

# Statutory Interpretation as Argumentation



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## 1 Introduction

1 Interpretation is regarded as the passage from a legal text to a legal rule (Hage 1996,  
2 214; Tarello 1980), namely a normative premise under which an individual case  
3 is “subsumed” or classified (see Moreso and Chilovi, chapter 2, part III, this vol-  
4 ume, on “[Interpretive Arguments and the Application of the Law](#)”). This passage  
5 can be compared to the common understanding and processing of utterances in ordi-  
6 nary conversation (Smolka and Pirker 2016), in which semantic content is only a  
7 vehicle for getting to the “speaker’s meaning” or what is communicated—a richer  
8 content “to which meaning and obvious background assumptions have both con-  
9 tributed” (Soames 2008, 411; see also Butler 2016; Carston 2013; Horn 1995; Miller  
10 1990). Legal interpretation does not differ essentially from ordinary interpretation,  
11 even though legislative speech is one-sided (there is nobody who can immediately  
12 answer back) and the basic presumption governing such texts is that the author used  
13 the language to convey ideas (Sinclair 1985, 390). However, pragmatic principles  
14 constitute a dimension of rationality which is necessary for the understanding of

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15 legal texts (Sinclair 1985, 401). As Soames puts it, the statutory language provides  
 16 incomplete semantic content, which needs to be completed by pragmatic (contextual)  
 17 factors and processes:

18 Just as what I say, and commit myself to, by uttering a sentence, is often a function of  
 19 more than its semantic content, so “what the law says,” and is committed to, is often a  
 20 function of more than the semantic contents of relevant legal texts. Just as you have no  
 21 standing to reinterpret my remark to conform to your moral and political views, simply  
 22 because the meaning of my sentence doesn’t fully determine the content of my remark, so  
 23 judges applying the law have no standing to reinterpret it, simply because the linguistic  
 24 meanings of the relevant legal texts don’t fully determine the content of the law. There are  
 25 other principles at work filling the gap between sentence meanings and the contents of texts,  
 26 legal or otherwise (Soames 2008, 404).

27 In pragmatics, the reconstruction of meaning in ordinary conversation is regarded  
 28 as characterized by both default reasoning and systematic and critical inferences  
 29 (Jaszczolt 2005, 46; Wilson 2005). Default inferences are triggered when informa-  
 30 tion about the current context is absent or not necessary for comprehension (i.e., when  
 31 the inferential conclusion is not in conflict with the present context). When default  
 32 inferences cannot be drawn (Kecskes 2008, 2013, 129, 131; Kecskes and Zhang  
 33 2009), more complex inferences need to be made. In legal theory, this twofold pro-  
 34 cess is mirrored by the concepts of understanding and interpretation. Interpretation  
 35 is defined as “an ascription of meaning to a linguistic sign in the case its meaning is  
 36 doubtful in a communicative situation, i.e., in the case its “direct understanding” is  
 37 not sufficient for the communicative purpose at hand” (Dascal and Wróblewski 1988,  
 38 204). In case there is an “eventual ‘mismatch’ between the ‘computed’ utterance-  
 39 meaning and some contextual factor” resulting from the background or the specific  
 40 case to which the law is applied (Dascal and Wróblewski 1988, 213, 216), interpre-  
 41 tation needs to be justified through reasons (Atlas 2008; Atlas and Levinson 1981;  
 42 Dascal 2003, 635).

43 This chapter addresses the problem of representing and assessing the reasons pro-  
 44 vided in favor of a specific interpretation and more precisely justifying why and how  
 45 an interpretation is more acceptable than others (Macagno 2017). At this functional  
 46 level, such interpretive reasons are regarded as arguments (Macagno and Capone  
 47 2016) aimed at showing why a particular rule, rather than another, is valid on the  
 48 basis of the statutory text (Hage 1996, 215). In statutory interpretation, such argu-  
 49 ments are usually analyzed using specific maxims of interpretation, which can be  
 50 translated into a formal language (Hage 1997). In this chapter, we will show how the  
 51 canons of interpretation can be represented as schemes, namely patterns of defeas-  
 52 ible argument advanced in support of the interpretation of a text (or part thereof).  
 53 This formalization can be then used to bridge the gap between legal interpretation  
 54 and argumentation theory, and more specifically the argumentation schemes used for  
 55 representing and evaluating natural arguments (Macagno and Walton 2015; Walton  
 56 et al. 2008).

57 The functional analysis of legal interpretation in terms of arguments and the  
 58 formalization of the interpretive arguments as schemes (advanced in Sects. 2  
 59 and 3) allows modeling legal interpretation combining the formal argumentation

60 system ASPIC+ with a logical language (Sartor et al. 2014). After introducing the  
 61 Carneades Argumentation System (Sect. 4) and applying it to two cases (Sects. 5  
 62 and 6), Sects. 7–10 will be devoted to developing a logical model for reasoning  
 63 with interpretive canons, conceived as defeasible rules (see Sartor, chapter 3,  
 64 part II, this volume, on “[Defeasibility in Law](#)”). The logical structure that will be  
 65 developed will not be framed in deontic terms, but rather will concern terminological  
 66 assertions concerning what should count as the best interpretations of the contested  
 67 or potentially contested expressions.

## 68 2 Interpretive Arguments

69 The justification of an interpretation can be regarded as an argumentation-based  
 70 procedure in which the best interpretation is the one supported by the strongest or  
 71 less defeasible arguments (Atlas and Levinson 1981; Macagno et al. 2018). On this  
 72 perspective, the “canons” or maxims of interpretation can be reframed as arguments  
 73 (Macagno and Walton 2017), which can be classified according to their commu-  
 74 nicative purpose and the types of warrants. This classification allows detecting the  
 75 relationship between interpretive canons and the schemes commonly used in argu-  
 76 mentation theory.

### 77 2.1 *The Existing Types of Interpretive Arguments*

78 Macagno et al. (2012) compiled a list of eleven interpretive arguments identified by  
 79 MacCormick and Summers (1991). Below, each type of argument recognized in that  
 80 prior list is explained in a condensed manner to give the readers some idea of how  
 81 each of them can be reconfigured as a distinct defeasible form of argument.

- 82 ● *Argument from ordinary meaning* requires that a term should be interpreted accord-  
 83 ing to the meaning that a native speaker would ascribe to it.
- 84 ● *Argument from technical meaning* requires that a term having a technical meaning  
 85 and occurring in a technical context should be interpreted in its technical meaning.
- 86 ● *Argument from contextual harmonization* requires that a term included in a statute  
 87 or set of statutes should be interpreted in line with whole statute or set.
- 88 ● *Argument from precedent* requires that a term should be interpreted in a way that  
 89 fits previous judicial interpretations.
- 90 ● *Argument from statutory analogy* requires that a term should be interpreted in  
 91 a way that preserves the similarity of meaning with similar provisions of other  
 92 statutes.
- 93 ● *Argument from a legal concept* requires that a term should be interpreted in line  
 94 with the way it has been previously recognized and doctrinally elaborated in law.

- 95 ● *Argument from general principles* requires that a term should be interpreted in a
- 96 way that is most in conformity with general legal principles already established.
- 97 ● *Argument from history* requires that a term should be interpreted in line with the
- 98 historically evolved understanding of it.
- 99 ● *Argument from purpose* requires that a term should be interpreted in a way that
- 100 fits a purpose that can be ascribed to the statutory provision, or whole statute, in
- 101 which the term occurs.
- 102 ● *Argument from substantive reasons* requires that a term should be interpreted in
- 103 line with a goal that is fundamentally important to the legal order.
- 104 ● *Argument from intention* requires that a term should be interpreted in line with the
- 105 intention of the legislative authority.

106 These eleven types of interpretive argument are comparable to and overlap with  
 107 the fourteen types previously identified by Tarello (1980, Chap. 8), listed as follows  
 108 in Sartor et al. (2014):

- 109 ● *Arguments a contrario* rejects interpretations of a term departing from the term's
- 110 literal meaning.
- 111 ● *Analogical arguments* support interpretations according to which the meaning of
- 112 a term or expression of a legal provision is extended to apply a rule to a case not
- 113 regulated by the given provision (it is included in neither the core nor the periphery
- 114 of its application area), but presenting a relevant similarity with the cases covered
- 115 by it (Damele 2014; Gray 2013, 35).
- 116 ● *Arguments a fortiori* support interpretations according to which the meaning of a
- 117 term or expression in a legal provision is extended to apply that provision a case
- 118 that is not regulated by such a provision (it is included in neither the core nor the
- 119 periphery of the application area of the provision in question), but deserves, to a
- 120 higher degree, the same discipline as the cases covered by it.
- 121 ● *Arguments from completeness of the legal regulation* exclude interpretations that
- 122 create legal gaps.
- 123 ● *Arguments from the coherence of the legal regulation* exclude interpretations of
- 124 different legal statements that make them conflicting.
- 125 ● *Psychological arguments* support interpretations driven by the actual intent of the
- 126 authors of legal text.
- 127 ● *Historical arguments* support interpretations giving a legal statement the same
- 128 meaning that was traditionally attributed to other statements governing the same
- 129 matter.
- 130 ● *Apagogical arguments* exclude interpretations that generate absurdities.
- 131 ● *Teleological arguments* support interpretations contributing to it a purpose per-
- 132 taining to the goals or interests that the law is supposed to promote.
- 133 ● *Non-redundancy arguments* exclude interpretations that would make the inter-
- 134 preted expression redundant, under the assumption that the legislator does not
- 135 make useless normative statements.
- 136 ● *Authoritative arguments* support interpretations already given by authoritative
- 137 courts or scholars.

- 138 ● *Naturalistic arguments* support interpretations aligning a legal statement to human  
139 nature or the nature of the matter regulated by that statement.
- 140 ● *Arguments from equity* support (exclude) (un)fair or (un)just interpretations.
- 141 ● *Arguments from general principles* support (exclude) interpretations that are sup-  
142 ported by (incompatible with) general principles of the legal system.

143 The two lists complement each other, even though Tarello's list emphasizes the  
144 kinds of input on which interpretive argument is based, such as ordinary language,  
145 technical language, and so forth, while MacCormick and Summers' list emphasizes  
146 the reasoning steps involved in the interpretive process.

147 In comparing the two lists of types of interpretive arguments, some common  
148 elements stand out, but there are also significant differences. Some of the argu-  
149 ment types in the Tarello's list—such as analogical arguments, teleological argu-  
150 ments, and arguments from general principles—appear to be already included in  
151 the list of MacCormick and Summers. Tarello's psychological arguments seem to  
152 fit under McCormick and Summers' category of argument from intention. It looks  
153 like Tarello's authoritative arguments might fit under MacCormick and Summers'  
154 category of argument from precedent. Others types of argument are distinctively  
155 different, while in still other cases it is unclear how the type of interpretive argument  
156 described in the one list is related to the type described in the other list.

157 One of the crucial problems concerning types of interpretive arguments is their  
158 use (in training legal practitioners or scholars) and their relations with the works in  
159 argumentation theory and logic on argument analysis and reconstruction. Recently,  
160 the canons or maxims that express the general principle characterizing each type of  
161 argument have been represented as defeasible rules, to be integrated within a pri-  
162 oritized defeasible logic system (Rotolo et al. 2015). The purpose of this chapter is  
163 to analyze types of interpretive arguments as argumentation schemes, or rather dia-  
164 logical patterns of arguments, in which an interpretation is regarded as a defeasible  
165 viewpoint that needs to be supported by a pattern of reasoning and can be subject  
166 to default in case specific critical questions are successfully advanced. On this per-  
167 spective, interpretive reasoning is framed within a broader dialectical framework,  
168 involving a specific burden of bearing out and defeating a specific interpretation  
169 (Gizbert-Studnicki 1990).

170 Some of the interpretive argumentation schemes in both lists clearly relate to  
171 argumentation schemes already widely known and studied in argumentation that are  
172 not specifically designed to deal with interpretive issues (Macagno and Walton 2015;  
173 Walton et al. 2008). Hence, there are many questions about how some of the new  
174 interpretive schemes relate to these more general schemes that have been already  
175 widely recognized. For example, the category of authoritative arguments in Tarello's  
176 list might relate to scheme for argument from expert opinion. Since laws formulated  
177 in statutes are binding on the courts, it can be said that the statement made in this  
178 context can be held to hold by reason of authority. But a legal scheme for argument  
179 from administrative authority that is a variant on argument from authority already has  
180 some recognition in the field of argumentation studies. Hence, there are questions  
181 raised about how this new interpretive scheme proposed by Tarello distinguishes  
182 between the two kinds of argument from authority. As mentioned above, there is

183 also the question of how Tarello's version of interpretive argument from authority  
 184 fits in with schemes from MacCormick and Summers' list such as argument from  
 185 precedent, argument from a legal concept, argument from general principles, and  
 186 argument from history. None of these questions can be discussed in this chapter,  
 187 for reasons of length, but they need to be recognized here as problems for future  
 188 research.

189 Another similar problem is how the interpretive argument from precedent, as it  
 190 is called in MacCormick and Summers' list, is related to the general scheme for  
 191 argument from precedent, already recognized in the argumentation literature. The  
 192 problem is that there are great divisions of opinion on precisely how the scheme  
 193 should be modeled. Many think that argument from precedent is always based on  
 194 argument from analogy, that is, on a comparison between and source case and a target  
 195 case. But others might think that legal argument from precedent needs to be based  
 196 on *ratio decidendi*. Another question raised by this difference of opinion is whether  
 197 *ratio decidendi* represents some kind of analogy between the two cases where the  
 198 rationale used to arrive at the conclusion in the source case is supposed to be similar  
 199 to a comparable rationale that can fit the target case.

200 In this chapter, we recognize the existence of these problems without delving into  
 201 a detailed analysis thereof, so that we can forge ahead with building a framework  
 202 for interpretive argumentation schemes that can later be applied to studying specific  
 203 schemes and issues. The starting point is to provide a general classification of the  
 204 most important arguments of the two lists, identifying the more generic identities  
 205 between them. Then, we move through a sequence of examples of legal arguments  
 206 where interpretation of a statute or law is an issue, applying the model to the examples.  
 207 As always, the work of applying formal structures to real cases of argumentation in  
 208 natural language discourse raises problems and difficulties in its own right.

## 209 2.2 *Classifying the Interpretive Arguments*

210 MacCormick (2005, 124–25) proposed that there are three main categories of  
 211 interpretive argument, over the above eleven categories of interpretive arguments  
 212 acknowledged as persuasive in grounding a selected interpretation of a text in a  
 213 disputed case in a broad variety of legal systems. First, there are so-called *linguis-*  
 214 *tic arguments* that appeal to the linguistic context itself to support an interpretation  
 215 (which we can call definitional arguments, Macagno and Walton 2014). Second,  
 216 there are the *systemic arguments* that take the special context of the authoritative  
 217 text, within the legal system, into account. Such schemes merge the authority of the  
 218 source with the reconstruction of the definition from the text. Third, there are the  
 219 *teleological–evaluative arguments* that make sense of the text in light of its aim or  
 220 goal (which we can refer to as pragmatic arguments, see Macagno and Walton 2015).  
 221 A fourth category is what McCormick (2005) calls “*appeal to the lawmaker’s inten-*  
 222 *tion.*” McCormick does not consider this type of interpretive argument alongside  
 223 the other main categories of interpretive argument, because of the ambiguity and

224 indeterminacy of the notion of intention. He rather views it a trans-categorical type  
 225 of argument that ranges across all the other categories and their types, as linguistic,  
 226 systemic or teleological–evaluative considerations can support the attribution of  
 227 intentions to legislators.

228 If we try to analyze the lists of arguments in terms of patterns of argument,  
 229 explaining the arguments of legal interpretation using the categories of argumentation  
 230 schemes, we need to draw a first crucial distinction between arguments that  
 231 support an interpretation and arguments that reject an interpretation. Some interpretive  
 232 canons, however, are bivalent, in the sense that they provide for two interpretive  
 233 schemes: one (positive or negative) when the canon’s condition is satisfied, and  
 234 the opposite (negative or positive) when the canon’s condition is not satisfied. For  
 235 instance, while the contextual coherence of an interpretation supports the adoption  
 236 of an interpretation, lack of contextual coherence supports rejection. In such cases,  
 237 we use the symbol + and–to denote the use of a scheme to support and reject an  
 238 interpretation, for instance + contextual coherence and –contextual coherence.

239 The arguments supporting an interpretation are different in nature (Macagno  
 240 2015). Pragmatic arguments, definitional arguments (of different types, including  
 241 the systemic ones), and analogical arguments represent distinct reasoning patterns,  
 242 which are often merged with authority arguments. Such arguments are intended to  
 243 back up a specific definition based on previous interpretations (epistemic authority)  
 244 or on the reconstruction of a possible “intention” of the lawmaker (deontic authority),  
 245 or on the alleged “nature” of a concept (the commonly shared definition). Such  
 246 categories often merge with each other, but they can be classified in Fig. 1 based on  
 247 a distinctive feature, namely their distinctive reasoning pattern.

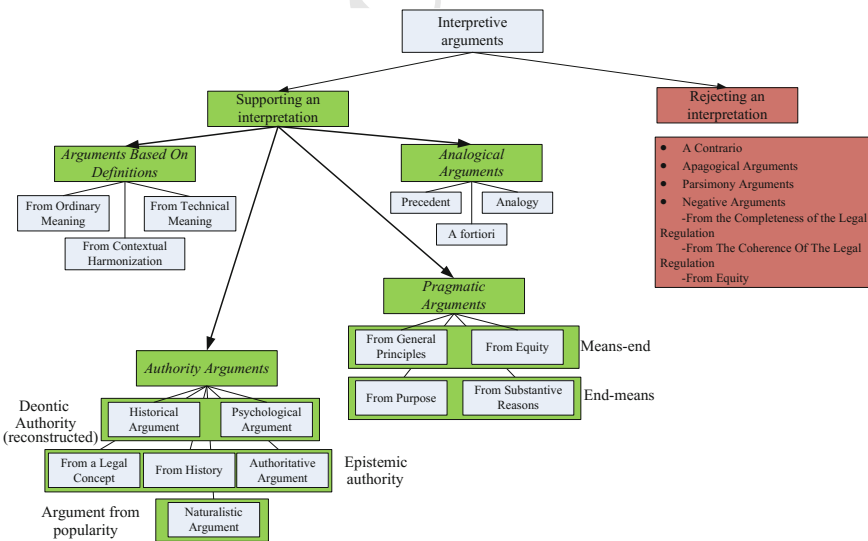


Fig. 1 Classifying the arguments of interpretation

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248 It was recognized by MacCormick (2005) that there can be conflicts between  
 249 interpretive arguments, pitting one form of interpretive argument against another  
 250 (Rotolo et al. 2015). Some legal traditions provide general criteria for dealing with  
 251 conflicts of this sort based on certain kinds of priorities. Alexy and Dreier (1991,  
 252 95–8) have cited criteria such as the following: (a) In criminal law, arguments from  
 253 ordinary meaning have priority over arguments from technical meaning; (b) in crim-  
 254 inal law, generic arguments based on the intention of the legislator have priority over  
 255 arguments not based on authority, but not over linguistic arguments. In this chapter,  
 256 we will use argumentation tools to represent such conflicts and priorities.

### 257 3 Translating Interpretive Arguments into Schemes

258 The classification of interpretive arguments can be the starting point for translating  
 259 the arguments (and canons or maxims) into formal (or rather, quasi-formal) schemes  
 260 representing how a conclusion is supported by premises. In particular, we will pro-  
 261 vide the schemes for the two general categories (positive versus negative) and the  
 262 definition-based arguments (in particular, from ordinary and technical meaning).  
 263 These schemes will be the ground for the further formal representations in Sects. 4,  
 264 5 and 6 and the logical formalization in the remaining sections.

#### 265 3.1 Assumptions and Common Template

266 Statutes are written in natural language. Our concern is with the interpretation of  
 267 sentences expressed in natural language that are susceptible to differing interpreta-  
 268 tions (Atlas 2005; Horn 1995). The major philosophical concern is how the notion  
 269 of meaning is to be defined in relation to the task of finding the evidential basis  
 270 for preferring one interpretation or another (Atlas 2005; Atlas and Levinson 1981;  
 271 Dascal 2003, 635). In this chapter, we find it most highly suitable to adopt a prag-  
 272 matic approach to meaning, namely to understand statutory meaning as the intention  
 273 expressed through the legal text (Carston 2013), an approach that corresponds to the  
 274 trans-category understanding of interpretation in McCormick (2005). The syntax  
 275 representing the structure of a sentence, as well as the individual semantic meanings  
 276 of each term contained in the sentence, are important. But over and above such fac-  
 277 tors, it needs to be acknowledged that the meaning of the sentence composed of these  
 278 elements, especially in the examples considered in this chapter, needs to be placed in  
 279 the context of a broader text or corpus in which it is embedded. For example, the issue  
 280 of whether a contested word should be taking it as expressing and ordinary meaning  
 281 or a technical meaning is a dispute about whether the word can be interpreted the one  
 282 way or the other in a special context of use. For these reasons, although we acknowl-  
 283 edge the importance of semantics and syntax in matters of statutory interpretation,  
 284 we need to study the notion of meaning in a broad manner to include not only these



285 aspects, but also the aspect of the placement of the sentence in a broader context of  
 286 use in different kinds of discourse.

287 From our perspective, making an interpretation consists in associating a linguistic  
 288 occurrence and a meaning within a specific context and use, i.e., in claiming that a  
 289 certain expression  $E$  in certain document  $D$  has a certain meaning  $M$ . Interpretations  
 290 are not necessarily correct. They may be right or wrong, preferable or not to other  
 291 interpretations.

292 We shall model the application of interpretation canons by using a uniform tem-  
 293 plate, so that for each canon we obtain an argument scheme including a major premise,  
 294 a minor premise, and an interpretive conclusion.

- 295 • The major premise is a general canon: If interpreting an expression (word, phrase,  
 296 sentence) in legal document (source, text, statute) in a certain way satisfies the  
 297 condition of the canon issue, then *the expression* should/should not be interpreted  
 298 (depending on whether the canon is a negative or positive one) in that way.
- 299 • The minor premise is a specific assertion: Interpreting an expression in a particular  
 300 document in a certain way satisfies the condition of the canon.
- 301 • The conclusion is a specific claim: The expression in that document indeed  
 302 should/should not be interpreted in that way.

303 In this chapter, we shall apply this template to provide schemes for the following  
 304 canons: (1) argument from ordinary language ( $OL$ ); (2) argument from technical  
 305 language, whose requirement is correspondence to technical language ( $TL$ ); (3) *a*  
 306 *contrario* argument ( $AC$ ); (4) argument from purpose ( $Pu$ ); (5) argument from prece-  
 307 dent ( $Pr$ ); (6) argument from contextual harmonization ( $CH$ ). This list of schemes  
 308 will be added to as new schemes are formulated. + for schemes uses to argue for an  
 309 interpretation. Here is our system of notation for labeling the nodes in an argument  
 310 diagram to indicate a scheme. We use – for schemes used to argue against an inter-  
 311 pretation, +e for exclusion, and +i for inclusion. Hence, we put +e as the use is in  
 312 favor of exclusion (for the exclusionary conclusion). In Carneades, + indicates an  
 313 argument in favor of its conclusion, so if the conclusion is exclusionary, it should be  
 314 +e. So, for example, the notation +iPr labels a pro argument from inclusive argument  
 315 from precedent.

### 316 3.2 Positive Interpretive Schemes

317 As mentioned above, two fundamental macro-categories of interpretive argument  
 318 schemes need to be distinguished, the positive ones supporting an interpretation  
 319 and the negative ones rejecting an interpretation. Here is the template for positive  
 320 interpretive argument schemes. In presenting this template, we shall use uppercase  
 321 letters for variables and lowercase letters for constants:

Major premise	<i>C</i> : If the interpretation of <i>E</i> in a <i>D</i> as <i>M</i> satisfies <i>C</i> 's condition, then <i>E</i> in <i>D</i> should be interpreted as <i>M</i>
Minor premise	The interpretation of <i>e</i> in <i>d</i> as <i>m</i> satisfies <i>C</i> 's condition
Conclusion	<i>e</i> in <i>d</i> should be interpreted as <i>m</i>

322 In applying this template, we need to substitute in the major premise the condition  
 323 that characterizes a canon, for instance, fitting *ordinary language* (OL).

324 In order to show how positive interpretive canons can be applied with this pattern,  
 325 we use the case of *Dunnachie v Kingston-upon-Hull City Council*, also used by  
 326 MacCormick (2005), as a running example. This case concerns an employee who  
 327 claimed to have been unfairly dismissed, and as a result to have suffered humiliation,  
 328 injury to feelings and distress. The employer argued that the relevant section of the  
 329 current UK legislation, called the Employment Rights Act of 1996, only permits  
 330 recovery of *financial loss*. The employee argued that a proper construction of all the  
 331 relevant section of the statute allows for recovery of *losses* other than financial losses  
 332 narrowly construed. The question posed was whether the term “*loss*,” as used in the  
 333 statute, referred only to financial loss or could be given a more extended meaning so  
 334 that it included losses such as emotional loss that are not strictly financial.

If we use the canon *Ordinary Language*, we obtain the following structure:

Major premise	<i>OL</i> : If The interpretation of <i>E</i> in <i>D</i> as <i>M</i> fits <i>ordinary language</i> , then <i>E</i> in <i>D</i> should be interpreted as <i>M</i>
Minor premise	The interpretation of “ <i>loss</i> ” in <i>Employment Relations Act</i> as <i>PecuniaryLoss</i> fits <i>ordinary language</i>
Conclusion	“ <i>loss</i> ” in the <i>Employment Relations Act</i> should be interpreted as <i>PecuniaryLoss</i>

335 Note that we use inverted commas for linguistic occurrences (“*loss*”) and a single  
 336 word, with capitalized initials for meanings (*PecuniaryLoss*).

337 By substituting the conditions of the *OL* canon, with the requirement of other  
 338 canons listed above it is possible to generate other interpretation schemes. For  
 339 instance, we can obtain the following scheme for *Technical Language* (*TL*):

Major premise	<i>TL</i> : If the interpretation of <i>E</i> in <i>D</i> as <i>M</i> fits <i>technical language</i> , then <i>E</i> in <i>D</i> should be interpreted as <i>M</i>
Minor premise	The interpretation of “ <i>loss</i> ” in the <i>Employment Relations Act</i> as <i>PecuniaryOrEmotionalLoss</i> fits <i>technical language</i>
Conclusion	“ <i>loss</i> ” in the <i>Employment Relations Act</i> should be interpreted as <i>PecuniaryOrEmotionalLoss</i>

340

341 Obviously, our interpretive schemes only provide the top-level step in the reason-  
 342 ing that is needed to apply an interpretive canon. For supporting the application of a  
 343 canon, we need to establish the minor premise of the corresponding scheme, namely  
 344 to show that the interpretation we are proposing indeed satisfies the canon we are  
 345 considering. This requires specific arguments, according to scheme being consid-  
 346 ered. For instance, for establishing that interpretation “*pecuniary loss*” of expression  
 347 “*loss*” in document *Employment Relations Act* fits canon *ordinary language*, we will  
 348 have to establish, by providing adequate evidence, that this interpretation matches the  
 349 current linguistic usage. Thus, for instance, to support the application of the *ordinary*  
*language* canon, we would need an inference like the following:

Major premise	If <i>E</i> is commonly understood as <i>M</i> , then the interpretation of <i>E</i> in <i>D</i> as <i>M</i> fits <i>ordinary language</i>
Minor premise	The “ <i>loss</i> ” is commonly understood as <i>PecuniaryLoss</i>
Conclusion	The interpretation of “ <i>loss</i> ” in <i>Employment Relations Act</i> as <i>PecuniaryLoss</i> fits <i>ordinary language</i>

350 Here, the minor premise is a substitution instance of the antecedent of the major  
 351 premise.  
 352

### 353 3.3 Negative Interpretive Schemes

354 According to negative canons, if an interpretation meets the canon’s condition, then  
 it is to be rejected.

Major premise	<i>C</i> : If the interpretation of <i>E</i> in <i>D</i> as <i>M</i> satisfies condition of <i>C</i> ’s canon, then <i>E</i> in <i>D</i> should not be interpreted as <i>M</i>
Minor premise	The interpretation of <i>e</i> in <i>d</i> as <i>m</i> satisfies condition of <i>negative canon</i>
Conclusion	<i>e</i> in <i>d</i> should not be interpreted as <i>m</i>

355 The most common negative canon is the *a contrario* (AC), which rejects an inter-  
 356 pretation which is over- or under-inclusive with regard to the usual semantic meaning  
 357 of that expression, according to the idea that *Ubi lex voluit, dixit; ubi noluit, tacuit*  
 358 (what the law wishes, it states, what the law does not want, it keeps silent upon). The  
 359 *a contrario* canon can also be viewed as a counterfactual appeal to the intention of  
 360 the legislator: If the legislator had meant to express a meaning that is different from  
 361 the usual meaning (the semantic meaning) of the expression at issue, he would have  
 362 used a different expression. Here is for instance an example of application of the *a*  
 363 *contrario* canon.  
 364

Editor Proof

Major premise	<i>AC</i> : If the interpretation of <i>E</i> in <i>D</i> as <i>M</i> conflicts with the usual meaning of <i>E</i> (is over or under-inclusive), then <i>E</i> in <i>D</i> should not be interpreted as <i>M</i>
Minor premise	The interpretation of the expression “ <i>loss</i> ” in the <i>Employment Relations as PecuniaryOrEmotionalLoss</i> conflicts with the usual meaning of “ <i>loss</i> ”
Conclusion	“ <i>loss</i> ” in <i>Employment Relations Act</i> should not be interpreted as <i>PecuniaryOrEmotionalLoss</i>

365 There is also a more specific kind of a *contrario* argument, which we may call  
 366 subclass a *contrario*: Rather than rejecting an interpretation as a whole, it addresses  
 367 the exclusion or inclusion of a certain subclass in the interpretation at issue, based on  
 368 the fact that the subclass is included in or excluded from the usual meaning. Here are  
 369 the two variants: the exclusionary a *contrario* (*eAC*) and the inclusionary a *contrario*  
 370 (*iAC*). Note that the *iAC* has a positive interpretive conclusion, as the non-exclusion,  
 371 i.e., the non–non-inclusion is an inclusion.

Here is the first variant, namely the exclusionary a *contrario* argument.

Major premise	<i>eAC</i> : If the interpretation of <i>E</i> in <i>D</i> as including <i>S</i> conflicts with the usual meaning of <i>E</i> , then <i>E</i> in <i>D</i> should be interpreted as excluding <i>S</i>
Minor premise	The interpretation of “ <i>loss</i> ” in the <i>Employment Relations</i> as including <i>EmotionalLoss</i> conflicts with the usual meaning of “ <i>loss</i> ”
Conclusion	“ <i>loss</i> ” in <i>Employment Relations Act</i> should be interpreted as excluding <i>EmotionalLoss</i>

372

Here is the second variant, the inclusionary a *contrario* argument.

Major premise	<i>iAC</i> : If the interpretation of <i>E</i> in <i>D</i> as excluding <i>S</i> conflicts with the usual meaning of <i>E</i> , then <i>E</i> in <i>D</i> should be interpreted as including <i>S</i>
Minor premise	The interpretation of “ <i>loss</i> ” in the <i>Employment Relations</i> as excluding <i>EmotionalLoss</i> conflicts with the usual meaning of “ <i>loss</i> ”
Conclusion	“ <i>loss</i> ” in <i>Employment Relations Act</i> should be interpreted as including <i>EmotionalLoss</i>

373

374 The a *contrario* scheme can also be used in a meta-dialogical sense that concerns  
 375 the choice of the scheme. A clear example is the following argument taken from  
 376 *R. v. Barnet London Borough Council* (1 All ER 97, 2004):

377 The words ‘ordinarily residing with’ are common English words and here there is no context  
 378 requiring that they should be given other than their natural meaning in accordance with the  
 379 accepted usage of English. Even in such circumstances, however, there can be difficulty and  
 380 doubt as to their applicability to particular facts, because the conception to which the words  
 381 have reference does not have a clearly definable content or fixed boundaries.

382 The reasoning can be represented as follows, where *mAC* stands for meta-a *con-*  
 383 *trario*.

Major premise	<i>mAC</i> : If <i>E</i> in <i>D</i> is an ordinary English expression, and <i>E</i> in <i>D</i> has no context requiring a technical meaning, then the <i>technical language</i> is inapplicable to expression <i>E</i> in a document <i>D</i>
Minor premise 1	“ <i>Ordinarily residing with</i> ” in the <i>Local Education Authority Awards Regulations</i> is an ordinary English expression
Minor premise 2	“ <i>Ordinarily residing with</i> ” in the <i>Local Education Authority Awards Regulations</i> has no context requiring a technical meaning
Conclusion	The <i>technical language</i> canon is inapplicable to expression “ <i>Ordinarily residing with</i> ” in the <i>Local Education Authority Awards</i>

384 In this case, the absence of a context requiring a technical language (such as a  
 385 definition, or the technical nature of the object of the regulation at issue) leads to the  
 386 inapplicability of the *technical language* canon. This scheme is not a mere rebuttal  
 387 (exclusion of a determinate meaning), but an undercutter (an attack to the grounds  
 388 of an argument, in this case the possibility of using a major premise) (Pollock 1995;  
 389 Walton 2015). Thus, the fact that the *technical language* argument cannot be used  
 390 to support that interpretation does not exclude that the same interpretation can be  
 391 successfully proposed through a different argument, such as the teleological one  
 392 (argument from purpose).

393 The meta-dialogical analysis of the *a contrario* argument raises two issues concern-  
 394 ing its nature. The first one is the relationship between the exclusion of alterna-  
 395 tive canons of interpretations and the idea of default. According to Alexy and Dreier  
 396 (1991, 95–8), the *ordinary language* scheme should be taken as the default setting.  
 397 The general principle at work here is the following conditional: Any expression in a  
 398 legislative document should be interpreted using *ordinary language*, unless there are  
 399 superior reasons to interpret the expression as fitting one of the other ten schemes.  
 400 However, all interpretive canons are defaults. The difference here is that for any  
 401 expression we can raise the defeasible claim that it should be interpreted according  
 402 to its ordinary language meaning, while claims based on other canons can only be  
 403 raised under specific conditions (e.g., a technical context is required to substantiate  
 404 the claim that a term should be interpreted in a technical meaning).

405 The second controversial issue about the *a contrario* argument is whether it ought  
 406 to be treated only as an argumentation scheme or also as a meta-level principle that  
 407 can be applied in conjunction with interpretive argumentation schemes. Argument  
 408 from ignorance has traditionally been treated as an argumentation scheme in logic  
 409 (Macagno and Walton 2011; Walton 1995), whereas the closed world assumption  
 410 has been treated in AI as a meta-level principle rather than as a specific form of  
 411 argument in its own right (Reiter 1980). The *a contrario* argument is similar to the  
 412 argument from lack of evidence as it supports an inference from a negative finding  
 413 to a positive conclusion.

Editor Proof

## 4 Attacking, Questioning, and Defending Interpretive Arguments

Since the basic defeasible schemes share a general pattern for interpretive arguments, there is no need to formulate critical questions for each of these schemes individually. The critical questions for each of them follow the general pattern indicated by the three critical questions presented below.

- (CQ<sub>1</sub>) What alternative interpretations of  $E$  in  $D$  should be considered?  
 (CQ<sub>2</sub>) What reasons are there for rejecting alternative explanations?  
 (CQ<sub>3</sub>) What reasons are there for accepting alternative explanations as better than (or equally good as) the one selected?

The function of the critical questions is to help someone dealing with interpretive issues to probe into an interpretive argument in order to get an initial idea of what some of the weak points and it might be. They have a heuristic function of suggesting to an arguer who is at a loss on how to respond by suggesting possible avenues of attack. In this instance, the CQs are not independent of each other, and they have an ordering. CQ<sub>1</sub> should be asked first.

The way we will analyze interpretive arguments, as well as critical questions matching them and counterarguments attacking them, is to build an argumentation tree which includes a contested interpretive argument and provides an analysis of how the chains of argumentation on both sides of the dispute connect with each other and to the ultimate claim at issue. This can be done using tools from formal argumentation systems such as the Carneades Argumentation System (Carneades) or the ASPIC+ system. Both ASPIC+ and CAS are based on a logical language comprising both strict and defeasible inference rules that can be used to build arguments, and both systems use argumentation schemes. Sartor et al. (2014) have applied ASPIC+ to build a logical analysis of interpretative schemes, and we will use here a simplified version of Carneades which will prove to have some tools that can be applied to examples illustrating the distinctive argumentation approach to interpretative arguments.

Both ASPIC+ and Carneades use a scheme called defeasible *modus ponens*, also used in the DefLog argumentation system of Verheij (2008). This scheme is a variant of *modus ponens* in which the antecedent of the conditional premise takes the form of a conjunction. Verheij (2008, 24) observed that if you look at the typical argumentation scheme with eyes slightly narrowed, it appears to have a *modus ponens* format in outline. In the formalism that will be used in the second part of the present contribution, a scheme fits the following type of argument structure, where the major premise is a defeasible conditional with a conjunctive antecedent.

Major Premise:  $A, B, C, \dots \Rightarrow Z$   
 Minor Premise:  $A, B, C, \dots$   
 Conclusion:  $Z$

It was shown in Walton (2004, 134–39) how a majority of the schemes recognized in the argumentation literature can be tailored to fit this defeasible *modus ponens* form.

455 In all three systems, arguments are modeled as graphs containing nodes representing  
 456 propositions from the logical language and edges from nodes to nodes. In these  
 457 systems, an argument can be supported or attacked by other arguments, which can  
 458 themselves be supported or attacked by additional arguments. The outcome in a  
 459 typical case of argumentation is a graph structure representing a series of supporting  
 460 arguments, attacks, and counterattacks in a sequence that can be represented using  
 461 an argument map, also often called an argument diagram.

462 Carneades models arguments as directed graphs consisting of argument nodes  
 463 connected to statement nodes. The premises and conclusions of an argument graph  
 464 are represented as statement nodes, shown as rectangles in Fig. 3 (Gordon 2010).  
 465 Argument nodes represent different structures of different kinds of arguments, such  
 466 as linked or convergent arguments. A linked argument is one where two or more  
 467 premises function together to support a conclusion. In the argument maps below,  
 468 the name of the argumentation scheme is inserted in the node (the circle) joining the  
 469 premises to the conclusion. As will be shown in the figures, there can be two kinds  
 470 of arguments shown in the node, a pro (supporting argument) or a con (attacking)  
 471 arguments. A supporting argument is represented by a plus sign in its argument  
 472 node, whereas a con argument is represented by a minus sign in the nodes containing  
 473 argumentation schemes such as *modus ponens*, argument from expert opinion, and  
 474 so forth (<http://carneades.github.com>). Conflicts between pro and con arguments can  
 475 be resolved using proof standards such as including preponderance of the evidence  
 476 (Gordon and Walton 2009b). Argument graphs are evaluated relative to audiences,  
 477 modeled as a set of assumptions and an assignment of weights to argument nodes.  
 478 An audience is defined as a structure  $\langle \text{assumptions}, \text{weight} \rangle$ , where  $\text{assumptions} \subseteq$   
 479  $L$  is a consistent set of literals assumed to be acceptable by the audience and  $\text{weight}$   
 480 is a partial function mapping arguments to real numbers in the range 0.0–1.0. These  
 481 numbers represent the relative weights assigned by the audience to the arguments  
 482 (Gordon and Walton 2011).

483 In Carneades, there can be compound arguments consisting of several argument  
 484 nodes joined together by edges in the graph so that an argument represents a chain  
 485 of reasoning from the supporting premises down to the ultimate proposition to be  
 486 proved, the so-called statement at issue. Arguments are evaluated on the basis of  
 487 whether the audience accepts the premises or not, and on how strong the various  
 488 arguments making up the graph are. A very simple example of how an argument  
 489 evaluation works in the Carneades system is shown in Fig. 2. The rounded nodes  
 490 represent argumentation schemes accepted by the audience. A pro argument is indi-  
 491 cated by the plus sign in its node. A con argument is represented by a minus sign in  
 492 its argument node. A green (light gray) node means the proposition in it is accepted  
 493 by the audience. A red (dark gray) node means the proposition in it is rejected by the  
 494 audience. If the node is white (no color), the proposition in it is neither accepted nor  
 495 rejected. In the printed version, green appears as light gray and red appears as dark  
 496 gray.

497 In both argument diagrams shown in Fig. 2, the ultimate conclusion, statement 1,  
 498 is shown on the far left of the diagram. First, let us consider which premises the audi-  
 499 ence accepts or rejects, as shown in the argument diagram on the left. Argument 2

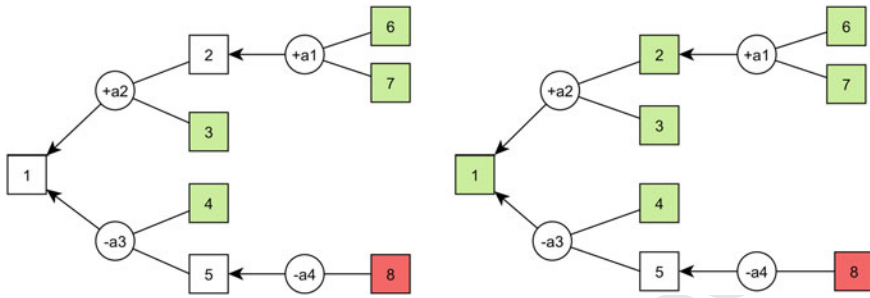


Fig. 2 Carneades graphs displaying an argument evaluation

500 is a pro argument supporting statement 1, while argument 3 is a con  
 501 attacking statement 1. The audience accepts proposition 3 as a premise in argu-  
 502 ment 2, but the other premise, statement 2, is neither accepted nor rejected by the  
 503 audience. Both premises of this additional argument, argument 1, are accepted by  
 504 the audience. Argument a3 is a con argument but one of its premises, statement 5,  
 505 is not accepted. Moreover, this premise is attacked by a con argument, but the only  
 506 premise in this con argument statement 6 is rejected.

507 To see how this conflict is resolved, look at the diagram on the right. Since both  
 508 statements 6 and 7 are accepted by the audience, Carneades automatically calculates  
 509 that the conclusion 2 is accepted. However, what about the con argument against  
 510 statement 1 shown at the bottom, namely argument 3? This con argument could  
 511 defeat statement 5, but its premise 8 is rejected by the audience. Therefore, pro  
 512 argument a2 wins out over con argument a3, and so conclusion 1 is shown in green  
 513 as acceptable.

514 Carneades also formalizes argumentation schemes. Schemes can be used to con-  
 515 struct or reconstruct arguments, as well as to determine whether a given argument  
 516 properly instantiates the types of argument deemed normatively appropriate accord-  
 517 ing to the scheme requirements.

518 The critical questions matching an argumentation scheme cannot be modeled in a  
 519 standard argument graph straightforwardly by representing each critical question as  
 520 an additional implicit premise of the scheme. The reason is that there are two different  
 521 variations on what happens when a respondent asks a critical question (Walton and  
 522 Gordon 2005). These variations concern the pattern of how the burden of proof  
 523 shifts from the proponent to the respondent and back as each critical question is  
 524 asked by the respondent in a dialogue. With some critical questions merely asking  
 525 the question is enough to defeat the proponent's argument, because the burden of  
 526 proof is shifted onto the proponent's side, and if the proponent fails to meet this  
 527 burden of proof, the initial argument is immediately defeated. With other critical  
 528 questions, merely asking the critical question is not enough by itself to defeat the  
 529 proponent's argument. For example, if the respondent asks the bias critical question  
 530 when the proponent has put forward an argument from expert opinion, the proponent  
 531 can simply reply, "What proof do you have that might expert is biased?" On this



532 approach, merely asking the question does not defeat the proponent's argument until  
 533 the respondent offers some evidence to back it up. Carneades deals with this problem  
 534 of burden of proof for critical questioning by distinguishing three types of premises  
 535 in an argumentation scheme, called ordinary premises, assumptions, and exceptions.  
 536 Assumptions are assumed to be acceptable unless called into question. Exceptions  
 537 are modeled as premises that are not assumed to be acceptable and which can block  
 538 or undercut an argument as it proceeds. Hence, an exception, which is modeled  
 539 in Carneades as an undercutter, only defeats the argument it was attacking if it  
 540 is supported by other arguments which offer reasons to back up the undercutting  
 541 argument. Ordinary premises of an argumentation scheme are treated as assumptions.  
 542 They are assumed to be acceptable in case they are put forward, but must be supported  
 543 by further arguments to remain acceptable after being challenged by critical questions  
 544 or counterarguments.

545 For any one of these critical questions to be effective in defeating the original  
 546 interpretive argument, the respondent must give some indication of what he takes this  
 547 alternative interpretation to be. Thus, it would appear that each of these critical ques-  
 548 tions only defeats the original interpretive argument if some evidence is presented  
 549 by the respondent pinpointing an alternative interpretation which might challenge  
 550 the one originally appealed to by the proponent's argument.

551 Like ASPIC+, Carneades has three ways in which one argument can attack and  
 552 defeat another. An opponent can attack one or more of the premises of an argument.  
 553 This is called an undermining attack. Or an opponent can attack the conclusion by  
 554 presenting an argument to show it is false or unacceptable. This type of attack is  
 555 called a rebutter. But thirdly, the opponent can attack the inferential link joining  
 556 the premises to the conclusion. This type of attack is called an undercutter. For  
 557 example, if the inference is based on a rule, the attack could claim that there is an  
 558 exception to the rule that applies in the present case at issue. This way of modeling  
 559 argumentation is based on Pollock's distinction (Pollock 1995, 40) between two kinds  
 560 of argument attacks called rebutters and undercutters. On Pollock's view, a rebutter  
 561 is a counterargument that attacks the conclusion of a prior argument, whereas an  
 562 undercutter is a counterargument that attacks the argument link between the premises  
 563 and the conclusion. For example, an argument that fits the argumentation scheme for  
 564 argument from expert opinion can be critically questioned by asking whether the  
 565 expert is biased. In Carneades, such a critical question is modeled as an undercutter,  
 566 and an undercutter is modeled as an argument that defeats the original argument it  
 567 was aimed at only if it is backed up by some additional evidence that supports it.

568 Next, we use Carneades to show how the interpretative statutory schemes can be  
 569 applied to an extended sequence of argumentation in a typical case using a large  
 570 argument graph to connect the individual interpretive arguments to each other.

## 571 **5 The Education Grants Example**

572 According to the account of the following case described in Cross (2005, 90),  
 573 Section 1 of the Education Act of 1962 required local education authorities to make

574 grants to students who were “ordinarily resident” in their area, so that the student  
 575 could attend higher education courses. A requirement in the Education Act stipulated  
 576 that to be eligible, the student had to have been ordinarily resident in the UK for three  
 577 years prior to his or her application. The following issue arose: Could someone who  
 578 had come to the UK for education count the period spent in education as ordinary  
 579 residence to qualify for a mandatory grant under the Education Act?

580 There were two sides to the issue. The Court of Appeal held that such a person  
 581 could not count this period as ordinary residence, offering the following argument  
 582 (Cross 2005, 90). Lord Denning MR and Everleigh LJ were impressed by the need  
 583 to relate this Act to the policy of the Commonwealth Immigrants Act 1962 and its  
 584 successor, the Immigration Act 1971. Under the latter Act, students coming only for  
 585 study had a conditional leave to stay in the country limited to the purpose of study  
 586 which did not involve ordinary residence for the general purposes of everyday life.  
 587 Denning and Everleigh considered that consistency with this Act required the term  
 588 “ordinarily resident” in the Education Act to be interpreted as living as an ordinary  
 589 member of the community would, which would not include residence for the limited  
 590 purpose of study.

591 Arriving at a different interpretation, the House of Lords unanimously reversed  
 592 this decision. They felt that the Court of Appeal had given too much weight to  
 593 arguments drawn from the Immigration Act. They offered the following argument,  
 594 quoted from Cross (2005, 91).

595 Parliament’s purpose expressed in the Education Act gave no hint of any restriction on  
 596 the eligibility for a mandatory award other than ordinary residence in the United Kingdom  
 597 for three years and a satisfactory educational record. There was nothing expressed in the  
 598 Immigration Act which gave guidance as to the interpretation of the Education Act and,  
 599 indeed, despite a series of immigration measures since 1962, nationality had not formed  
 600 part of the regulations under the Education Act until 1980. Accordingly, the ordinary natural  
 601 meaning of the Education Act prevailed to make the students eligible for a mandatory grant  
 602 if they had resided in the United Kingdom for the purposes of study.

603 In this case, it was concluded that the role of the judge should not be to reconcile  
 604 legislative provisions. Instead, it was proposed that the basis for interpretation should  
 605 be that of the ordinary language meaning of the expression “ordinarily resident.”

606 The argumentation in this case can be analyzed as an interpretive argument put  
 607 forward by its proponents Denning and Everleigh and countered by an interpretive  
 608 argument put forward in the House of Lords. Below, we use a sequence of three  
 609 argument maps to model the structure of the argumentation sequence in the case.

610 The first argument, shown in Fig. 3, cites the Immigration Act of 1971, which  
 611 stated that students coming to a country for study only had a conditional leave to  
 612 stay in the country, adding that this conditional leave does not involve ordinary  
 613 residence for the general purposes of everyday life. Because a related document is  
 614 cited as the basis for drawing a conclusion in support of statutory interpretation, the  
 615 argumentation scheme which is the basis of this argument is the one for argument  
 616 from contextual harmonization (CH), recognized by MacCormick and Summers. For  
 617 present purposes, this scheme is taken to represent the following kind of argument:  
 618 A certain expression that occurs in a document is best interpreted as fitting with its  
 619 usage in a set of related documents; therefore, in this document it will interpreted in

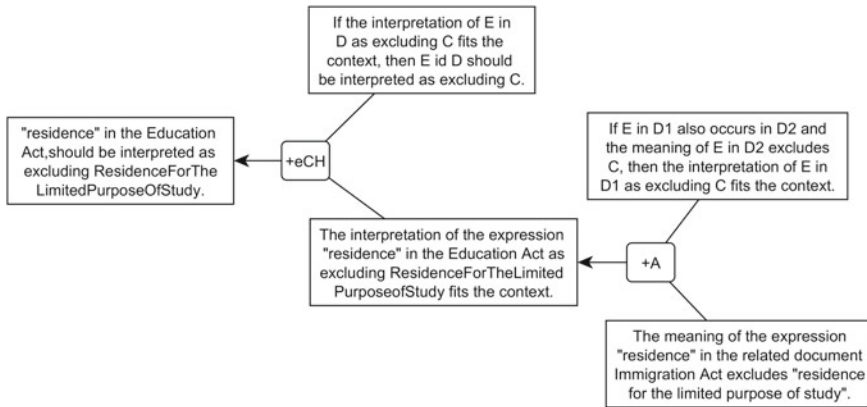


Fig. 3 Proponent’s argument in the educational grants example

620 the same way. In other words, if there is an issue about how to interpret an expression  
 621 in a document, such as a statute, then it can be argued that the best way to interpret  
 622 it is within a context of related documents so that it fits with the way the term has  
 623 been interpreted in these other documents.

624 Let us apply the scheme for the argument from contextual harmonization to the  
 625 first part of this example. The notation *+CH*, referring to a supporting use of argument  
 626 from contextual harmonization, has been inserted in the node linking the two premises  
 627 in the middle of Fig. 2 to the ultimate conclusion shown at the left. Here is a textual  
 628 representation of the arguments, which corresponds to the graph of Fig. 3. Let us  
 first examine the top argument by Lord Denning.

Major premise	<i>eCH</i> : If the interpretation of <i>E</i> in <i>D</i> as excluding <i>C</i> fits the context, then <i>E</i> in <i>D</i> should be interpreted as excluding <i>C</i>
Minor premise	The interpretation of “ <i>residence</i> ” in the <i>Education Act</i> as excluding <i>ResidenceForTheLimitedPurposeOfStudy</i> fits the context
Conclusion	“ <i>residence</i> ” in <i>Education Act</i> should be interpreted as excluding <i>ResidenceForTheLimitedPurposeOfStudy</i>

629 The supporting argument may appeal to the fact that in other pieces of legislation  
 630 “ordinary residence” excludes indeed “*residence for the limited purpose of study.*”  
 631

632 The ultimate conclusion is the statement that non-UK students cannot count the  
 633 period as ordinary residence.

634 Next, we turn to an analysis of the argumentation in the second quoted text above,  
 635 where the opponent, in this instance the House of Lords, put forward a counterargu-  
 636 ment.

Editor Proof

Major premise	<i>eCH</i> : If an expression <i>E</i> in document <i>D</i> <sub>1</sub> also occurs in a related document <i>D</i> <sub>2</sub> , and the meaning of <i>E</i> in <i>D</i> <sub>1</sub> excludes a concept <i>C</i> , then the interpretation of the expression <i>E</i> in <i>D</i> <sub>2</sub> as excluding <i>C</i> fits the context
Minor premise	The meaning of “ <i>residence</i> ” in the related document <i>Immigration Act</i> excludes concept “ <i>residence for the limited purpose of study</i> ”
Conclusion	The interpretation of an expression “ <i>residence</i> ” in the <i>Education Act</i> as excluding <i>ResidenceForTheLimitedPurposeOfStudy</i> fits the context

637 Parliament’s purpose expressed in the Education Act gave no hint of any restriction on the  
 638 eligibility for a mandatory award other than ordinary residence in the United Kingdom for  
 639 three years and a satisfactory educational record.

This argument fits the scheme for inclusionary argument from intention (+*iAI*):

Major premise	+ <i>iAI</i> : If the interpretation of <i>E</i> in <i>D</i> as excluding <i>S</i> conflicts with legislative purpose, then <i>E</i> in <i>D</i> should be interpreted as including <i>S</i>
Minor premise	The interpretation of an expression “ <i>residence</i> ” in the <i>Education Act</i> as excluding <i>ResidenceForTheLimitedPurposeOfStudy</i> conflicts with legislative purpose
Conclusion	“ <i>residence</i> ” in <i>Education Act</i> should be interpreted as including <i>ResidenceForTheLimitedPurposeOfStudy</i>

640 The reason why the minor premise holds is provided by the following supporting  
 641 counterfactual argument.

Major premise	If the linguistic meaning of <i>E</i> in <i>D</i> includes <i>S</i> , and there are no hints that the legislator intended to exclude <i>S</i> from the meaning of <i>E</i> in <i>D</i> , then the interpretation of <i>E</i> in <i>D</i> as excluding <i>S</i> conflicts with legislative intention
Minor premise 1	The linguistic meaning of “ <i>residence</i> ” in the <i>Education Act</i> includes <i>ResidenceForTheLimitedPurposeOfStudy</i>
Minor premise 2	There are no hints the legislator intended to exclude <i>ResidenceForTheLimitedPurposeOfStudy</i> from the meaning of “ <i>residence</i> ” in <i>Education Act</i>
Conclusion	The interpretation of an expression “ <i>residence</i> ” in the <i>Education Act</i> as excluding <i>ResidenceForTheLimitedPurposeOfStudy</i> conflicts with legislative intention

642 This argument is shown in Fig. 4 as a counterargument to the one in Fig. 3.  
 643 We leave it as an open problem how the argument on the right could be more  
 644 fully represented, for example, by including the “there are no hints” statement as  
 645 a premise in an *a contrario* argument. This would make the argument on the right  
 646 more complex. Hint: it is possible to solve this problem by invoking the notion of an  
 647 enthymeme.  
 648

Editor Proof

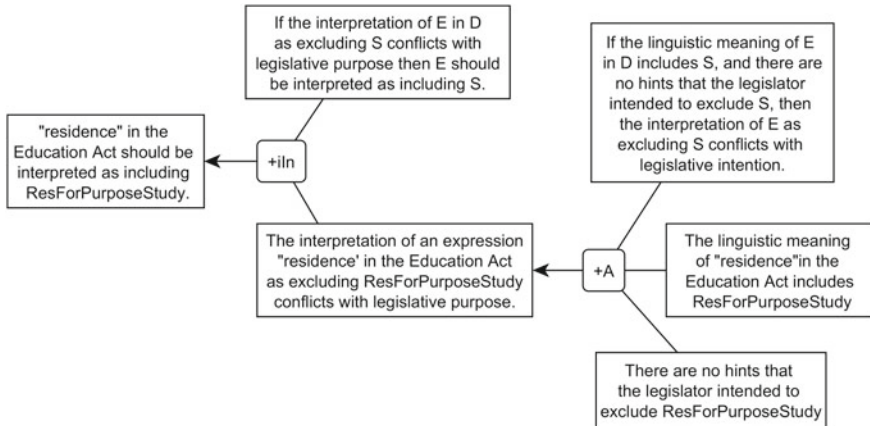


Fig. 4 Respondent’s rebuttal to the educational grants example

649 Next let us look at the other argument just below this one. Cross (2005, 91–92)  
 650 offers this account of this part of the case.

651 Lord Denning MR and Everleigh LJ were impressed by the need to relate this Act to the  
 652 policy of the Commonwealth Immigrants Act 1962 and its successor, the Immigration Act  
 653 1971. Under the latter act, students coming only for study had a conditional leave to stay in  
 654 the country limited to the purpose of study and this did not involve ordinary residence for the  
 655 general purposes of everyday life. They considered that consistency with this Act requires  
 656 the term ‘ordinarily resident’ in the Education Act to be interpreted as living as an ordinary  
 657 member of the community would, which could not include residence for the limited purpose  
 658 of study.

659 We are told in the quoted part of the text that Denning and Everleigh considered that  
 660 consistency with the Education Act requires living as an ordinary member of the  
 661 community and that being an ordinary member of the community does not include  
 662 residence for the limited purpose of study. Accordingly, we have represented these  
 663 two propositions as premises in a linked argument supporting the conclusion that  
 664 conditional leave does not involve ordinary residence, as shown in Fig. 5 at the  
 665 bottom right. The rightmost argument supports one premise of the argument to the  
 666 left of it. It is labeled as a supporting argument labeled *+iPr* in Fig. 5. The conclusion  
 667 of this argument is the opposite of the conclusion shown in Fig. 4.

668 What we see in Fig. 5 is therefore a rebuttal because it presents an argument that  
 669 attacks the ultimate conclusion of the original argument shown in Fig. 4. There is  
 670 a conflict between the argument shown in Fig. 5 and the previous two arguments  
 671 shown in Figs. 3 and 4.

672 We have chosen to use the term “interpretation” instead of “meaning,” because the  
 673 latter term is not only vague but is itself susceptible to many contested interpretations.  
 674 Nevertheless, it can be said generally that what the interpreters of the statue are  
 675 generally seeking is an interpretation that they contend that represents the genuine,

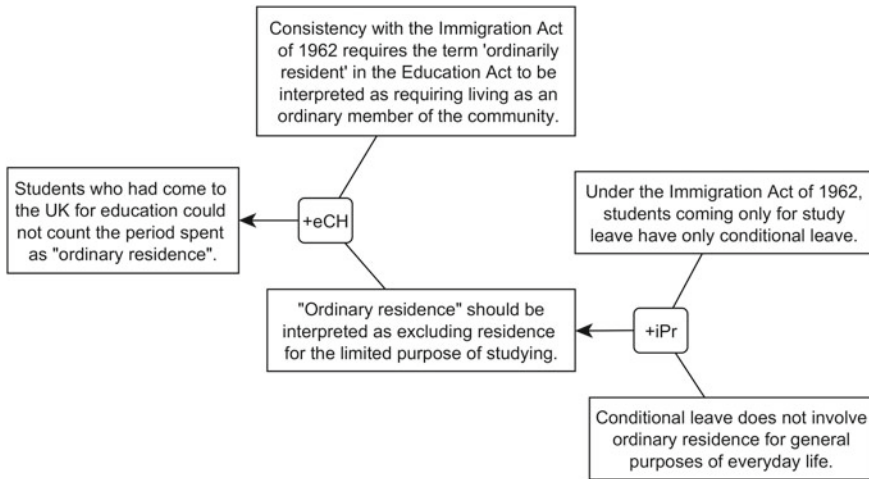


Fig. 5 Respondent's premise attack in the educational grants example

676 true, or real meaning of the textual item they are discussing. This notion that there is  
 677 what is called a real meaning underneath the vagaries in the text being examined or  
 678 deconstructed has however been subject to some abuse in philosophy. For all these  
 679 reasons, we generally prefer using the term "interpretation" to the term "meaning."

680 The evaluation system of Carneades compares the set of pro arguments against  
 681 the set of con arguments if the two sets of arguments are independent of each other.  
 682 However, summing the weights of arguments to check if the sum of the weights of  
 683 the pro arguments outweighs the sum of the weights of the con arguments is only  
 684 feasible if it be assumed that the two arguments are independent of each other. This  
 685 can be done with Carneades, but it requires an additional evaluation.

686 As with all arguments found in natural language texts, it is possible to analyze  
 687 the given text in further depth by bringing out more implicit assumptions and more  
 688 subtle inferences. However, building an argument map of a real argument expressed  
 689 in natural language is very often a difficult interpretive task requiring learned skills  
 690 and often itself providing many challenges of textual interpretation. Generally, one  
 691 finds there are alternative interpretations opened up as the text of the cases is analyzed  
 692 in greater depth and more implicit premises and arguments are brought out. Building  
 693 an argument diagram can often raise important questions of argument interpretation  
 694 and analysis that might not be initially visible to someone who is trying to deal  
 695 with the argument or find out what to do with it. To illustrate some of the problems  
 696 inherent in such as task, we go back to the *Dunnachie* example.

697 **6 Fitting Interpretive Schemes to Cases**

698 *Dunnachie*, following the commentary of MacCormick (2005, 128), offers an exam-  
 699 ple of argument from contextual harmonization. The scheme for argument from  
 700 contextual harmonization requires that a particular sentence in a statute should be  
 701 interpreted considering the whole statute and any set of related statutes that are avail-  
 702 able. In line with the model of interpretive schemes introduced in Sect. 2, the scheme  
 for contextual harmonization as applied to *Dunnachie* takes the following form.

Major premise	+CH: If the interpretation of <i>E</i> in <i>D</i> as <i>M</i> fits the context, then <i>E</i> in <i>D</i> should be interpreted as <i>M</i>
Minor premise	The interpretation of “loss” in the <i>Employment Relations Act</i> as <i>PecuniaryLoss</i> fits the context
Conclusion	“loss” in <i>Education Act</i> should be interpreted as <i>PecuniaryLoss</i>

703 The reason why this interpretation fits context is provided by the following sup-  
 704 porting argument, which addresses the case in which the same expression occurs in  
 705 different positions in the document (for simplicity’s sake, we do not include in the  
 706 scheme the possibility that there are multiple occurrences of the expression in the  
 707 same document):

Major premise	If <i>E</i> besides occurring in position $P_1$ of document <i>D</i> also occurs in positions $P_1, \dots, P_n$ , where it has meaning <i>M</i> , then <i>E</i> in $P_1$ should also be interpreted as <i>M</i>
Minor premise	“loss” besides occurring in Section 2 of the <i>Employment Relations Act</i> also occurs in Section 4 where it has the meaning “pecuniary loss”
Conclusion	“loss” in Section 2 of the <i>Employment Relations Act</i> should be interpreted as “pecuniary loss”

708 Again following the commentary of MacCormick (2005, 128) on *Dunnachie*,  
 709 the following example can be given to show how Carneades models a pro argument  
 710 supporting a claim in a case where there is also a con argument attacking the same  
 711 claim (Fig. 6).  
 712

713 The claim that “loss” should be interpreted as including both financial loss and  
 714 emotional loss was partly based on a statement made in an earlier case. In this case,  
 715 *Johnson Unisys Ltd.*, Lord Hoffman had made the statement that an extension of the  
 716 word “loss” to “emotional loss” could be made. So, it would appear, at least initially,  
 717 that the argument drawn from the statement can be classified as an instance of a pro  
 718 argument from precedent.

719 The reader will recall from the list in Sect. 2 that according to the description  
 720 given by MacCormick and Summers, (1987) an interpretive argument from precedent  
 721 requires that if a term has a previous judicial interpretation, it should be interpreted

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722 to fit that previous interpretation. In the previous case of *Norton Tool Co. v Tewson*,  
 723 it had been ruled that “loss” was to be interpreted as signifying exclusively financial  
 724 loss. Following the lines of the analysis of the structure of interpretative schemes  
 725 in section, the scheme for interpretive argument from precedent can be cast in the  
 following inclusionary and exclusionary forms.

Major premise	<i>ePr</i> : If the interpretation of <i>E</i> in <i>D</i> as excluding <i>S</i> fits precedents, then <i>E</i> in <i>D</i> should be interpreted as excluding <i>S</i>
Minor premise	The interpretation of an “ <i>loss</i> ” in the <i>Employment Relations Act</i> as excluding <i>EmotionalDamage</i> fits precedents
Conclusion	“ <i>loss</i> ” in <i>Education Act</i> should be interpreted as excluding <i>EmotionalDamage</i>

726 The supporting argument is the following:

Major premise	If <i>E</i> in <i>D</i> was understood in precedent <i>P</i> as excluding <i>C</i> , then the interpretation of <i>E</i> in <i>D</i> as excluding <i>C</i> fits precedents
Minor premise	“ <i>loss</i> ” in the <i>Employment Relations Act</i> was understood in <i>Norton</i> as excluding <i>EmotionalDamage</i>
Conclusion	The interpretation of “ <i>loss</i> ” in the <i>Employment Relations Act</i> as excluding <i>EmotionalDamage</i> fits precedents

727 Here is a positive application of the argument by precedent:  
 728 A supporting argument is the following:  
 729 The arguments could be further developed by pointing to the clues which support  
 730 this understanding of the precedent, using the argument diagram in Fig. 7.  
 731

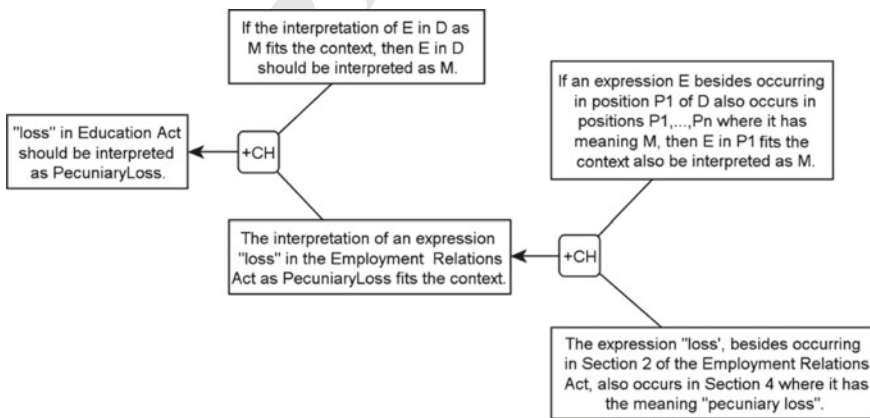


Fig. 6 Use of the scheme for argument from contextual harmonization in *Dunnachie*

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Major premise	<i>iPr</i> : If the interpretation of <i>E</i> in <i>D</i> as including <i>C</i> fits precedents, then <i>E</i> in <i>D</i> should be interpreted as <i>M</i>
Minor premise	The interpretation of “ <i>loss</i> ” in the <i>Employment Relations Act</i> as including <i>EmotionalDamage</i> fits precedents
Conclusion	“ <i>loss</i> ” in <i>Education Act</i> should be interpreted as including <i>EmotionalDamage</i>
Major premise	If <i>E</i> in <i>D</i> was understood in precedent <i>P</i> as including <i>C</i> , then the interpretation of <i>E</i> in <i>D</i> as including <i>C</i> fits precedents
Minor premise	The interpretation of an expression “ <i>loss</i> ” in the <i>Employment Relations Act</i> was understood in precedent <i>Johnson vs Unisys</i> as including <i>EmotionalDamage</i>
Conclusion	The interpretation of an expression “ <i>loss</i> ” in the <i>Employment Relations Act</i> as including <i>EmotionalDamage</i> fits precedents

732 But in *Dunnachie*, in addition to this pro instance of interpretive argument from  
 733 precedent, there was also a con argument for the same conclusion. There is a conflict  
 734 between the two interpretations shown in Fig. 8.

735 How could this conflict be resolved? The answer requires taking a closer look at  
 736 the interpretive scheme for argument from precedent to see how one precedent can  
 737 be stronger than another in supporting or attacking a claim about how a statute or  
 738 law should be interpreted.

739 This way of modeling the scheme rests on the assumption that the user already has  
 740 a clear idea of what a precedent is. Schauer (1987) has shown that arguments from  
 741 precedent are already highly familiar in everyday conversational argumentation. This  
 742 suggests that we need to begin with some intuitive understanding of what constitutes

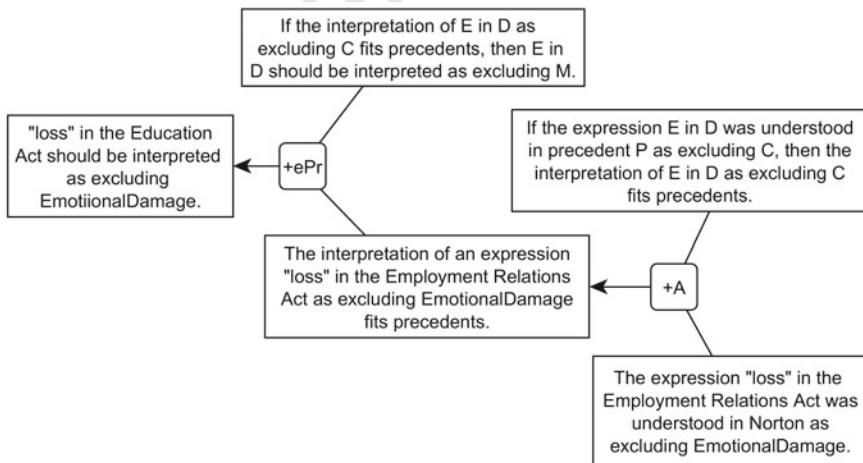


Fig. 7 Use of a prior case as a precedent supporting a textual interpretation

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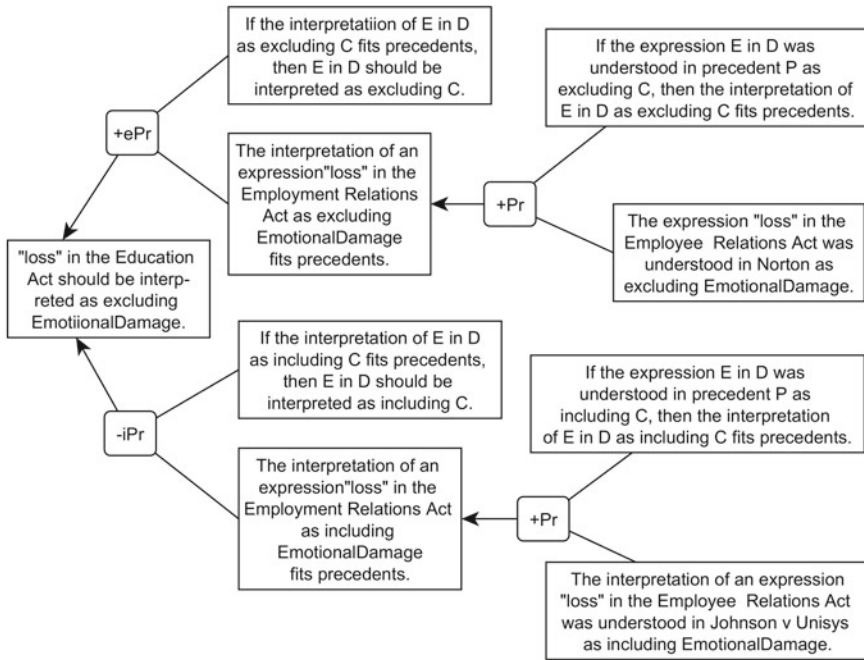


Fig. 8 Conflicting pro and con interpretive arguments from precedent

743 a precedent case. We could also build on the scheme for argument from precedent  
 744 generally known in the argumentation literature, but there are differences of opinion  
 745 on how that should be formulated (Walton 2010), in particular on the issue of how  
 746 that scheme is related to the one for argument from analogy.

747 In his commentary on the case, MacCormick (2005, 129) made the following  
 748 argument to support seeing this statement by another court as a binding premise in  
 749 an argument from precedent. First, this ruling had been followed and approved many  
 750 times. Second, it contained an acceptable rationale for interpreting loss exclusively  
 751 as financial loss. Therefore, MacCormick concluded that it was a better guide for  
 752 future rulings than the *Johnson* case.

753 In contrast, MacCormick put forward arguments advancing several reasons why  
 754 Lord Hoffman's statement in *Johnson* might not constitute a binding precedent. First,  
 755 they were not necessary to the decision reached in *Johnson*. Second, it had not been  
 756 followed by other courts as a binding precedent. Third, although it was open to the  
 757 House of Lords to have overruled *Norton Tool*, establishing a new ruling on the  
 758 meaning of loss, this was not done. These arguments were used by MacCormick to  
 759 question whether the remarks made by Lord Hoffman constitute a precedent binding  
 760 on subsequent cases. These further arguments are shown in Fig. 9. For simplicity  
 761 and readability's sake, we do not rigidly follow the structures illustrated above, and  
 762 we omit to fully indicate the canons that are applied.

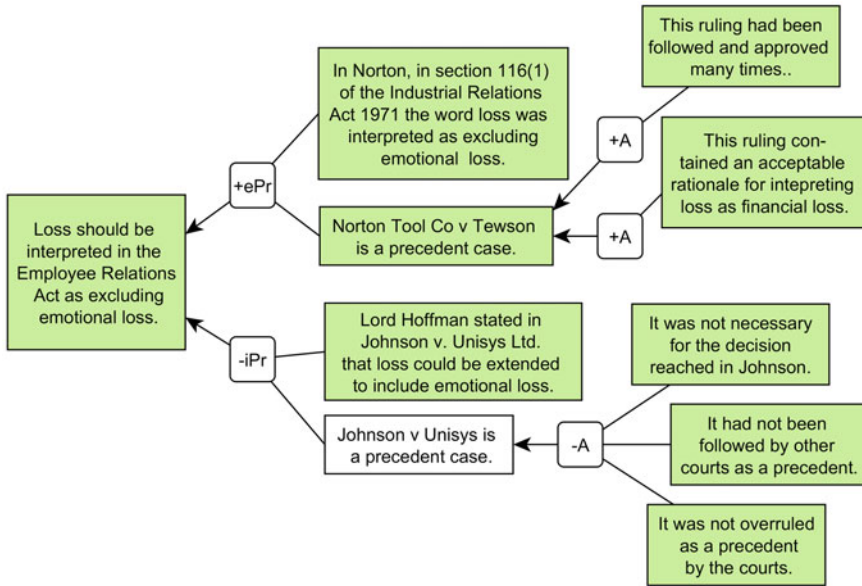
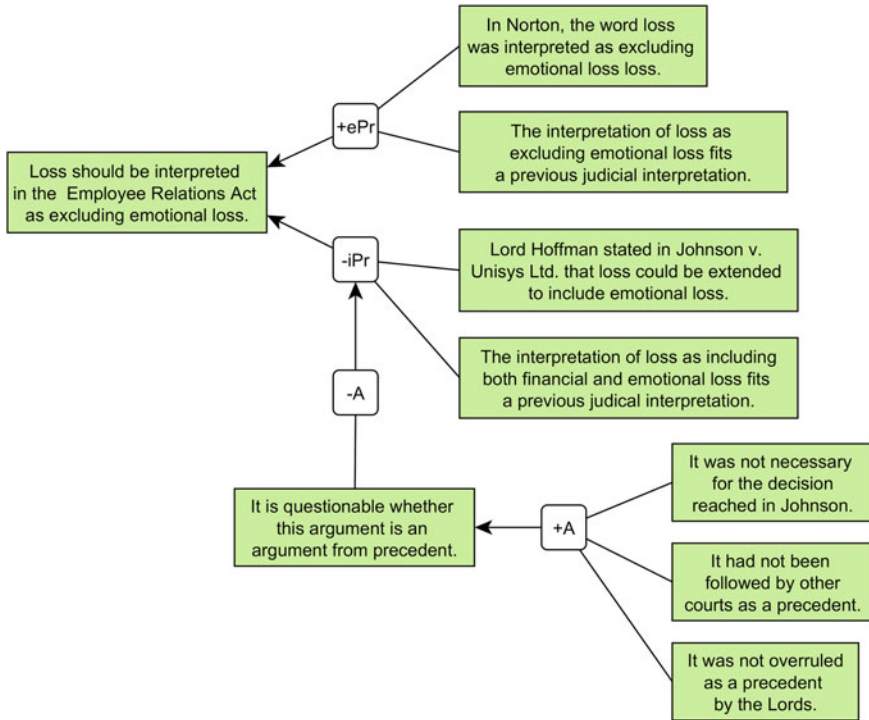


Fig. 9 Conflict resolved by taking other arguments into account

763 Let us say that all the propositions shown in the five rightmost rectangles are  
 764 accepted by the audience. These five rectangles are shown in green backgrounds.  
 765 Next, look at the pro argument from precedent at the top. Each of the two arguments  
 766 supporting the proposition that *Norton Tool Co. v Tewson* is a precedent case has  
 767 only one premise, and in both instances, that premise is accepted. Therefore, the  
 768 proposition that *Norton tool Co. v Tewson* is a precedent case is automatically shown  
 769 as accepted by Carneades. Let us also assume that the other premise of this argument  
 770 is accepted. Since both premises of the argument are now accepted, the ultimate  
 771 conclusion shown at the left of Fig. 9 is now automatically shown as accepted.

772 But now let us look at the bottom argument, the con argument from precedent.  
 773 Since all three of its premises are accepted, the con argument attacking the proposition  
 774 that *Johnson v Unisys* is a precedent case is successful in defeating it. Hence, this  
 775 proposition is shown in a rectangle with a white background, indicating that it is  
 776 not accepted. Actually, the additional evidence provided by the two pro arguments  
 777 shown at the top right of Fig. 9 is not needed for the pro argument from precedent  
 778 to defeat the con argument from precedent in the case. It is enough that because one  
 779 premise of the con argument (shown in white at the bottom of Fig. 9) is defeated, the  
 780 pro argument from precedent at the top prevails.

781 Summing everything up, the pro argument from precedent at the top prevails over  
 782 the con argument from precedent at the bottom, because one of the premises of the  
 783 con argument is unacceptable. It is shown by Carneades as not accepted because it



**Fig. 10** Attacking an interpretive argument from precedent

784 is defeated by the applicable con argument - A. Only the pro argument is accepted,  
 785 and so the conclusion is accepted. Hence, the conflict is resolved.

786 There is another way of modeling the conflict between the two arguments from  
 787 precedent.

788 Using the scheme for argument from precedent put forward in Sect. 2, Mac-  
 789 Cormick's argument could be modeled as an undercutter critically questioning  
 790 whether the top argument shown in Fig. 10 fits the argumentation scheme for argu-  
 791 ment from precedent. This way of interpreting MacCormick's remarks on how to  
 792 model the argumentation in this instance is to take his argument above as an under-  
 793 cutter that attacks the argument used in the *Johnson* case by arguing that it is ques-  
 794 tionable whether the pro argument shown in Fig. 10 is a proper instantiation of  
 795 the scheme for argument from precedent. Such an interpretation of MacCormick's  
 796 evaluation of the argumentation is shown in Fig. 10.

797 This case is an interesting one because the way MacCormick analyzes the argu-  
 798 mentation in it, because there is still another alternative interpretation of it that is  
 799 possible, judging from his remarks. It might be possible to argue that even though  
 800 the ruling in *Johnson* on how to interpret loss was not a binding precedent, because  
 801 it was not necessary to the decision made in that case, still it could be taken to be a

802 weaker kind of precedent. MacCormick (2005, 129) distinguishes between a binding  
 803 precedent and a precedent that is persuasive but not binding. Honoring this distinc-  
 804 tion, interpretation of the word “loss” in Johnson could be taken as a weaker kind of  
 805 precedent. Following this line of argument, the conflict between the two arguments  
 806 from precedent no longer represents a deadlock because the stronger precedent from  
 807 Norton would have priority over the weaker precedent from Johnson. Carneades  
 808 and ASPIC+, as well as other systems, recognize different kinds of priority order-  
 809 ings on rules, and so that would be another way that AI systems could model the  
 810 argumentation in this case.

811 In Sect. 2, we only proposed schemes for some of the interpretive arguments to  
 812 give the reader an idea of what these schemes should ultimately look like. However,  
 813 especially with some of the schemes, the descriptions of the different kinds of inter-  
 814 prepretive arguments given by MacCormick and Summers are not enough in themselves  
 815 to definitively formulate the matching scheme. In particular, the scheme for argument  
 816 from precedent needs more study by applying it to cases before a definitive version  
 817 can be given.

## 818 7 Formalizing Interpretive Arguments—General Structure

819 In this section, we shall provide a general formal structure for interpretive arguments,  
 820 based on the approach of interpretive arguments introduced and exemplified in the  
 821 previous sections. Let us first summarize that approach.

822 Interpretive arguments can be distinguished along two different criteria: positive  
 823 versus negative and total versus partial. The first distinction concerns whether they  
 824 argue that a certain interpretation should be adopted or rather rejected. The second  
 825 distinction pertains as to whether they address the whole interpretation of a term, or  
 826 only the inclusion or exclusion of a subclass in the term’s meaning. Correspondingly,  
 827 partial interpretive arguments can be distinguished into exclusionary and inclusionary  
 828 ones.

829 All interpretive arguments we shall consider are based on canons, namely defea-  
 830 sible conditionals, stating that if certain conditions are or are not met, a certain  
 831 interpretive condition should or should not be adopted. Canons may be positive or  
 832 negative depending on whether their consequent is the obligation to adopt or not to  
 833 adopt a certain interpretation. Positive canons can also have a negative counterpart,  
 834 to the extent that the absence of the condition they require leads to the rejection of  
 835 an interpretation.

836 In this section, we shall propose appropriate formal structures for capturing all  
 837 these forms of interpretive arguments.

838 Let us start with positive and negative total interpretive arguments. Both structures  
 839 have the following elements: an expression  $E$  (word, phrase, sentence, etc.) occurs  
 840 in a document  $D$  (statute, regulation, contract, etc.), interpreting this occurrence  
 841 as meaning  $M$  satisfies the condition of a certain interpretive scheme (of ordinary  
 842 language, technical language, purpose, etc.). Positive canons state that if all these

843 elements are satisfied we are licensed to derive the interpretive conclusion that *E in*  
 844 *D should be interpreted as M*. Negative canons state that if an interpretation *I* would  
 845 not fit the scheme, then *E in D should not be interpreted as M*. In Sartor et al. (2014),  
 846 we modeled interpretive claims as deontic claims, stating the obligation to adopt a  
 847 certain interpretation. Here, we follow a different approach, focusing on the relationship  
 848 between an interpretation and its justification, as a metalinguistic discourse on  
 849 why a meaning is the best interpretation of an expression. In this sense, we model  
 850 interpretive claims as terminological assertions concerning best interpretations of the  
 851 contested or potentially contested expressions within a legal text (for a similar idea,  
 852 see Araszkievicz 2013).

853 All canons are modeled as defeasible rules (expressed in the form  $r : \varphi_1, \dots, \varphi_n \Rightarrow \psi$ , where  $r$  is the rule name, where  $\varphi_1, \dots, \varphi_n$  and  $\psi$  are formulas in  
 854 a logical language,  $\varphi_1, \dots, \varphi_n$  being the *antecedents*, and  $\psi$  being the *consequent* of  
 855 the rule.  
 856

857 We express interpretive conclusions as claims concerning conceptual relations  
 858 between a meaning  $M$  that is proposed and the outcome of the best legal interpre-  
 859 tation of the linguistic occurrence at issue, namely expression  $E$  in document  $D$   
 860 (Bezuidenhout 1997; Carston 2002, 2013; Soames 2008; Sperber and Wilson 1986;  
 861 Wilson and Sperber 2004). Such an outcome is denoted by the function expression  
 862  $BestInt(E, D)$ , denoting the best interpretation of expression  $E$  in document  $D$ . Con-  
 863 ceptual relations are expressed with description logic symbols:  $\equiv$  for conceptual  
 864 equivalence,  $\neq$  for difference,  $\supseteq$  for inclusion. Thus  $BestInt(E, D) = M$  means that  
 865 the best interpretation of expression  $E$  in document  $D$  is represented by meaning  $M$ .

866 Thus, a general pattern for positive total interpretive canons can be expressed as  
 867 follows:

868  $C$ : expression  $E$  occurs in document  $D$ ,  
 869 the interpretation of  $E$  in  $D$  as  $M$  satisfies the condition of positive canon  $C \Rightarrow$   
 870  $BestInt(E, D) \equiv M$

871 Here is an example:

872  $OL$ : expression  $E$  occurs in document  $D$ ,  
 873 the interpretation of  $E$  in  $D$  as  $M$  fits *ordinary language*  $\Rightarrow$   
 874  $BestInt(E, D) \equiv M$

875 Similarly, negative canons claim that the best interpretation is not the proposed one,  
 876 as in the following example, based on the non-redundancy canon:

877  $NR$ : expression  $E$  occurs in document  $D$ ,  
 878 the interpretation of  $E$  in  $D$  as  $M$  is redundant  $\Rightarrow$   
 879  $BestInt(E, D) \neq M$

880 Let us now provide examples for partial interpretations, such as, for exclusionary  
 881 interpretative claims:

882  $eSAC$ : expression  $E$  occurs in document  $D$ ,

883 the interpretation of expression  $E$  in the  $D$  as including  $S$  conflicts with usual meaning  $\Rightarrow$   
 884  $BestInt(E, D)^C \supseteq S$   
 885 where  $BestInt(E, D)^C$  is the complement of  $BestInt(E, D)$ , and for inclusionary interpretive  
 886 claims:

887 iSAC: expression  $E$  occurs in document  $D$ ,  
 888 the interpretation of  $E$  in the  $D$  as excluding  $S$  conflicts with the usual meaning  $\Rightarrow$   
 889  $BestInt(E, D) \supseteq S$

890 We can also identify a pattern for priority arguments between different (instances of)  
 891 interpretive canons (we use  $>$  to express priority).

892  $C$ : concerning expression  $E$  in document  $D$ , the interpretation as  $M_1$  according to canon  $C_1$   
 893 meets the priority criterion with regard to the interpretation as  $M_2$  according to canon  $C_2 \Rightarrow$   
 894  $C_1(E, D, M) > C_2(E, D, M_2)$ .

895 where  $C(E, D, M)$  denotes the instance of canon  $C$  which attributes meaning  $M$  to  
 896 expression  $E$  in document  $D$ . Consider, for instance, Alexy and Dreier's idea that in  
 897 criminal law *ordinary language* has priority over *technical language*.

898  $P_1$ : expression  $E$  in document  $D$  concerns Criminal law  $\Rightarrow$   
 899  $OL(E, D, M_1) > TL(E, D, M_2)$ .

900 where  $OL(E, D, M_1)$  denotes the instance of canon  $OL$  (*ordinary language*) which  
 901 attributes meaning  $M_1$  to expression  $E$  in document  $D$ , and similarly for  $TL$  (*technical*  
 902 *language*). In this sense, interpretive arguments can be ordered in hierarchies depend-  
 903 ing on the specific legal context.

904 For reasoning about interpretation, we need an argumentation system including  
 905 strict rules, defeasible rules, and preference between rules, such as the system devel-  
 906 oped by Prakken and Sartor (1996), the ASPIC+ system (Prakken 2010), or the  
 907 Carneades system (Gordon and Walton 2009a). We express defeasible rules in the  
 908 form  $r : \varphi_1, \dots, \varphi_n \Rightarrow \psi$  and strict rules in the form  $\varphi_1, \dots, \varphi_n \mapsto \psi$ . We use  
 909 arrows  $\mapsto$  and  $\Leftrightarrow$  for material conditional and biconditional of propositional logic.  
 910 We also assume that our system includes the inferences of classical logic, namely  
 911 that for any propositions of classical logic  $\varphi$  and  $\psi$ , if  $\varphi$  is derivable from  $\psi$ , then  
 912 we have a strict rule  $\varphi \mapsto \psi$ .

913 Here, we assume that argument  $A$  including defeasible rules may be defeated  
 914 in two ways. This first consists in successfully *rebutting*  $A$ , i.e., by contradicting  
 915 the conclusion of a subargument of  $A$ , through an argument that is not weaker than  
 916 the attacked subarguments (we assume that  $A$  too is a subargument of itself). More  
 917 precisely,  $B$  rebuts  $A$  when (a)  $B$ 's conclusion is incompatible with the conclusion  
 918 of a subargument  $A'$  of  $A$ , and (b)  $B$  is not weaker than  $A'$ , i.e.,  $A' \not> B$  (see Prakken  
 919 2010). Condition (b) corresponds to the idea that if  $A$  were stronger than  $B$ , it would  
 920 resist  $B$ 's challenge.

921 Regarding comparative strength, we assume that the comparison between two  
 922 arguments  $A$  and  $B$  is to be assessed according to two criteria:

- 923 (a) preference for strict arguments (those only contains strict rules) over defeasible  
 924 ones (those also containing defeasible rules): If  $A$  is strict and  $B$  is defeasible,  
 925 then  $A > B$ .
- 926 (b) preference between defeasible arguments according to the last link principle: If  
 927  $A$  is preferable to  $B$  according to the last link principle, then  $A > B$ .

928 The *last link principle* assumes a partial strict ordering  $>$  over defeasible rules and  
 929 compares arguments  $A$  and  $B$  having incompatible conclusions by considering the  
 930 sets of the last defeasible rules which support such conclusions in the two arguments  
 931 (see for a formal characterization, Prakken and Sartor 1996; Prakken 2010).

932 The second way of defeating an argument  $A$  consists in *undercutting*  $A$ , i.e., in  
 933 producing an argument  $B$  that rejects the application of a defeasible rule included  
 934 in argument  $A$ . Let us express the claim that a rule does not apply, by denying the  
 935 corresponding name of the rule: The statement  $\neg r$  denies that rule named  $r$  applies.  
 936 Then, we can say in general terms that argument  $B$  undercuts argument  $A$ , if  $B$  has the  
 937 conclusion  $\neg r$ , where  $r$  is the top rule of a subargument  $A'$  of  $A$ . For instance, argument  
 938  $[\rightarrow a; r_1: a \Rightarrow b]$  is undercut by argument  $[\rightarrow c; r_2: c \Rightarrow \neg r_1]$ . When we want to  
 939 refer to the rule instance that is obtained by specifying a general rule  $r$  relatively  
 940 to entities  $e$ , we use the expression  $r(e)$ . Thus, the expression  $\neg r(e)$  expresses the  
 941 claim that the rule instance  $r(e)$  does not hold, or, in other words, the claim that the  
 942 rule  $r$  does not apply to entities  $e$ . For instance, the proposition  $\neg OL(123(1)ERA)$   
 943 expresses the claim that canon  $OL$  does not apply to the text 123(1)ERA.

944 Semantics for an argumentation system can be based on the idea of an extension,  
 945 namely a set of compatible arguments, which includes resources (arguments) that  
 946 respond to all defeaters of arguments in the set. Here, we adopt the approach that  
 947 consists in looking for most inclusive extensions, which are called preferred exten-  
 948 sions (Dung 1995). An argument is then considered to be justified if it is included  
 949 in all such extensions. It is considered defensible if it is included in some (but not  
 950 necessarily in all) extensions.<sup>1</sup> The arguments that are defensible but not justified are  
 951 only in some preferred extensions: Their status remains undecided, as their inclusion  
 952 in a preferred extension depends on what other arguments are already included in  
 953 the extension, different choices being possible.

954 Consider for instance the following set of arguments:  
 955  $\{[a], [b], [a, r_1: a \Rightarrow c], [b, r_2: b \Rightarrow \neg c]\}$ . We have two preferred extensions  
 956  $E_1 = \{[a], [b], [a, r_1: a \Rightarrow c]\}$  and  $E_2 = \{[a], [b], [b, r_2: b \Rightarrow \neg c]\}$ . Each  
 957 extension includes an argument that is defeated, but also defeats an argument in the  
 958 other extension:  $A_1 = [a, a \Rightarrow c]$  for  $E_1$  and  $A_2 = [b, b \Rightarrow \neg c]$  for  $E_2$ . So, each one  
 959 of the two extensions is able to respond to all defeaters of any argument it includes.  
 960  $A_1$  and  $A_2$  are merely defensible as they are incompatible, and we do not have, in  
 961 the given set of arguments, reasons for preferring one to the other.

962 Assume that we add argument  $[r_3: \Rightarrow r_1 > r_2]$ . Then, we have just one preferred  
 963 extension, namely  $\{[a], [b], [a, r_1: a \Rightarrow c], [r_3: \Rightarrow r_1 > r_2]\}$ , since, according to the  
 964 preference  $r_3: \Rightarrow r_1 > r_2$ ,  $A_1$  is no longer defeated by  $A_2$ .

<sup>1</sup>In Sartor chapter 3, part II, this volume, on “[Defeasibility in Law](#),” a semantics based on labeling, which is equivalent to the extension based semantic here presented, was adopted.



965 Moving from arguments to conclusions, we have two possibilities for defining  
 966 what conclusions are justified. One option is to view a conclusion as justified when it is  
 967 established by a justified argument. The other option consists in viewing a conclusion  
 968 as justified when it is supported in all preferred extensions possibly through different  
 969 arguments. More precisely, we get the following definition:

970 **Definition** (*Defensibility and Justifiability*).

- 971 • *Defensibility*. Claim  $\varphi$  is defensible with regard to argument set  $\mathcal{A}$  if there exists  
 972 a preferred extension  $S$  of  $\mathcal{A}$  that contains an argument with conclusion  $\varphi$ .
- 973 • *Strong justifiability*. Claim  $\varphi$  is strongly justifiable with regard to argument set  $\mathcal{A}$ ,  
 974 if  $\varphi$  is the conclusion of an argument  $A$  that is contained in all preferred extensions.
- 975 • *Weak justifiability*. Claim  $\varphi$  is weakly justifiable with regard to argument set  $\mathcal{A}$  if  
 976 all preferred extensions of contain arguments having conclusion  $\varphi$ .

977 Note that the weak definition of justifiability is broader than the strong, since  
 978 it allows for a justifiable conclusion to be obtained through different incompatible  
 979 arguments, included in different extensions. This is the notion that seems to be more  
 980 appropriate to interpretation, as we shall argue in the following.

## 981 8 Interpretive Arguments—A Formalization

982 An interpretive argument can be constructed by combining an interpretive canon with  
 983 the corresponding interpretive conditions. For instance, an argument from ordinary  
 984 language would have the following form (in each argument, for conciseness sake,  
 985 we put the general norm rather than its instantiation to the case at hand):

986 *Argument A<sub>1</sub>*

- 988 1. expression “Loss” occurs in document 123(1)ERA
- 989 2. the interpretation of “Loss” in 123(1)ERA as *PecuniaryLoss* fits *ordinary language*
- 990 3. *OL*: expression  $E$  occurs in document  $D \wedge$   
 991 the interpretation of  $E$  in  $D$  as  $M$  fits *ordinary language*  $\Rightarrow$   
 992  $BestInt(E, D) \equiv M$

---

993  $C.BestInt(\text{“Loss”}, 123(1)ERA) \equiv PecuniaryLoss$

995 Interpretive arguments can be attacked by counterarguments. For instance, the fol-  
 996 lowing counterargument based on *technical language* successfully rebuts the above  
 997 argument based on *ordinary language*, by providing a different incompatible inter-  
 998 pretation (assuming that no priority can be established and that concepts are different  
 999 when denoted with a different name):

1000

*Argument A<sub>2</sub>*

1002

1. expression “Loss” occurs in document 123(1)ERA

1003

2. the interpretation of “Loss” in 123(1)ERA as *PecuniaryOrEmotioalLoss* fits technical language

1004

1005

3. *TL*: expression *E* occurs in document *D* ∧

1006

the interpretation of *E* in *D* as *M* fits *technical language* ⇒

1007

 $BestInt(E, D) \equiv PecuniaryOrEmotionalLoss$ 

1008

1009

---

 $BestInt(\text{“Loss”}, 123(1)ERA) \equiv PecuniaryOrEmotionalLoss$ 

1010

The interpretation based on ordinary language could also attacked by directly denying its conclusion, for instance by a non-redundancy argument claiming that “Loss” should not be interpreted in this way, since this would make 123(1)ERA redundant.

1011

1012

1018

*Argument A<sub>3</sub>*

1015

1. expression “Loss” occurs in document 123(1)ERA

1016

2. the interpretation of “Loss” in 123(1)ERA as *PecuniaryLoss* makes the norm redundant

1017

3. *NR*: expression *E* occurs in document *D* ∧

1018

the interpretation of *E* in *D* as *M* makes the norm redundant ⇒

1019

 $BestInt(E, D) \neq M$ 

1020

1021

---

 $BestInt(\text{“Loss”}, 123(1)ERA) \neq PecuniaryLoss$ 

1022

A rebutting attack can also be played by using partial (inclusionary or exclusionary interpretive) arguments.

1023

1028

*Argument A<sub>4</sub>*

1026

1. expression “Loss” occurs in document 123(1)ERA

1027

2. the interpretation of “Loss” in 123(1)ERA as *EmotionalLoss* conflicts with usual meaning

1028

3. *eAC*: expression *E* occurs in document *D*,

1029

the interpretation of expression *E* in the *D* as including *S* conflicts with usual meaning ⇒  $BestInt(E, D)^C \supseteq S$ 

1030

1031

1032

---

 $BestInt(\text{“Loss”}, 123(1)ERA) \supseteq EmotionalLoss$ 

1033

where  $BestInt(\text{“Loss”}, 123(1)ERA)^C$  denotes the complement of  $BestInt(\text{“Loss”}, 123(1)ERA)$ .

1034

Given that *PecuniaryOrEmotionalLoss* includes emotional loss, i.e.,

1035

1036

4.  $PecuniaryOrEmotionalLoss \supseteq EmotionalLoss$ 

1037

we can conclude

1038 5.  $BestInt(\text{“Loss”}, 123(1)ERA) \neq PecuniaryOrEmotionalLoss$

1039 which contradicts the conclusion of the above argument  $A_2$ .

1040 An undercutting attack against the *ordinary language* argument could be mounted  
 1041 by arguing that the expression “loss” in the Employment Rights Act is used in a  
 1042 technical context, e.g., in the context of the discipline of industrial relations, where  
 1043 arguments from *ordinary language* do not apply. Thus, this canon is inapplicable to  
 1044 the expression *Loss* in 123(1)ERA, which is expressed using the formalism above as  
 1045  $\neg OL(123(1)ERA)$ .

- 1046 1. expression “Loss” occurs in document 123(1)ERA
- 1047 2. 123(1)ERA is a technical context
- 1048 3.  $TC$ : expression  $E$  occurs in document  $D$ ,
- 1049  $D$  is a technical context  $\Rightarrow \neg OL(E)$

---

1050  $\neg OL(123(1)ERA)$

## 1052 9 Preference Arguments over Interpretive Arguments

1053 We may have preferences over interpretive arguments. For example, in Italy, the  
 1054 Court of Cassation revised its interpretation of the term *Loss* (*danno*) as occurring  
 1055 in the Italian Civil Code (ICC) using an argument from substantive reasons (the  
 1056 constitutional value of health): The Court thus rejected the traditional interpretation  
 1057 as pecuniary damage, arguing that also damage to health should also be included in  
 1058 the scope of the term (and consequently compensated):

1060 *Argument A<sub>1</sub>*

- 1061 1. expression “Loss” occurs in document Art2043ICC
- 1062 2. the interpretation of “Loss” in Art2043ICC as *PecuniaryLoss* fits legal history
- 1063 3.  $OL$ : expression  $E$  occurs in document  $D$ ,
- 1064 the interpretation of  $E$  in  $D$  as  $M$  fits legal history  $\Rightarrow BestInt(E, D) \equiv M$

---

1065  $BestInt(\text{“Loss”}, Art2043ICC) \equiv PecuniaryLoss$

1068 *Argument A<sub>2</sub>*

- 1069 1. expression “Loss” occurs in document Art2043ICC
- 1070 2. the interpretation of “Loss” in Art2043ICC as *PecuniaryLossOrDamageToHealth* con-
- 1071 tributes to substantive reasons
- 1072 3.  $SR$ : expression  $E$  occurs in document  $D$ ,
- 1073 the interpretation of  $E$  in  $D$  as  $M$  contributes to substantive reasons  $\Rightarrow$
- 1074  $BestInt(E, D) \equiv M$

---

Editor Proof

1076  $BestInt(\text{"Loss"}, Art2043ICC) \equiv PecuniaryLossOrDamageToHealth$

1077 These two arguments conflict (rebut each other), as:

1079  $PecuniaryLoss \neq PecuniaryLossOrDamageToHealth$

1080 To address the conflict, the judges argued that the second argument defeats the first,  
1081 since SR in this context contributes to constitutional values.

1082 *Argument 3*

- 1084 1. The interpretation of expression "Loss" in Art2043ICC, as  
1085  $PecuniaryLossOrDamageToHealth$  according to SR contributes to constitutional  
1086 values
- 1087 2. SR: The interpretation of expression  $E$  in  $D$ , as  $M$  according to SR contributes to consti-  
1088 tutional values  $\Rightarrow SR(E, D, M) > LH(E, D, M')$

1089 

---

1090  $SR(\text{"Loss"}, Art2043ICC, PecuniaryLossOrDamageToHealth) >$   
 $LH(\text{"Loss"}, Art2043ICC, PecuniaryLossOrDamageToHealth)$

## 1091 10 From Best Interpretations to Individual Claims

1092 We must be able to move from interpretive claims to conclusion in individual cases,  
1093 namely from conceptual assertions to individual claims. For this purpose, we can  
1094 adopt general patterns for strict rules, which provide for the transition from interpre-  
1095 tive claims to assertions concerning individuals:

- 1096 1.  $BestInt(E, D) \equiv M \mapsto \forall x [E_D(x) \leftrightarrow M(x)]$
- 1097 2.  $BestInt(E, D) \sqsupseteq M \mapsto \forall x [M(x) \rightarrow E_D(x)]$
- 1098 3.  $BestInt(E, D)^C \sqsupseteq M \mapsto \forall x [M(x) \rightarrow \neg E_D(x)]$

1099 where  $x$  is sequence of variables which is required by concept  $M$ ,  $M(x)$  is the predicate  
1100 corresponding to concept  $M$ , and  $E_D$  is a predicate representing the occurrence of  $E$   
1101 in  $D$  at issue. Consider for instance the above interpretive claim according to which

1102  $BestInt(\text{"loss"}, 125ERA) \equiv PecuniaryLoss$

1104 The corresponding instance of transition rule 1 would be:

1105  $BestInt(\text{"loss"}, 125ERA) \equiv PecuniaryLoss$   
1106  $\mapsto \forall x [LOSS_{ERA}(x, y, z) \leftrightarrow PecuniaryLoss(x, y, z)]$

1108 To be read as: If the best interpretation of expression "loss" in document Section 125  
1109 of the Employment Relations Act is concept  $PecuniaryLoss$ , then a person  $x$  in an

1110 event  $y$  has a “loss” of amount  $z$  (as understood in Section 125 of the Employment  
1111 Relations Act) if and only if  $x$  in  $y$  has a pecuniary loss of  $z$ .

1112 Let us assume that John in his unfair dismissal by Tom had a pecuniary loss of Euro  
1113 100, i.e.,  $PecuniaryLoss(John, DismissalByTom, 100)$ . Let us expand the ordinary  
1114 language argument with the following: the latter assumption, the above instance of  
1115 transition rule 1, and strict rules corresponding to an inference of classical logic. We  
1116 get the following argument (where we list with the premises in the argument and  
1117 with letters the intermediate conclusions).

1118 *Argument A<sub>4</sub>*

- 1120 1. expression “Loss” occurs in document 123(1)ERA  
1121 2. the interpretation of “Loss” in 123(1)ERA as  $PecuniaryLoss$  fits *ordinary language*  
1122 3.  $OL$ : expression  $E$  occurs in document  $D \wedge$   
1123 the interpretation of  $E$  in  $D$  as  $M$  fits *ordinary language*  $\Rightarrow$   
1124  $BestInt(E, D) \equiv M$   
1125  
1126 a.  $BestInt(\text{“Loss”}, 123(1)ERA) \equiv PecuniaryLoss$  (from 1, 2, and 3)  
1127 4.  $BestInt(\text{“loss”}, 125ERA) \equiv PecuniaryLoss \mapsto \forall x [Loss_{ERA}(x, y, z) \leftrightarrow$   
1128  $PecuniaryLoss(x, y, z)]$   
1129 b.  $\forall x [Loss_{ERA}(x, y, z) \leftrightarrow PecuniaryLoss(x, y, z)]$  (from a and 4)  
1130 5.  $PecuniaryLoss(John, DismissalByTom, 100)$   
1131  
1132 c.  $Loss_{ERA}(John, DismissalByTom, 100)$  (by classical logic) (from b and 5)

1133 The mixture of interpretive and other arguments that are needed for a legal conclu-  
1134 sion can also include additional conceptual relations. For instance, let us assume that  
1135 we know that John has sustained a pecuniary loss of 100 Euros, as a consequence of  
1136 his unfair dismissal. Since the concept of pecuniary loss is included in the concept  
1137 of pecuniary or emotional loss, we can infer that he suffered a pecuniary or emo-  
1138 tional loss. This conclusion would enable us to conclude that John has a loss in the  
1139 sense of Section 125 ( $Loss_{ERA}(John, DismissalByTom, 100)$ ), also on the basis of  
1140 the interpretation of loss as  $PecuniaryOrEmotionalLoss$ , according to an argument  
1141 *Argument A<sub>5</sub>* which includes this interpretation.

1142 *Argument A<sub>5</sub>*

- 1144 1. expression “Loss” occurs in document 123(1)ERA  
1145 2. the interpretation of “Loss” in 123(1)ERA as  $PecuniaryOrEmotionalLoss$  fits *technical*  
1146 *language*  
1147 3.  $TL$ : expression  $E$  occurs in document  $D \wedge$   
1148 the interpretation of  $E$  in  $D$  as  $M$  fits *technical language*  $\Rightarrow$   
1149  $BestInt(E, D) \equiv M$

- 1150
- 
- 1151 a.  $BestInt(\text{“Loss”}, 123(1)ERA) \equiv PecuniaryOrEmotionalLoss$  (from 1, 2, and 3)
- 1152 4.  $BestInt(\text{“loss”}, 125ERA) \equiv PecuniaryOrEmotionalLoss \mapsto$   
 $\forall x [Loss_{ERA}(x, y, z) \leftrightarrow .PecuniaryOrEmotionalLoss(x, y, z)]$
- 
- 1153 b.  $\forall x [Loss_{ERA}(x, y, z) \leftrightarrow PecuniaryOrEmotionalLoss(x, y, z)]$  (from a, and 4)
- 1154 5.  $\forall x [PecuniaryLoss(x, y, z) \rightarrow PecuniaryOrEmotionalLoss(x, y, z)]$
- 1155 6.  $PecuniaryLoss(John, DismissalByTom, 100)$
- 
- 1157 c.  $PecuniaryOrEmotionalLoss(John, DismissalByTom, 100)$  (from 5, and 6)
- 
- 1158 d.  $Loss_{ERA}(John, DismissalByTom, 100)$  (from 5 and c)

1161 Arguments  $A_4$  and  $A_5$  are inconsistent, as they include incompatible interpretive con-  
 1162 clusions (incompatible subarguments): According to conclusion (a) in  $A_4$ , the best  
 1163 interpretation of “loss” in Section 125 is *PecuniaryLoss*, while according to conclusion  
 1164 (a) in  $A_5$  the best interpretation is a different concept, namely *PecuniaryOrEmotion-*  
 1165 *alLoss*. However, the two arguments lead to the same conclusion in the case of John’s  
 1166 dismissal: He suffers a loss of 100, as understood in Section 125 of the Employment  
 1167 Relations act.

1168 Therefore, we may view this conclusion as legally justified, namely as weakly  
 1169 justified. This is the case even though we are unable to make a choice between  
 1170 the two incompatible interpretations (the two competing interpretive arguments are  
 1171 both defeasible, and neither is justified), as the conclusion follows from both such  
 1172 interpretations. This view corresponds to the idea that only relevant issues have to be  
 1173 addressed in legal decision-making: The issue of whether “loss” is limited or not to  
 1174 pecuniary losses is irrelevant in John’s case, since he has only suffered a pecuniary  
 1175 loss (this issue would be relevant if he had on the contrary suffered instead, or  
 1176 additionally, an emotional loss).

## 1177 11 Conclusions

1178 In this chapter, our goal was to show how interpretive schemes can be formulated  
 1179 in such a manner that they can be incorporated into a formal and computational  
 1180 argumentation system such as Carneades or APSICf+ and then applied to display-  
 1181 ing the pro–contra structure of the argumentation using argument maps applied to  
 1182 legal cases. To this purpose, we have analyzed the most common types of statutory  
 1183 arguments and brought to light their common characteristics. We have shown how  
 1184 canons of interpretation can be translated into argumentation schemes, and we have  
 1185 distinguished two general macrostructures of positive and negative, total and partial  
 1186 canons, under which various types of schemes and rebuttals can be classified. This

1187 preliminary classification was then used for modeling the interpretive arguments  
1188 formally and integrating them into computational systems and argument maps.

1189 The interpretive schemes can be applied initially when constructing an argument  
1190 diagram to get an overview of the sequence of argumentation in a case of contested  
1191 statutory interpretations. The schemes can be applied in order to help the argument  
1192 analyst convey an evidential summary showing how the subarguments fit together in  
1193 a lengthy sequence of argumentation in a case, as indicated in the main example of  
1194 the educational grants case. The next step is to zoom in on parts of the argumentation  
1195 sequence that pose a problem where critical questions need to be asked or refinements  
1196 need to be considered. Here, the critical questions can be applied in order to find  
1197 further weak points in an argument by bringing out implicit premises that may have  
1198 been overlooked and that could be questioned.

1199 The function of the set of critical questions matching a scheme is to give the arguer  
1200 who wants to attack the prior argument some idea of the kinds of critical questions that  
1201 need to be asked in replying to it. Thus, the critical questions can offer guidance as to  
1202 where look for weak points that could be challenged. However, there are theoretical  
1203 issues of how to structure the critical questions. If critical questions can be modeled  
1204 in the argument diagrams as additional premises, ordinary premises, assumptions, or  
1205 exceptions such as done in Carneades or ASPIC+, they can be modeled in argument  
1206 maps as undercutting or rebutting counterarguments. The problem that always arises  
1207 in attempts to fit critical questions into argument diagrams in this manner is one  
1208 of burden of proof. Is merely asking a critical question enough to defeat a given  
1209 argument? Or should a critical question be taken to defeat the given argument only if  
1210 some evidence is given to back it up. Carneades or ASPIC+ provides a way of dealing  
1211 with this problem that has been shown to be applicable to interpretative schemes.

1212 The danger with using such schemes to construct hypotheses about the best inter-  
1213 pretation is one of jumping to a conclusion too quickly. This danger can be overcome  
1214 by asking critical questions matching the scheme and by considering possible objec-  
1215 tions to the argument fitting an interpretive scheme. For as we have seen in the  
1216 example, a sequence of argumentation based on the application of interpretive argu-  
1217 mentation schemes is defeasible and can be attacked by undercutters and rebutters  
1218 in an opposed sequence of argumentation. Indeed, it is this very situation of one  
1219 sequence of interpretive argumentation being used to attack another one that is char-  
1220 acteristic of the example we studied, a standard example of statutory interpretation.

1221 We have also provided a fresh logical formalization of reasoning with interpretive  
1222 canons. Rather than modeling interpretive conclusion as deontic claims, as we did  
1223 in Sartor et al. (2014), here we have modeled them as conceptual (terminological)  
1224 claims concerning best interpretations.

1225 We have then considered how interpretive arguments can be framed within argu-  
1226 mentation systems, including defeasible and strict rules. We have argued that a seman-  
1227 tics based on preferred extensions can provide an appropriate approach to interpre-  
1228 tive conclusions and can be used to distinguish between defensible and justifiable  
1229 interpretive claims. Regarding justification, we have argued for weak justifiability  
1230 (derivation in all extensions, also through different argument) to be more appropriate  
1231 to interpretive reasoning in legal contexts.

1232 This work still is quite preliminary, but necessarily so, since AI and law research  
 1233 has neglected issues pertaining to statutory interpretation and more generally the  
 1234 issue of determining the correct meaning of authoritative sources of the law. Fur-  
 1235 ther research should include a more refined classification system for interpretative  
 1236 schemes. Also, the idea of merging argumentation with deontic logic as advanced  
 1237 in Sartor et al. (2014), Walton et al. (2014) needs to be reconsidered and integrated  
 1238 with the different framework presented in this chapter.

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