Modelling Case Law Dynamics with Dialogue Moves

Trevor Bench-Capon and John Henderson
Dept of Computer Science, University of Liverpool, UK

Abstract. In this paper we describe a set of dialogue moves which can be used to give a procedure which supports reasoning with legal rules derived from cases as described by Levi. The moves are illustrated with an extended example.

Keywords. legal case based reasoning, evolution of case law, argumentation.

1. Introduction

In [10] we discussed the way case law develops as new cases arise. Our account was broadly based on [12]. In this paper we take the ideas further, and provide a more precise account of our proposed mechanism, in the form of a set of dialogue moves. When a case is presented, the current understanding of the domain will be expressed as one or more rules, based on the previous decisions. If the case is governed by the existing rules, that will provide a reason to decide in accordance with them. The other party will then propose a counter argument based on a modification of the rules, which should favour the other side, while being, as far as possible, consistent with previous decisions. If the counter argument is accepted, this refined understanding of the law will be expressed using the modification. In this way the theory may be reconstructed in the light of the new case to express an improved understanding.

We will first set out the machinery of our model, and the set of dialogue moves we have developed. These moves will then be applied to an example based on the fictional area of law described in [10]. The applicability to real cases was illustrated by the discussions in [10] of the thread of cases from [12] and some US 4th Amendment cases.

2. Elements of the Model

Throughout this paper we will give illustrations based on the example of [10], a fictitious welfare benefit, called Independence Allowance (IA). IA is paid to enable a measure of financial independence to those who are not expected to work. There may be other conditions (such as residence), but the idea that those not expected
Table 1. Factual Predicates. Sentence is a prison sentence: for non-prisoners it will be 0. If not yet entered workforce, value for entered workforce is age +1

<table>
<thead>
<tr>
<th>Predicate</th>
<th>Domain</th>
<th>Predicate</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0-130</td>
<td>Apprentice</td>
<td>Yes,No</td>
</tr>
<tr>
<td>Sentence</td>
<td>0-30</td>
<td>Absence</td>
<td>0-130</td>
</tr>
<tr>
<td>Current Education</td>
<td>Primary, Secondary, College, University, No</td>
<td>Entered Workforce</td>
<td>12-130</td>
</tr>
</tbody>
</table>

Table 2. Factors for Independence Allowance. Vague factors have an upper and lower bound.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant</td>
<td>Age &lt; 5</td>
</tr>
<tr>
<td>Child</td>
<td>Age &lt; 16(low)/19(high)</td>
</tr>
<tr>
<td>PrimarySchoolChild</td>
<td>Current Education is Primary</td>
</tr>
<tr>
<td>Schoolchild</td>
<td>Current Education in {Primary, Secondary, College}</td>
</tr>
<tr>
<td>AgeofConsent</td>
<td>Age ≥ 16</td>
</tr>
<tr>
<td>Minor</td>
<td>Age ≥ 18</td>
</tr>
<tr>
<td>BelowSchoolLeavingAge</td>
<td>Age &lt; 19</td>
</tr>
<tr>
<td>Young Adult</td>
<td>Age ≥ 18 AND Age &lt; 30(low)/35(high)</td>
</tr>
<tr>
<td>Elderly</td>
<td>Age ≥ 60(low)/80(high)</td>
</tr>
<tr>
<td>Pensionable</td>
<td>Age ≥ 66</td>
</tr>
<tr>
<td>DeemedRetired</td>
<td>Age ≥ 72</td>
</tr>
<tr>
<td>Prisoner</td>
<td>Sentence &gt; 0</td>
</tr>
<tr>
<td>Short Stay Prisoner</td>
<td>Sentence &lt; 1</td>
</tr>
<tr>
<td>Full Time Education (FTE)</td>
<td>Current Education in {Primary, Secondary, College, University}</td>
</tr>
<tr>
<td>Continuing FTE</td>
<td>Current Education in {Primary, Secondary, College, University} AND Entered Workforce &gt; Age</td>
</tr>
<tr>
<td>Apprenticed</td>
<td>Apprentice = True</td>
</tr>
<tr>
<td>AbsenceDegree</td>
<td>Moderate if Absence/Age &gt; 0.5: Substantial if Absence/Age &gt; 0.8</td>
</tr>
</tbody>
</table>

to work deserve some income is the prime motivation for the benefit. The cases used in [10], plus some additional cases are given in Table 3 in section 4 where the example is thoroughly worked through.

As with HYPO [3], we represent cases as a set of facts. Facts are predicates of arity 1, and the domains may be boolean, an enumerated set of values, or a specified numeric range. The facts used in our example are shown in Table 1.

These predicates can be mapped to factors using simple rules as shown in Table 2. These factors are intended to pick out potentially legally significant patterns of fact. For non-boolean facts we follow [13], so that where we have a dimension such as age or education, the factors identify points or ranges on that dimension. Some factors, like child, may lack precise bounds.

A rule will comprise an antecedent, which will be a set of factors, and a consequent, which will be a positive outcome, and sets of positive exceptions and negative exceptions. Positive exceptions are those with a positive outcome despite the antecedent not being satisfied, and negative exceptions are those with a negative outcome despite the antecedent being satisfied. Each exception will be a set of factors.

Rule = < Antecedent, {PosExceptions}, {NegExceptions}, Outcome >
The initial rule for IA is: \( R_1: < [\text{Child}(X)], [], [], \text{Pay} > \). The variable in Child indicates that there has been no decision as to whether the low or the high bound should be used.

3. Procedure

After the first case has been decided, the ratio of that case will offer a reason (as in the reason model of [13]) why the case was so decided. From this reason a rule can be derived, to be applied to future cases. This reason will be more general than the particular facts of the case and the terms used as the reason factor might be vague like child, or precise (at a given time) like minor, currently legally set at 18. In the case of the vague terms the appropriate bound may be disputed, so that it may be controversial whether the rule applies or not.

Given a rule, a new case will either satisfy the rule (or fall under a positive exception), or fall under a negative exception, or the rule may be inapplicable. If it does satisfy the rule or a positive exception that will be an argument for the positive side; if it satisfies a negative exception that will be an argument for the negative side. If no rule is applicable there is a “negation as failure” argument for the negative side, resulting from the burden of proof being on the positive side. Although following the rule would apply the existing theory, the theory must be reconsidered in the light of the new case. There will therefore be a number of ways to respond by proposing modifications to the theory. We will now describe the responses and the rebuttals of these responses for each of the four situations. This gives a three-ply argumentation structure, which is commonly used in legal reasoning with cases, e.g. HYPO [3] and CATO [2].

3.1. First Ply

There are four possible moves here, two for the claimant and two against:

- **ApplyRule(R).** This can be played if there is a rule R for which the antecedent is satisfied by the new case. It argues for a positive outcome.
- **ApplyPosException(R,E,V).** This can be played if there is a rule R with a positive exception E which is satisfied by the new case. V is the value [7] promoted by the exception. It argues for a positive outcome.
- **ApplyNegException(R,N,V).** This can be played if there is a rule R with a negative exception N which is satisfied by the new case. Again V is the value promoted by the exception. It argues for a negative outcome.
- **NoRule.** This can be played if there is no rule for which the antecedent is satisfied by the new case. It argues for a negative outcome.

3.2. Second Ply

The responses here will depend on the move made in the first ply.
3.2.1. *ApplyRule*, *ApplyPosException* and *ApplyNegException*

There are a number of possible replies. The same replies can be used for all three of these first ply moves.

- **DoesNotApply**(*Rule/PosException/NegException*, *Factor*, *NewFactor*, *Value*). This can be used if a factor in the rule/positive exception/negative exception is vague, and the case falls within the “penumbra of doubt” [9]. The respondent will propose a replacement *NewFactor* falling within the range of *Factor*, but such that the rule/positive exception/negative exception no longer applies. *Value* is the social value that would be promoted by adopting the new factor.

- **ProposeException**(*Factor*, *Value*). This is used if there is a factor in the new case not present in the previous cases to which the rule applied. It proposes that factor as a negative exception for *ApplyRule* and *ApplyPosException* and as a new positive exception for *ApplyNegException*. *Value* suggests a social purpose which would be advanced by adopting the exception.

- **Narrow**(*Rule/PosException/NegException*, *Factor*, *NewFactor*, *Value*). This prevents the rule/positive exception/negative exception from applying by proposing to replace *Factor* with *NewFactor* in the antecedent/positive exception/negative exception. *NewFactor* may be a smaller range of the same dimension as *Factor*, or require an additional fact to hold, (e.g. replacing *FTE* with *Continuing FTE* from Table 2). It is argued that the narrowing would serve some social purpose, *Value*.

- **Broaden**(*NegException*, *Factor*, *NewFactor*, *Value*). For *ApplyRule* this enables a negative exception to apply by broadening a factor in that negative exception. *NewFactor* may be a larger range of the same dimension as *Factor*, or remove a fact from the definition of *Factor*. It is argued that the broadening would serve some social purpose, *Value*.

3.2.2. *NoRule*

*ProposeException* and *Broaden* can also be used here, and there are two new moves.

- **ProposeException**(*Rule*, *Factor*, *Value*). This can be used if there is a factor in the new case which was not present in the previous cases, to enable the rule to apply even though the antecedent is not satisfied. It proposes *Factor* as a positive exception. It differs from new rule, in that the case is seen as an exception, rather than as a new, distinguished, group of cases.

- **Broaden**(*Rule/PosException*, *Factor*, *NewFactor*). This enables a rule or positive exception to apply by broadening a factor in the antecedent/positive exception. *NewFactor* may be a larger range of the same dimension as *Factor*, or remove a fact from the definition of *Factor*.

- **Analogy**(*Rule*, *Factor1*, *Factor2*, *Similarities*): This contends that, on the basis of some similarities, a new factor, *Factor1*, is sufficiently analogous to an existing factor in the rule, *Factor2*, that they should be treated the same.

- **NewRule**(*Antecedent*, *Value*): This argues that a new rule is required for cases of this type. *Value* suggests a social purpose which would be advanced by recognising the new type. As for all rules the outcome is positive.
3.3. Third Ply

Each of these responses can be met with rebuttals.

To rebut *DoesNotApply* the rebutter needs to justify the higher bound. Therefore a different *NewFactor*, which will include the current case, can be proposed.

- **RuleDoesApply**(*Factor*, *NewFactor2*, *Value2*). Where *NewFactor2* is an alternative replacement for *Factor*, which does include the new case. *Value2* is the social value promoted by adopting the proposed new factor, and it is argued to be preferred to the value promoted by the factor proposed in the response.

For those depending on a value *ProposeException*, *Narrow*, *Broaden* and *NewRule*, the rebuttal will turn on the desirability of promoting the value. A rebuttal can therefore deny that it does promote this value, or put forward a preferred value which the exception would demote.

- **NoPromotion**(*Factor*, *Value*): The proposed exception would not promote the desired value.
- **Demotion**(*Factor*, *Value2*): The proposed exception would demote *Value2*, which is preferred to the value promoted by adopting the exception.

For *NewRule* and *ProposedException* there is an additional rebuttal, based on precedents. If existing negative instances satisfy the proposed rule or positive instances contain the proposed exception, precedential constraint [11] excludes the proposed exception.

- **Precedent**(*Rule/Exception*, *C*): The proposed rule or exception was not applied in a precedent case, *C*.

When the response involves broadening or narrowing, an alternative rebuttal will contend that the proposed movement is too great to be acceptable.

- **TooGreat**(*Factor*, *NewFactor*). *NewFactor* would entail too great a movement and so *Factor* should continue to be used.

The final response is *Analogy*. To rebut this move, it is necessary to cite differences which make the proposed analogy unacceptable.

- **NoAnalogy**(*Factor1*, *Factor2*, *Differences*). *Differences* are the differences between the proposed new factor and the existing factor.

For example, if *father* was proposed as an analogy to *mother*, gender would be a difference, and might or might not be considered significant.

3.4. Resolution

After three plies, as in the US Supreme Court, a decision has to be made whether to stay with the original rule or to accept the modification. This will be a matter of for argument, as in the Justices’ Conference stage in the Supreme Court process [1]. Modelling these arguments is, however, outside the scope of this paper, which is intended to describe the public proceedings. The nature of the decision will depend on the type of the rebuttal. *RuleDoesApply*, *NoPromotion*, and *Demotion*,...
all turn on a value judgement ([6] and [8]). Here the judges must choose which purpose or value they wish to promote. The preferred values are intended to reflect what [12] called the “common ideas of society”, and may change over time, enabling the law to adapt to changing social attitudes.

*Precedent* is a powerful rebuttal and should, given a strict interpretation of *stare decisis*, normally succeed. Sometimes, however, precedents are not followed or overruled. Sometimes this is simply because the precedent is too old and no longer represents the “common ideas of society”, or it may be that the precedent is anomalous and conflicts with a large body of other precedents, or perhaps a new value, not considered in the precedent, has subsequently emerged. In either case the judge must decide whether there are sufficient grounds to disregard the precedent. The discussion in [10] gives examples from both Levi’s negligence cases and the US Fourth Amendment cases where a precedent is not followed.

*TooGreat* requires the judge to consider whether the proposed broadening or narrowing is too great a step to be acceptable, even if permitted by precedents [13]. Here the judge must come to a view on what seems appropriate. It might be argued that value judgements are also in play here, but we will not consider this here.

Finally, *NoAnalogy* requires the judge to decide whether the similarities or the differences are more persuasive in the context of the case. A discussion of these matters can be found in [5]. Again it might be argued that value judgements are also in play here.

It is at the resolution stage that the three types of argument often associated with [12] and discussed in [10], namely logical similarity, bright line and floodgates, can be seen. Logical similarity is key in deciding whether an analogy holds, but is also used in determining whether a broadening or narrowing is too great: does there remain a logical similarity between the old factor and the new factor? Bright line is particularly associated with disputes as to whether a rule applies or not since there the existing factor is vague, but it is also a consideration in broadening and narrowing: which proposal provides the better bright line? Floodgates is essentially the justification for deciding that a proposed broadening or narrowing is too great.

### 4. Independence Allowance Example

In this section we will apply the moves described above to the example of [10]. This example was a series of cases relating to a fictitious welfare benefit, *Independence Allowance* (IA), paid to enable a measure of financial independence to those who are not expected to work. We will use the cases used in [10], plus some additional cases as shown in Table 3. The idea is to reconstruct the sequence of cases in terms of our dialogue game. Some explanation of the moves is provided in italics.

The initial case C1 was decided for the claimant giving rise to the initial rule R1 *Pay if child*. Once we have a rule the dialogue procedure can be used.

**C2**: First Ply: No Rule: *the rule does not apply to a 40 year old.*  
Third Ply: TooGreat(Child,Not Elderly):
Table 3. Facts for all IA Cases.

<table>
<thead>
<tr>
<th>Case</th>
<th>Age</th>
<th>Prisoner</th>
<th>FTE</th>
<th>Apprentice</th>
<th>Entered</th>
<th>Absence</th>
<th>Payable</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>4</td>
<td>0</td>
<td>No</td>
<td>No</td>
<td>5</td>
<td>0</td>
<td>Yes</td>
</tr>
<tr>
<td>C2</td>
<td>40</td>
<td>0</td>
<td>No</td>
<td>No</td>
<td>16</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>C3</td>
<td>12</td>
<td>0</td>
<td>No</td>
<td>No</td>
<td>13</td>
<td>0</td>
<td>Yes</td>
</tr>
<tr>
<td>C4</td>
<td>30</td>
<td>0</td>
<td>No</td>
<td>16</td>
<td>0</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>C5</td>
<td>9</td>
<td>0</td>
<td>Primary</td>
<td>10</td>
<td>0</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>27</td>
<td>0</td>
<td>No</td>
<td>18</td>
<td>0</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>17</td>
<td>0</td>
<td>College</td>
<td>18</td>
<td>0</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>C8</td>
<td>90</td>
<td>0</td>
<td>No</td>
<td>14</td>
<td>0</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>C8a</td>
<td>67</td>
<td>0</td>
<td>No</td>
<td>16</td>
<td>0</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>C9</td>
<td>20</td>
<td>0</td>
<td>University</td>
<td>21</td>
<td>0</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>C9a</td>
<td>35</td>
<td>0</td>
<td>University</td>
<td>16</td>
<td>0</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>C10</td>
<td>67</td>
<td>3</td>
<td>No</td>
<td>16</td>
<td>0</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>C11</td>
<td>80</td>
<td>0</td>
<td>No</td>
<td>14</td>
<td>75</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>C12</td>
<td>16</td>
<td>0</td>
<td>Secondary</td>
<td>17</td>
<td>13</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>C13</td>
<td>19</td>
<td>0</td>
<td>No</td>
<td>Yes</td>
<td>18</td>
<td>0</td>
<td>No</td>
</tr>
<tr>
<td>C14</td>
<td>70</td>
<td>0</td>
<td>No</td>
<td>14</td>
<td>40</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>C15</td>
<td>68</td>
<td>0.25</td>
<td>No</td>
<td>16</td>
<td>0</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>C16</td>
<td>2</td>
<td>0</td>
<td>No</td>
<td>3</td>
<td>0</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

Decision: Rebuttal succeeds. R1 does not apply. Do not Pay

**C3**: First Ply: ApplyRule(R1): *the rule applies to a 12 year old.*
Second Ply: Narrow(R1.Child,Infant): *C1 was an infant.*
Third Ply: TooGreat(Child,Infant): *Decision: Rebuttal succeeds. R1 applies. Pay*

C4 and C6 are similar to C2 with attempts to broaden Child to high and low values of *YoungAdult* rejected as too great. C5 is similar to C3 with an attempt to narrow Child to *PrimarySchoolChild* rejected as too great. C7, however, produces a need to clarify *Child*, since the case falls in an area of uncertainty.

**C7**: First Ply: ApplyRule(R1): *interpreting child broadly.*
Second Ply: DoesNotApply(Child,AgeOfConsent,SelfReliance): *The upper bound of child is too high: C1 was an infant, C3 was at secondary school.*
Third Ply: RuleDoesApply(Child,BelowSchoolLeavingAge,NotExpectedWork): Decision: Rebuttal succeeds. Rule is modified. Pay. *BelowSchoolLeavingAge provides a better bright line since it relates to expectations regarding work.*
Rule becomes **R1a**: pay if BelowSchoolLeavingAge.

C8 introduces a second rule, which is modified in C8a.

**C8**: First Ply: No Rule: *the rule does not apply to a 90 year old.*
Second Ply: NewRule(Elderly,NotExpectedWork):
Third Ply: Demotion(Elderly,Expense):
Decision: Rebuttal fails. New rule established. Pay. *It is considered that paying this group who are not expected to work is worth the expense.*
New Rule **R2**: pay if elderly.
C8a: First Ply: ApplyRule(R2): the rule applies to a 67 year old.
Second Ply: DoesNotApply(R2),DeemedRetirement,ExpectedWork) C8 was above deemed retirement age.
Third Ply: RuleDoesApply(Elderly,Pensionable,NotExpectedWork): Decision: Rebuttal succeeds. R2b Modified. Pay The decision turns on the age at which people cease to be expected to work.
Rule becomes R2b: pay if Pensionable.

C9 introduces a positive exception, which is modified in C9a.

C9: First Ply: No Rule: neither rule applies to a 20 year old.
Second Ply: ProposeException(R1,FTE,NotExpectedWork):
Third Ply: Demotion(FTE,Enterprise):
Decision: Rebuttal fails. Exception established. Pay.
Rule becomes R1b: pay if BelowSchoolLeavingAge or FTE.

C9a: First Ply: ApplyPosException(R1,FTE,NotExpectedWork):
Second Ply: Narrow(R1b,FTE,Continuing FTE, ExpectedWork): Once they have entered the labour force they are expected to work.
Third Ply: NoPromotion(Continuing FTE, ExpectedWork): If in FTE, continuing or not, not expected to work.
Rule becomes R1c: pay if BelowSchoolLeavingAge or Continuing FTE.

C10 and C11 introduce negative exceptions to R2a. C12 fails to establish a similar exception for R1c.

C10: First Ply: ApplyRule(R2): the rule applies to a 67 year old.
Second Ply: ProposeException(R2a,Prisoner,CannotUse) Prisoners cannot make use of the benefit.
Third Ply: Demotion(Prisoner,NotExpectedWork):
Decision: Rebuttal succeeds. Exception established. Pay.
Rule becomes R2b: pay if Pensionable unless Prisoner.

C11: First Ply: ApplyRule(R2): the rule applies to a 80 year old.
Second Ply: ProposeException(R2a,AbsenceDegree(Substantial),Undeserving) People who have not worked in this country do not deserve the benefit.
Third Ply: NoPromotion(SubstantialAbsence,Undeserving): Merit depends on current circumstances not past history.
Decision: Rebuttal fails. Exception established. Don’t Pay.
Rule becomes R2c: pay if Pensionable unless Prisoner or AbsenceDegree(Substantial).

C12: First Ply: ApplyRule(R1c): the rule applies to a 16 year old.
Second Ply: ProposeException(R2a,AbsenceDegree(Substantial),Undeserving) People who have not lived in this country do not deserve the benefit.
Third Ply: NoPromotion(AbsenceDegree(Substantial),Undeserving): Minors have no choice where they live.
Decision: Rebuttal succeeds. R1b applies. Pay,

C13 uses an analogy, C14 attempts to narrow an exception and C15 broadens one. Finally C16 attempts to use a precedent, but it is held to be too old.
C13: First Ply: NoRule: *the claimant is not in continuing FTE and not pensionable.* 
Second Ply: Analogy(R2a,Apprentice,ContinuingFTE,Learning) *Apprentices are engaged in learning.* 
Third Ply: NoAnalogy(R2a,Apprentice,ContinuingFTE,Paid) :*Apprentices are paid.* 
Decision: Rebuttal Succeeds. R1b does not apply: Don’t Pay.

C14: First Ply: ApplyNegException(R2b,Prisoner,CannotUse): 
Second Ply: Narrow(R2a,Prisoner,ShortStayPrisoner,Simplicity) *It is not worth cancelling and reinstating the benefit for a short period. Moreover the crime was not very serious.* 
Third Ply: Demotion(ShortStayPrisoner,CannotUse): *Even short stay prisoners cannot use the benefit.* 
Decision: Rebuttal succeeds. R2b Negative Exception applies: Don’t Pay.

C15: First Ply: applyRule(R2b). 
Second Ply: Broaden(AbsenceDegree(Substantial), AbsenceDegree(Moderate), Undeserving) *Even a moderate absence makes the claimant undeserving.* 
Third Ply: NoPromotion(AbsenceDegree(Moderate),Undeserving) :*A moderate absence allows sufficient contribution.* 
Decision: Rebuttal fails. R2b Negative Exception modified: Don’t Pay. 
Rule: R2c: pay if Pensionable unless prisoner or AbsenceDegree(Substantial) or AbsenceDegree(Moderate).

C16: First Ply: ApplyRule(R1b): *the rule applies to a 2 year old.* 
Second Ply: ProposeException(R1b,Infant,CannotUse) *An infant can make no use of the benefit.* 
Third Ply: Precedent(Infant, C1). *In C1 the benefit was paid to an infant.* 
Decision: Rebuttal fails. Exception established. Don’t Pay. 
Rule becomes R1c: pay if BelowSchoolLeavingAge or Continuing FTE unless Infant.

C1 is an old precedent. Also the value judgement used here, preferring CannotUse, was made in C10. C14 upholds the importance of CannotUse which was not considered in C1. Not following a precedent because an argument was not advanced in that precedent is found in *US v Ross* which does not follow *Robbins v California* as discussed in [10].

5. Concluding Remarks

In section 4 we worked through an example which exercised all the moves proposed in section 3. The question now arises as to the feasibility of automating the procedure. The first ply is straightforward: checking where a rule or exception applies is simple. The second ply is a little less straightforward. If a rule is applied, identifying a factor with questionable bounds, or factors that would represent a narrowing or broadening to exclude or include the case is straightforward. What is less so is identifying the rationale for these modifications. Similarly identifying
a factor that could serve as an exception is easy, but whether the proposal would be sensible or not requires some genuine understanding of the domain. In the IA example, prisoner made sense as a negative exception to R2, but would have made no sense as a positive exception to R1. The same is true when replying to a NoRule move. Exceptions, broadenings and factors that would provide useful analogies or antecedents to new rules can be identified, but some semantic understanding is required to judge whether it would be worth advancing them. In the third ply, whether there is a factor that would include the new case to allow RuleDoesApply is easy. Similarly discovering a precedent is not a problem. However, identifying differences for NoAnalogy, or that a value is not promoted or demoted requires a proper understanding of the terms [5]. That a broadening or narrowing is too great can always be argued, but judgement is required to form a view as to whether the claim is likely to be successful.

Thus two kinds of knowledge are required: knowledge about the rules, cases and background factors is precise and can be used to automatically suggest legally possible moves. Selecting the best move and assessing its worth, however, require a far deeper understanding of the domain, of a sort that would require a comprehensive ontology of the sort described in [4]. As is argued in [5] it would probably never be worth the effort to build such an ontology, even if it were feasible. Fortunately such an ontology already exists in the heads of lawyers. This suggests that the proposed system should be designed as a support system, making suggestions as to the possible moves, which then require selection and justification with values by the user. This still does not address the “private” argumentation as to which arguments should be advanced and accepted, which we leave to future work.

References
