Argument Moves in a Rule-Guided Domain

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Abstract

We discuss a theory of heuristic strategies and tactics for making arguments in a domain guided by rules where the primary task is to use previous cases to argue for a particular interpretation of a rule in a new fact situation. Since rules frequently have various problematic aspects, such as unstated exceptions or prerequisites, or use terms that are not clearly defined, the actual interpretation is a matter of debate, and the arguer must use interpretations from precedent cases to form his argument. The argument strategies and tactics actually adopted depend on the arguer's point of view and the complexion of his case in light of the rules and the precedents. The tactics, called "moves" here, are ultimately expressed in a small set of generic "argument primitives," such as analogizing and distinguishing. We discuss how these argument strategies, moves, and primitives are used by our mixed paradigm system, CABARET (Rissland & Skalak, 1990). We illustrate with examples from an area of U.S. Federal income tax law.

1. Introduction

In many domains some knowledge takes the form of rules, but it is difficult nevertheless to apply those rules to a set of facts. A rule might use terms that are not clearly defined, or not defined at all, or the rule may have unspoken exceptions or prerequisites. Rules in domains governed primarily by legal statutes, such as income tax law, exemplify such difficulties. The rules purporting to define even critical concepts, like "gross income," can be ambiguous. Terms that cannot be defined by hard and fast, necessary and sufficient conditions have been termed "open-textured," and are often the source of "hard" problems (Hart, 1958), (Gardner, 1987). Rules from everyday life also share these problems. For example, a university rule may require that a student make "satisfactory progress" towards a degree. In such situations, a particular rule interpretation often requires that an argument or justification be made in support of the desired conclusion. Statutory interpretation

can be contrasted with fields like mathematics, where the application of a rule to a set of facts is a straightforward application of an inference rule like *modus ponens*. Interpretation of problematic rules involves reasoning with several different types of knowledge, including the rule itself, subsidiary rules supporting it, precedents of past interpretation, the reasoning in the precedents, hypothetical cases, the goals of the interpreters, and sometimes even the motivations of those who wrote the rule in the first place.

1.1 Previous Work on Computational Legal Argument

Previous work in AI and in law has addressed many of the listed aspects of argument. For example, case-based reasoning aspects have been addressed by a growing community of CBR researchers and researchers in AI and law, including (Ashley, 1990; 1991), (Branting, 1991), (Bellairs, 1991), (Clark, 1988), (Goldman, Dyer & Flowers, 1987), (Stucky, 1986), (Sycara, 1991) and ourselves. AI models of legal argument have been incorporated in seminal work by McCarty (McCarty & Sridharan, 1982) and Gardner (Gardner, 1987). See generally (Rissland, 1990). The work by McCarty and Sridharan and the work

by Branting delve more deeply into the detailed structure of the arguments embodied in legal cases than this research, which reflects a more taxonomic perspective.

Jurisprudential aspects of argument, especially relating to case law, have been investigated by many legal philosophers, including Levi (Levi, 1949) and Llewellyn (Llewellyn, 1989). Perelman and Olbrechts-Tyteca (Perelman & Olbrechts-Tyteca, 1969) and Toulmin (Toulmin, 1958) have produced classic and encompassing references on argumentation. Several researchers have used Toulmin as a starting point for their own work (Marshall, 1989), (Storrs, 1991). While our focus in this paper is on creating legal arguments, several AI researchers have made contributions to the computational theory of argument applied to a variety of tasks, including (Alvarado, 1990; 1991) (editorial comprehension), (August & McNamee, 1991) (editorial comprehension), (Birnbaum, 1982; Birnbaum, Flowers & McGuire, 1980) (argument representation and comprehension), and (Wu & Lytinen, 1991) (advertisement comprehension).

This work is also related to previous work in explanation and the selection of examples for explanation (Collins, 1977), (Rissland, 1978), and (Suthers, 1989).

1.2 Considerations in Creating a Theory of Adversarial Legal Argument

A complete computational theory of adversarial legal argument in statutory domains would account for a large number of factors. These include whether one is arguing for or against the result compelled by a certain rule, whether the point in issue has been decided in one's favor or not in a precedent, and whether there are alternate paths to the desired result. Construed as a decision tree, the abundance of factors creates a tree of non-trivial depth (see Figure 4, for example).

That statutes take the form of rules also presents confounding considerations for a theory of statutory argument. In arguing about the meaning of a legal rule (e.g., a tax regulation) that yields a result (e.g., an allowable deduction), at least four separate aspects of statutory reasoning can be addressed: (a) the meaning and scope of the rule's preconditions, (b) the rule's consequent as warranted by a "strict" application of the rule, (c) the status of the rule itself (e.g., its validity or

vulnerability), and (d) the meaning of the open-textured concept named in the consequent of the rule but perhaps existing independently of the rule.

The distinction between (b) and (d) can be subtle and an anticipatory example may be helpful. Consider a rule in the Internal Revenue Code (the "Code") that entitles one to a deduction of a particular kind, for example a deduction for certain travel expenses under Section 162. The consequent of the rule may be expressed as "taxpayer is entitled to a travel expense deduction." The ultimate result desired by the taxpayer is that he is entitled to a travel deduction by law, regardless of whether it is sanctioned by this particular Code rule or by some other justification (e.g., another Code rule or even a Supreme Court case holding that a social policy is more important than strict compliance with this Code provision). The taxpayer would like to argue his way into the concept class "taxpayer entitled to a travel expense deduction" named in the Code rule, by any warrant available.

This distinction between rule consequent, as in (b), and concept class, as in (d), can cut against taxpayer's case for a deduction, of course. There may be impediments to his legitimately receiving the deduction, notwithstanding the satisfaction of the Code section (e.g., a more powerful controlling statute with an opposite result, or a case invalidating the rule on constitutional grounds). This conflict between a rule result and other norms dealing with the rule consequent can be the source of "hard" questions (see, e.g., (Gardner, 1987)). The presence of such a conflict also questions the status of the rule itself, consideration (c).

Our approach does not present a complete theory of the distinctions between satisfying a rule and membership in the category named in the rule's consequent. Our methods do, however, carefully exploit the fact that a previous case may satisfy the rule in question, but still not have the ultimate disposition that one seeks.

In this paper, we use the term *disposition* to refer to the outcome of a case on the ultimate result argued for (membership in the concept class desired), regardless of whether that result was supported by the rule in issue. Thus the disposition of a tax case might be whether a desired deduction

was received or not. When we want to refer explicitly to the conclusion warranted by a specific rule, we will usually refer to the rule's *consequent*. Finally, we will refer to the *status* of a rule with respect to a precedent and mean whether the rule's preconditions were satisfied under a strict application of the rule to the precedent's facts.

We do not deal explicitly with (c), the nature of the rule's status as a warrant (in Toulmin's sense). We note only that the status of a statutory rule of law will differ from a blackletter rule of law derived from common law cases or from the rule of an individual case. Also, we believe that the makings of the theory that we present here do not require that this warrant be of a particular form.

2. Argument

2.1 Argument Strategies

How one argues about a rule depends on one's point of view. For instance, with respect to making satisfactory academic progress, a student would likely take a *pro* (in favor of) "making satisfactory progress" position whereas the university might undertake a *con* strategy (against a finding of satisfactory progress). In our model, the pro or con point of view is the initial determinant of how one approaches an argumentative task.

To illustrate, consider the following example. A taxpayer, who has spent a considerable amount of money fixing up a spare room in his house so that he can work there on evenings or weekends, has deducted those expenses on his Federal income tax return. The home office deduction is governed primarily by Section 280A(c)(1) of the Code (capitalization supplied):

[A deduction may be taken for] any item to the extent such item is allocable to a portion of the dwelling unit which is EXCLUSIVELY USED on a REGULAR basis —

(A) [as] the PRINCIPAL PLACE OF BUSINESS for any trade or business of the taxpayer,

(B) as a place of business which is used by patients, clients, or customers in MEETING OR DEALING with the taxpayer in the normal course of his trade or business, or

(C) in the case of a SEPARATE STRUCTURE which is not attached to the dwelling unit, in connection with the taxpayer's trade or business.

In the case of an employee, the preceding sentence shall apply only if the exclusive use referred to in the preceding sentence is for the CONVENIENCE OF HIS EMPLOYER.

Suppose that the Internal Revenue Service ("IRS") has challenged the deduction on the grounds that the taxpayer did not meet the "use on a regular basis" requirement, but admits that the other requirements of Section 280A(c)(1) have been met. The task confronting the taxpayer is to extend the rule so that it covers a situation outside the strict, received scope of the rule. This approach can be captured in the following rule of thumb:

If a rule's conditions are not met and one wants the rule to succeed, then broaden the rule.

On the other hand, the IRS has adopted the contrary point of view ("con"): against allowing the home office deduction. The IRS would argue that the rule is to be strictly applied and attempt to find cases interpreting that section which confirm that the rule's conclusion should not obtain. The parallel heuristic from this viewpoint is:

If a rule's conditions are not met and one wants the rule to fail, then confirm the miss.

In Section 2.2 we discuss how certain relevant precedents can be used to support rule broadening and rule miss confirmation. The two points of

Point of View/ Rule Conditions	Point of View = Pro	Point of View = Con
Rule Conditions Met	Confirm the Hit	Discredit the Rule
Rule Conditions Not Met	Broaden the Rule	Confirm the Miss

Figure 1. Argument Strategies.

view and the two possibilities that a rule's conditions are met or are not met by a fact situation yield a 2 x 2 matrix of **argument strategies** for the interpretation of a rule (Figure 1).

Each of the individual cells represents a strategy useful in circumstances that depend on the arguer's goal and a strict interpretation of the rule:

* **broadening** is used to argue that a rule applies to a situation where strict application indicates it does not, or to argue for membership in the concept class implied by the rule consequent, irrespective of the rule;

* **discrediting** is used to argue that a rule does not apply to a situation where strict application indicates it does;

* **confirming a hit** is used to argue that a rule does apply to a situation just as strict application indicates;

* **confirming a miss** is used to argue that a rule does not apply to a situation just as strict application of the rule indicates it does not.

This description of argument strategies is directed at appellate argument. It assumes that a determination has been made whether a rule's conditions have been met. This determination may have been given by administrative interpretation (as by the IRS) or by a lower court's interpretation (as by the Tax Court). Alternatively, on questions of first impression, the arguer may make a hypothetical assumption regarding whether a rule's conditions have been met and "play out" the arguments using the resulting strategies.

In this approach to statutory argument, each of the argument strategies is effected through a set of **argument moves**, which are described in the next subsection.

2.2 Argument Moves

An arguer can carry out a chosen argument strategy in several ways. While the choice of strategy looks in part to the current fact situation, the choice of move looks also to the available precedents. For each of the four argument strategies, there are in turn four possible moves. Each move depends on two factors: (1) the disposition of a precedent — whether or not the precedent held for the ultimate desired result; and (2) the status of the rule with respect to the precedent — whether or not the rule's conditions were met by the precedent's facts. We give some informal examples of moves that can be made and then provide a systematic treatment later in this section.

Consider again the example of the challenged home office deduction. On the basis of available precedents, our taxpayer might attempt to carry out an argument for broadening the home office rule in several ways. He can argue, for example:

(1) that the *unmet condition actually has been satisfied:* that the allegedly missing condition in fact has been met and thus the rule should apply. A useful precedent would be a case in which (a) the regular-use condition and all other rule conditions have been satisfied, (b) the "home office deduction" conclusion was therefore established, and (c) the taxpayer's situation is similar — especially with respect to the regularity of home office use. Or

(2) that the *unmet condition is not necessary:* that the result of the rule follows without meeting the condition with which he is having difficulty. A good precedent would be a case in which the regular-use condition was not met but where the

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home office deduction was granted nonetheless. Or

(3) that his *case is so unlike the cases where the rule's conditions have* not *been established* that the rule's conditions should be interpreted as being met in his situation. Useful precedents would be a group of cases that did not satisfy the regular-use condition and were not granted the deduction, but that were markedly different from cases that did satisfy the regular-use requirement, and very different from the current situation.

Choices (1) and (2) are variations of arguments based on precedents with the desired disposition: the taxpayer in the retrieved cases was allowed the deduction. The arguer would draw analogies with these favorably disposed cases to justify why the desired disposition should be reached in his situation as well. In (1), the arguer works with a precedent where the rule applied and in (2), with one where it did not.

In (1), the arguer uses the precedent to establish an unmet condition in his current case in order to argue for the consequent of the rule. The more his facts support the unmet condition relative to the precedent's, the better his argument. ("Since the other taxpayer met the requirement and I'm better situated than he, I also meet the requirement *a fortiori*.")

In (2), one argues directly for the disposition by soft pedaling or denying outright the necessity of meeting the unmet rule precondition. Thus, in (2) the arguer will analogize the current case and the precedent to justify the desired disposition (the deduction). He might go further — if he is bold enough or the precedent of high enough pedigree — to argue that the rule is invalid on its face, as opposed to incorrect in this particular application. The better the match between the unmet condition in the current fact situation and in the precedent, the easier the argument. ("Since the other taxpayer was allowed the deduction even though he failed the same alleged requirement, so should I.")

Choice (3) might be used in light of precedents whose outcome is the opposite to that desired: the deduction was not allowed and just as in his case, a condition was unmet. The arguer would distinguish those cases, as a whole: that they should not govern his case because his case is much stronger than those cases. He would need to argue by "double negative" that the desired

disposition should be reached in his case. ("Since I am so unlike those cases where the deduction was disallowed, I should be allowed the deduction.")

More difficult to make even than (3) would be an argument using a case with an undesired disposition despite the fact that the rule conditions were met. To use such a case, one would have to both distinguish the negative disposition and make use of its positive aspect concerning rule satisfaction. This strategy is obviously quite tricky to undertake, since one is trying to make a silk purse out of a sow's ear. It is open to an obvious counterattack: the opponent could use such a precedent to argue that the standard is even stricter than the rule specifies. In fact, this precedent would be a good choice for the opposition, and one would need to deal with it defensively at least.

Typically, one's first line of argument is to analogize cases with the disposition that one desires for the current fact situation. However, since the only relevant precedents might have been decided oppositely, argument moves are needed to use them to build offensive arguments. Since one's opponent is sure to cite cases with unfavorable outcomes, it is also necessary to respond defensively to cases with unfavorable dispositions. In such situations, the argument moves usually involve distinguishing (see Figure 2).

In general, then, there are two possibilities for the disposition of a relevant case and two possibilities for the success of strict application of the rule to it, and so there are four possible types of precedents to be dealt with. These four possibilities provide the setting for the argument moves for the broadening strategy, listed in Figure 2 on the following page.

Disposition of Precedent/ Rule Consequent is established in Precedent	Precedent has Desired Disposition	Precedent doesn't have Desired Disposition
Yes	Analogize Case [1]	Distinguish Case [3] Disposition & Analogize Rule Consequent
No	Analogize Case [2] Disposition (& Distinguish Rule Consequent)	Distinguish Case [4]

Figure 2. Argument Moves for Broadening. *(Cell numbers in braces, {}, are included for reference only.)*

A word as to terminology in the table: "Analogize Case Disposition" means to draw analogies between the precedent and the current situation of any sort to argue that the outcome of the two cases should be the same. (See consideration (d) of Section 1.2.) "Analogize Rule Consequent" means to draw analogies between two cases by taking into account those features that are related to the conditions of a rule in order to argue that the rule should hold — or fail to hold — in both cases. (See (b) of Section 1.2.) "Analogize Case" means to do both: "Analogize Case Disposition" and "Analogize Rule Consequent". "Distinguish Case", "Distinguish Case Disposition", and "Distinguish Rule Consequent" are parallel to their three "analogize" counterparts, except that distinctions between cases are exploited, and not their similarities.

Distinguishing moves are applied in the two situations for broadening where the retrieved cases have the wrong disposition. There, the precedents may have a different factual complexion or a different status with respect to the strict application of the rule. Hence, an advocate may need to distinguish a case with respect to its disposition, strict rule interpretation, or both. These moves are shown in cells [3] and [4] in the Broadening Table in Figure 2.

As it turns out, the same table also summarizes how to carry out the argument strategy to confirm a hit, that is, to confirm that a rule's preconditions are satisfied. In confirming a hit, one would prefer to analogize a similar case with the right disposition where the rule's conditions were satisfied. However, depending on the cases that

are available to an arguer, he may have to rely on cases that have unfavorable dispositions or reflect unfavorable strict interpretations under the rule. Various argument moves to confirm a hit are available as with broadening. With a merely confirmatory strategy, however, it is less incumbent upon the arguer to use precedents that are unfavorable in any way. There is no need to stretch arguments very far when the received rule interpretation favors one's own side anyway.

The remaining argument strategies, discredit and confirm a miss, also can be effected through similar argument moves. These two strategies also share a table of argument moves, which is presented in Figure 3.

The tables for all the argument moves use the same generic argumentative tasks of analogizing and distinguishing, which can thus be said to be "primitive" tasks. These primitives are considered briefly in the next section.

2.3 Generic Argument Primitives

Thus far in our discussion of argument moves we have made a simplifying assumption: that there is no difference between similarly disposed cases aside from their status with respect to a rule. However, in order to carry out the details of analogizing and distinguishing cases, an arguer must give close consideration to the facts of the available precedents, the current fact situation, and the degree of match between an available case and the current fact situation. These are central concerns of case-based argument. The selection of a strategy, and then of a move, focuses attention on how the rules constrain the use of case-based reasoning to argue case similarity and

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Disposition of Precedent/ Rule Consequent established in Precedent	Precedent has Desired Disposition	Precedent doesn't have Desired Disposition
Yes	Analogize Case {1} Disposition & Distinguish Rule Consequent	Distinguish Case {3}
No	Analogize Case {2}	Distinguish Case {4} Disposition & Analogize Rule Consequent

Figure 3. Argument Moves for Discredit a Rule and Confirm a Miss. *(Cell numbers in braces, {}, are included for reference only.)*

difference. We now address some of these case-based concerns.

In performing moves that require analogies, an arguer would usually rely on "best" cases in the sense defined by (Ashley, 1990). Best cases are most on-point cases for which there is no "trumping counterexample," which in turn is defined as a "case with the opposite outcome that contains all of the cited case's similarities and then some."[1] (Ashley, 1989). Relying on cases other than best cases can be rhetorically dangerous. Features present in a precedent but not in the current fact situation permit a counterargument: that the result was obtained in the precedent due to the presence of those other mitigating or contributing factors (Ashley, 1987). The use of best cases to implement a strategy, such as broadening, forestalls a contrary argument about credit assignment. For instance, in our taxpayer example, careful selection of the precedents on which the taxpayer relies can hinder a counterargument in which the taxpayer's adversary could "distinguish away" the taxpayer's cases. Given a choice of ways to pursue an argument strategy, an arguer chooses a specific tactical move based on the cases actually available. But given a variance in the closeness of match of these cases with the current case, some moves might be better than others, and no one case or move may be clearly "best".

When no best cases or even favorably disposed cases are available, the arguer might employ hypothetical cases (Rissland & Ashley, 1986), (Ashley, 1990), but in strict precedent-based domains, hypotheticals lack the pedigree of genuine precedents.

One way to implement this theory of strategies, moves and primitives is to form arguments in a top-down manner. In this way, the entire sequence of choices of strategies, moves, and generic argument tasks can be shown in a decision tree whose branch points involve point of view, status of the current fact situation with respect to the rule, disposition of available precedents, status of precedents with respect to the rule, and degree of match of precedents with the current fact situation. Figure 4 shows a portion of the decision tree, mostly that fragment relevant to the confirm-a-hit strategy. Although we have indicated only two leaves below the choice of argument move, there may be many ways to effect the moves. The means chosen will involve consideration of the details of the cases. In this top-down approach, the degree of case match is only considered after the choice of move. A control structure that responded in a bottom-up fashion to the particular cases that are available also could be employed, and would provide more opportunistic and flexible control for a system implementing this approach (see Section 5).

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[1] A best case must also share some factor with the problem that affirmatively favors one's own side. (Ashley, 1989).

3. Example

Let us assume the position of a taxpayer seeking a home office deduction. Our point of view is clearly pro, that is, for receiving the deduction. The point of view of the Internal Revenue Service is con, against the deduction. The relevant statute is given in Section 2.1.

Our first real task is to determine our argument strategy. Suppose the IRS has taken the position that the rule condition requiring regular use of the home office has not been met. In this setting, regular use is use that is not "occasional" or "incidental". Use of a home office three times per week for 50 weeks a year would probably be regular; use twice a year is probably not. Referring to Figure 1, our strategy is to broaden the home office rule. The IRS will try to confirm the miss on that statutory provision.

Next, we have to determine what argument move to make. Several options were informally set out in Section 2.2.

One possibility is to show that the requirement of regular use has in fact been met. Cell (1) of Figure 2 encompasses this strategy: we can analogize cases where (a) the home office rule has been satisfied and (b) the case has the desired outcome, which is "home office deduction granted to taxpayer." (As discussed, it is conceivable that we may satisfy Section 280A(c)(1), but have the deduction denied on some other grounds.) We try to show that we have satisfied the requirements of the statute because our case is like other cases in which the use has been found to be regular.

A second possibility is to use the broadening move in cell (2). Here we retrieve from our case base cases where the home office rule has not been satisfied but where the taxpayer received the deduction anyway. We argue thereby that the unmet condition is not strictly necessary for a favorable decision. We evince the similarity of our case to cases where a favorable decision was granted in spite of this failure ("analogize case
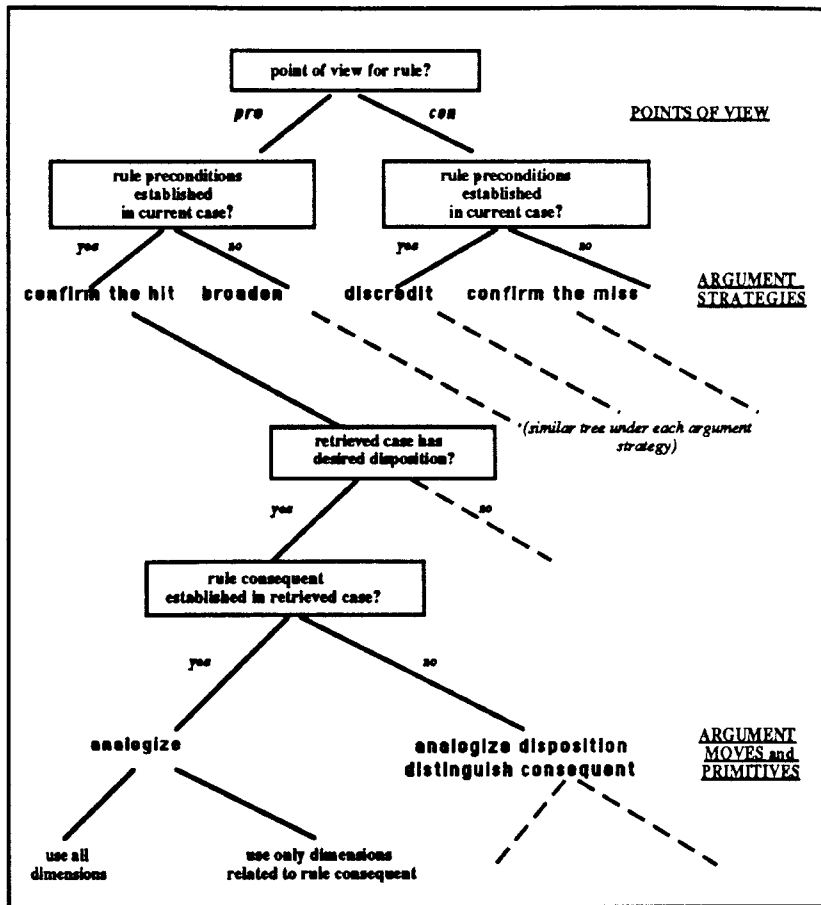

Figure 4. Decision tree fragment showing points of view, argument strategies, argument moves and primitives.

disposition"). However, simultaneously we may argue that our situation is superior to the cited cases on the issues raised by the unmet condition. We could advance distinguishing facts — present in our case but not in the cited cases — that support the argument that we (unlike the cited cases) *do* satisfy the rule's requirements. This hedging strategy is completed by the second part of the move in cell (2), "distinguish rule consequent". On one hand, we argue that regular use is not strictly required. On the other hand, we argue that our use was sufficiently regular that if the decision were to be made under the rule, we would still satisfy its requirements.

A third possibility is to use the distinguishing move in cell (4). This move suggests an attenuated effort to turn "distinguishing" into an an offensive, rather than a parrying, rhetorical

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weapon. We may retrieve cases from the case base in which the home office deduction rule was not satisfied and the taxpayer failed to receive the deduction. With cases that satisfy this "filter" we may argue that our case is sufficiently different from those situations where the deduction was denied, that the deduction should be granted in our case. This tenuous strategy may work best in a situation where the case base is sparse and there are no cases that can be relied on directly by analogy. This move can also be useful in situations where the negative cases retrieved have been regarded as taxpayer abuses. The argument is stronger, then: "Our case is not like these other abusive cases. In only such abusive cases has the deduction been denied. We deserve the deduction."

Without our going through the same detail, the IRS has a variety of moves available to it in Figure 3. The IRS may be less likely to reach for delicate arguments, however, since it merely has to argue that its initial interpretation should be confirmed, as opposed to actively extending the received interpretation of a rule, as entailed by a broadening strategy.

4. An Inventory of Legal Argument Structures

The examples given in Section 3 may suggest that legal arguments may be classified by their structure. The first possibility represents a "straightforward" argument, the second a "hedging" strategy, and the third a kind of "double negative" strategy. We have identified a set of such overlying argument templates in (Skalak & Rissland, 1991). Other common argument forms include "slippery slope", "weighting", "balancing", "make-weight" and "straw-man". We argue that many of these prototypical patterns can be described and implemented using the framework of point of view, strategies and moves presented above. One of our short term research goals is to demonstrate computationally that our CABARET system (described in Section 5) can be naturally extended to generate legal arguments encompassing a variety of common argument structures.

5. CABARET

CABARET (CAse-BAsed REasoning Tool) (Rissland & Skalak, 1990) is a domain-independent hybrid architecture for combining a production system with a case-based reasoner of the HYPO (Ashley, 1990) lineage. CABARET uses heuristic control rules to interleave case-based and rule-based tasks to solve problems in complex domains where knowledge both in the form of cases and in the form of rules is brought to bear. One of the hallmarks of the system is its ability to interleave processing of the case-based reasoning module and the rule-based based one to support the results of the complementary reasoner or to sidestep impasses in reasoning by the other module. Cf. (Branting, 1991).

The theory of argument strategies and moves discussed here is embodied in the control heuristic rules used by CABARET. To resolve impasses in rule-based processing (for example, a "near-miss", where all but one of the conditions of a rule are satisfied), the system posts tasks to an agenda to use various techniques to broaden the rule's scope. Some of the argument moves discussed above are included in these techniques. As discussed, the moves require retrieving cases in which (1) the specified rule consequent has been established or not and (2) the case has a specified disposition. CABARET can perform this filter in part because each of the cases in the knowledge base has been previously analyzed by CABARET and indexed by the system according to whether each of several important rules fired in the last analysis by its rule-based module. Having CABARET record its analysis of each case in the case base and indexing it by important rule-firings as well as by domain factors that are incorporated in the case-based module allows the system to retrieve cases that satisfy both "case-based" and "rule-based" constraints.

6. Summary

We have tried here to expound a theory of how arguments may be created in complex domains that require both rule-based and case-based reasoning. The theory depends on identifying argument strategies, which arise from one's viewpoint toward a rule-governed conclusion. The

theory specifies how a strategy may be effected through tactics called "moves". Moves are accomplished by retrieving cases that satisfy certain requirements as to disposition and rule satisfaction and applying primitive argument techniques, such as analogizing or distinguishing, to compare these precedents with the problem situation. This theory has been implemented in a case-based/rule-based hybrid architecture called CABARET, which specifies case- or rule-based tasks for the system to perform on the basis of control heuristics that incorporate the theory of strategies and moves described here.

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