

PERSUASIVE ARGUMENTATION IN RESOLUTION OF COLLECTIVE BARGAINING IMPASSES*

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ABSTRACT

In this paper we present a process model that uses past experience in generating arguments of persuasion. We view persuasive argumentation as an instance of problem solving. As such, we employ knowledge organization ideas and problem solving techniques that have been advocated in an analogical view of problem solving. To illustrate our ideas, we use the domain of mediation of labor disputes. Our model is implemented in the PERSUADER, a computer program that gives advice in collective bargaining mediation.

1. INTRODUCTION

Persuasion has been and will continue to be a chief instrument in the conduct of human affairs. Arguments are the means by which persuasion is effected. During persuasive argumentation, an agent, the persuader attempts to change the beliefs of another agent, the persuadee. In this paper, we present a process model of persuasive argumentation that uses past experience to create new arguments. Our model is influenced by the work of Kolodner and Simpson (1984) on case-based reasoning in problem solving. We use the domain of labor management disputes to illustrate our points.

Traditionally, the psychological literature has treated persuasion as a process of communication (Brembeck and Howell, 1976). In our model, persuasive argumentation is viewed as an instance of problem solving. The goal of the persuader as problem solver is to convince the persuadee to accept a particular proposition.** In labor mediation, the mediator is the persuader and the union or company the persuadee. When an impasse is reached in contract negotiations, a mediator is usually called in. The goal of the mediator is to convince the parties to reach a mutually acceptable contract without a strike.

This goal is achieved incrementally through many rounds of persuasive argumentation. In each round, the mediator tries to narrow the disputants' differences with respect to a contract issue, by convincing them to move towards a common value. In such cases, mediators traditionally use well-known persuasive arguments. An example of such an argument is that the adoption of seniority reduces labor turnover. These arguments and the appropriate ways to use them are identified in books on collective bargaining (Herman and Kuhn, 1981, Randle, 1951).

We view these arguments as plans that the mediator uses to achieve the goal of changing a party's position with respect to a contract issue. For a plan to be applicable, its preconditions have to be satisfied. The main factor determining the effectiveness of arguments of persuasion is the attitudes and beliefs of the persuadee (Abelson, 1959). The persuader has such a model of the persuadee in mind, to which he is addressing the persuasive arguments. We consider the persuadee model as part of the argument plan's preconditions. Another part of the preconditions is the economic context of the dispute. Argument plans are known by the mediator and are instantiated when the present case matches their preconditions. The task of the persuader is to decide the applicability of these plans to the situation at hand. To motivate our exposition, we present the following example:

The Yellow-Jackets textile company involved in a collective bargaining case refuses to grant the workers plantwide seniority for promotions and layoffs. The mediator suggests that seniority improves worker morale, resulting in more efficient plant operation and, consequently, decrease of production cost. The company points out that quite a number of key employees are junior and, during a layoff, they would be the first to go. This would impede the operation of the plant. The mediator, having this additional information, recalls a similar situation where the following solution was found: an exception in seniority for a number of key employees was accepted by the union in exchange for superseniority for union officers and stewards. The mediator proposes this compromise to the company, which agrees.

In this example, the mediator proposes an argument plan that she thinks is suitable to the particular situation. To generate the initial argument, the mediator recalls relevant economic factors, important goals of similar persuadees, and experiences with the same contract issue. Since these three forms of information might come from different mediation experiences, the mediator needs to combine information from the individual available schemata,

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**In adversarial argumentation the arguer does not attempt to change the beliefs of the interlocutor (Flowers, et. al., 1982).

constructing the most appropriate combination for the present situation. We call this schema the **argumentation precedent**. In this case the precedent includes the information that efficient plant operation is an important company goal, that seniority improves worker morale leading to worker efficiency, that the economic conditions are recession, and that the majority of textile industry contracts have seniority provisions. The precedent is used as a set of preconditions, against which arguments are tested for applicability.

The next two figures show the conceptual content of the initial argument plan and argumentation precedent for the above example. Space limitations prohibit a full explanation.

THE PERSUADER'S INITIAL ARGUMENT PLAN

persuadee: Yellow-Jackets company
 issue : *seniority*
 preconditions: argumentation precedent (below)
 claim: Increased plant efficiency comes from granting seniority
 persuader-goal: Change weight of issue ;see section on strategies
 argument-type: Self-interest ;see section on convincing power
 strength: .7 ;see section on convincing power

Figure 0-1

ARGUMENTATION PRECEDENT

persuadee-model: goals of the Yelow-Jackets, including their relative importance
 economic-context: recession, unemployment in the textile industry,...

Figure 0-2

2. THE OVERALL MODEL

We present the overall process model for persuasive argumetation in Figure 3.

PROCESS MODEL OF PERSUASIVE ARGUMENTATION

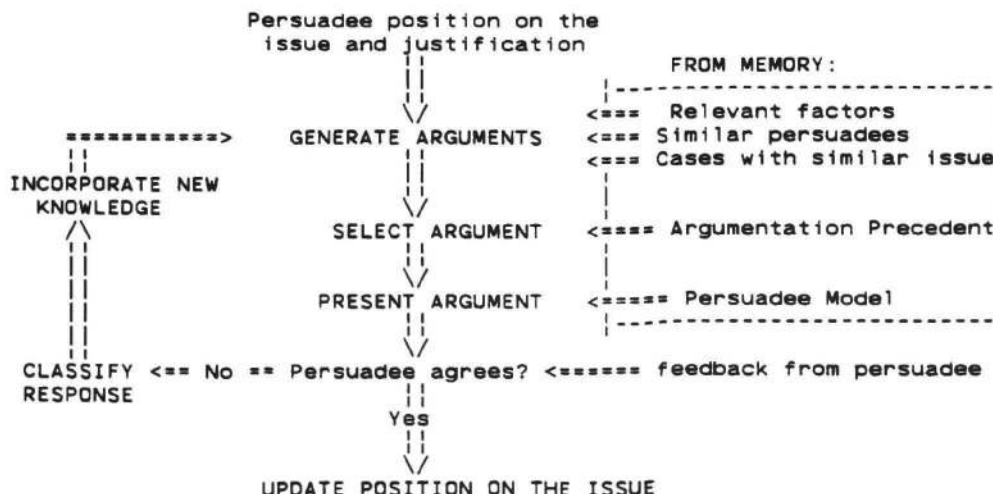


Figure 0-3

The input to the argumentation process is the persuadee's position on an issue and the position he needs to be convinced of. In mediation, these correspond to the value of the contract issue that the party has rejected and the mediator's proposal. The first stege in persuasive argumentation is to **generate** potentially applicable arguments using the contract issue as a probe. The most appropriate argument is then **selected** from the retrieved ones. This is

done by using the argumentation precedent, as a set of preconditions against which the potential effectiveness of retrieved arguments is tested. Consider, for example, the argument that the adoption of seniority for promotions reduces grievances. The rationale is that seniority is a criterion well-understood by the workers and thus will eliminate potential complaints of unfairness. The strength of this argument for the company depends directly on the importance of reducing grievances as a company goal. Relative importance of goals is included in the argumentation precedent.

Next, the persuader presents the selected argument. If the persuadee agrees, the appropriate update of the settlement is made, namely that there is agreement on this issue. If the persuadee disagrees, the reasons for the disagreement are analyzed for new information that could alter subsequent argumentation, such as new information about the persuadee's concerns (e.g., the company's concern about key employees), new information about economic factors (e.g., the strength of foreign competition), and corrected inferences about the relative importance of the persuadee's goals. The mediator incorporate the new knowledge into the argumentation precedent. In this way, the argument preconditions are dynamically learned as a result of comparing successful and failed applications of the argument. The process of generating potentially applicable arguments is then repeated, testing argument effectiveness against the updated argumentation precedent. A new, more convincing argument is selected for presentation.

3. THE PERSUADEE MODEL

The persuadee model, used during argument generation, selection, and presentation, contains the attitudes and beliefs of the persuadee. These are represented in terms of his collection of goals and their relative importance. Goals of a union or company negotiator are of two types: personal career goals and the goals of the union or company he represents. We represent these goals in goal trees (Carbonell, 1979). In the subsequent figure we depict the partial goal tree of a company.

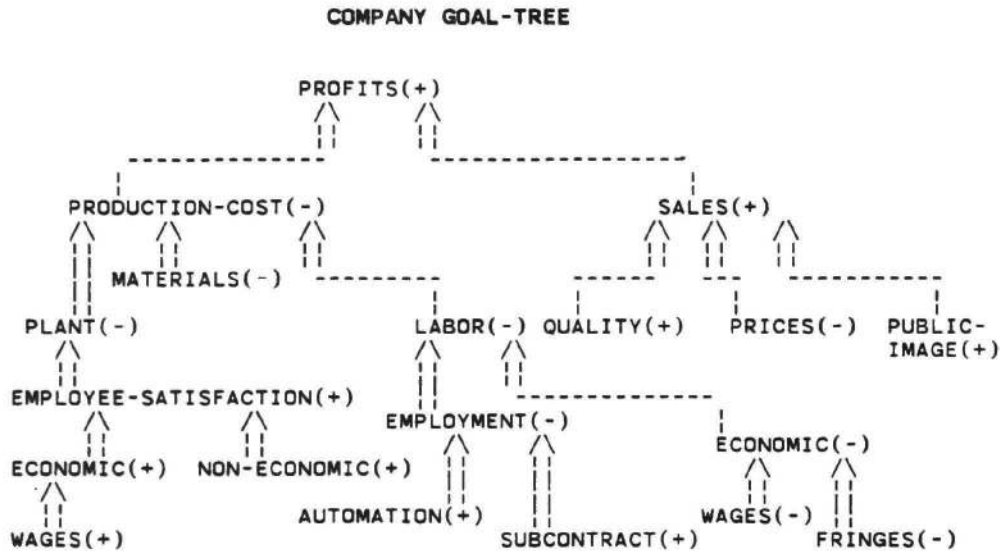


Figure 0-4

The notation for the relationships among goals in the tree is adopted from Spohrer and Riesbeck, (1984). A (+) sign corresponds to the goal of increasing the particular quantity to which it refers, while a (-) sign corresponds to decreasing the quantity. For example, increasing profits, PROFITS(+), which occupies the root of the goal tree, represents the company's highest level goal. The children of a node, connected to it through support links, denote the subgoals through which the supergoal is satisfied. For example, profits can be raised, PROFITS(+), by decreasing production costs, PRODUCTION-COST(-), or by increasing sales, SALES(+).

Also included in a goal tree is the relative importance of the party's goals, though for simplicity, this is not shown in the figure. The figure depicts a "prototype" instance (Rosch, 1977) of a company's goals. Goal trees vary with particular negotiators and companies (unions), and the best one possible is needed to construct effective arguments. When a persuader is faced with an unknown persuadee, he can use a prototype goal tree, or a persuadee model by transferring characteristics from the goal tree of a previously encountered and similar persuadee.

4. EFFECTIVE PERSUASION

There are two central issues in selecting the most effective argument plan: first, the persuader's goal, namely in what way does he want to change the persuadee's beliefs; and second, how to do it most convincingly. The first issue involves strategies of persuasion and the second, criteria for the persuasive power of arguments.

4.1 Strategies for argument plan selection

One measure of successful persuasion is the acceptance of the proposed solution by the parties. In mediation, this means the willingness of a party to accept a suggestion regarding a particular contract issue. This willingness depends on the party's assessment of the monetary value of that issue and the issue's importance. Hence, a mediator has two possible goals in convincing a party to accept a previously rejected issue:

- 1) changing the importance that the party attaches to the issue, or
- 2) changing the party's assessment of the issue's proposed monetary value

The argumentation strategies used to accomplish these goals determine how the argument plan selection is done. For example, if the persuader's goal is to change the importance accorded an issue by the persuadee, and he chooses to use the first strategy, then a threatening argument plan has to be used. Three argumentation strategies can be used to accomplish the first goal:

- (a) indicate possible unpleasant consequences of the present demand
- (b) propose alternatives
- (c) produce evidence showing that the particular proposal promotes an important goal of the persuadee

To illustrate the first strategy, suppose a union rejects a wage settlement. The mediator tells the union that if the company is forced to grant higher wages, it will become non-competitive and therefore will be forced to lay off workers. If an important union goal is preservation of employment for its members, then the union will abandon its goal of higher wages in order to satisfy its employment goal. Two strategies can be used to accomplish the second goal:

- (d) recall a "counterexample" from the persuadee's record of contracts
- (e) recall examples of similar unions (companies) having settled for the proposed value or less (more)

To illustrate the last strategy, consider a union's rejection of an increase of 10 cents per worker per hour in health benefits as unacceptably low. The mediator presents contracts signed by the same or other unions which incorporate an equal or lower increase. This argument is effective because perception of "low" or "high" values is determined by prevailing practice, namely what settlements similar disputants have agreed to.

4.2 The convincing power of arguments

For persuasion to be effective, the appropriate type of argument has to be presented in each situation. Examining a great number of arguments used in labor mediation, we have identified six categories of argument plan types. They have general applicability, although we will use examples from the mediation domain to clarify their use. We present them in a default ordering of persuasive power (from weakest to strongest):

1) Appeal to universal principle

In using a universal principle, the persuader appeals to some core belief of the persuadee as support for the argument. An example is the argument that a particular wage value does not afford the workers a "decent living standard". Arguments of this type are generally weak, since they appeal to moral principles rather than to the economic realities. However, if "public image" is an important company goal, arguments of this type take on added power.

2) Appeal to "minor standard"

"Minor standards" provide exceptions as a basis for refutation of arguments based on prevailing practice. In mediation, "minor standards" are used as justifications to propose settlements to the employees of one company that differ from settlements within the industry in general. Examples of minor standards include steadiness of employment and hazardous work (Elkouri and Elkouri, 1973).

3) Appeal to "prevailing practice" standard

People's attitudes and goals are strongly influenced by the groups to which they belong. They use the achievements of their peers as a standard with which to compare their situation and expectations. In mediation, this corresponds to the prevailing practice standard. Prevailing practice is the most frequently used argument in labor mediation. Its credibility derives from economic reality. A company cannot underpay its employees for fear of losing them to competitors; a union cannot insist on concessions much above what is given in the industry, for fear of lay-offs.

4) Appeal to precedents as counterexamples

Use of precedents as counterexamples provides a strategy to convince a persuadee that his claim is not as tenable as he would like to think. The power of counterexamples lies in their ability to point out contradictions between the claimed and the actual behavior of the persuadee. Psychological consistency theories (Heider, 1958; Festinger, 1957) give evidence for the persuasive power of counterexamples.

5) Appeal to self-interest

The persuasive power of these arguments depends on the importance of the goal that is claimed to be promoted by the adoption of the persuader's proposal. People will substitute the satisfaction of a lesser goal for a more important one. An example of such an argument is the acceptance by a company of seniority, because it reduces labor turnover, despite the resulting curtailment in management rights.

6) Threats

People want to satisfy their goals, so threatening an important goal of a persuadee is the most effective of arguments. In labor-management disputes, the threat of a strike is the most frequently used and clearly the most powerful argument. However, there are other threats that can be very persuasive, as when a food-processing company's employees threaten to "leak" news of health violations at the plant. The mediator's role here is to convince the company that the employees will carry out their threat and that similar tactics have damaged recalcitrant companies in the past.

5. SUMMARY AND FUTURE WORK

We have presented a portion of the reasoning and domain knowledge necessary in a process model of persuasive argumentation, and given examples from the domain of labor mediation. In this paper, we have concentrated mainly on the task of argument selection. Important factors in this selection are the persuadee model, the argumentation strategies and the convincing power of arguments. Many issues have not been addressed. For example, what is the exact algorithm to construct the argumentation precedent, what is the role of feedback, what is the most appropriate memory organization.

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