STRATEGIC AND DILEMMA ANALYSES OF A WATER EXPORT CONFLICT

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ABSTRACT

Two distinct approaches to formally studying conflict are described and compared by applying them to three different phases of an international controversy that arose when a private company was not allowed to export water from Canada. In each phase, the graph model for conflict resolution is employed for obtaining equilibria and strategic insights while confrontation analysis, a procedure for applying drama theory, is used to expose dilemmas faced by the decision makers. The results of the conflict analyses obtained for the three phases indicate that the two techniques complement one another and thereby provide a broader understanding about what occurred and how the dispute evolved over time. A potential resolution to the conflict occurs at a strategically stable outcome when decision makers do not face any dilemmas and their emotions are dissipated.

Keywords: Conflict Resolution, Confrontation Analysis, Dilemma Analysis, Drama Theory, Graph Model, Water Export Conflict

1. INTRODUCTION

The way we perceive a particular problem has considerable influence on the approach we use to conceptualize and analyze it. Scholars and professionals have applied certain conflict analysis techniques to model and analyze real world conflicts. Notwithstanding the benefits and importance of such analytical techniques, analysts usually build their conflict models based on certain categorical assumptions that focus on the structure of the conflict, described by who are the key stakeholders and what are their options and preferences. Guided by their own empirical knowledge of the circumstances surrounding a particular conflict and how it is described by the involved parties, analysts generally conjecture that the decision makers possess consistent preferences and convictions, and therefore their conflict model captures these intricacies of reality. With this mind-set, decision makers' emotions are not directly taken into account, and irrational actions are not considered or allowed as part of the decision making processes. We believe that this may give rise to moot results: firstly, different individuals typically have different perceptions and interpretations of the events that have led to the situation, depending on their cognition and personal constructs (Kelly, 1963). Secondly, a general abstraction of the problem may lead to wrong assumptions regarding the available feasible scenarios that each decision maker envisages, and could lead to missing the essence of the conflict. Finally, recent research in psychology and neurology shows, convincingly, that emotion is an essential element of the decision making process (Damasio, 1994). When considering irrational actions that may be connected to emotions, we adopt De Sousa's (1987) description who states that " An act is irrational if it tends to frustrate the agent's ostensible or ultimate goal" (p. 163).

We believe that central to any conflict resolution is the communication process that occurs between the parties involved, in their attempt to exchange information. This exchange of infor-

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mation has the role of exploring the ambient realities of the dispute and the changes in it. Parties start discovering each other's positions and expectations, as well as the cumbersome psychological context of the situation, and each attempts to manipulate an opponent's understanding and preferences by making unwilling threats. Bennett and Howard (1996), Bryant (2003), and Howard (1994a,b) argue that as parties conclude that their positions are not compatible, they face dilemmas of rationality: pursuing what they want and ostensibly most prefer (declared positions) and the need to make unwilling threats credible. This situation places emotional pressure on the parties, which may induce them to modify their positions, preferences, or priorities. Howard et al. (1992) claim that in order to resolve a conflict, we need to search and expose the dilemmas that are created as a result of players' pursuit for rationality, as well as identify the transformations that are needed to occur as a consequence of the players' attempts to remove these dilemmas during the course of the confrontation. They proposed a new approach called drama theory, which relaxes the assumption of rationality and shifts the focus of interest to analyzing the tensions created among and inside the decision makers. Their new method allows an extensive consideration of the decision makers' emotions in the analyses as the conflict evolves.

The objective of this paper is to complement the capabilities of the graph model for conflict resolution and drama theory by applying them to three phases of a conflict that took place when a private company was prohibited from exporting Canadian water in bulk. The graph model (Fang et al., 1993) is a game-theory-related conflict analysis technique, which is used for modeling and strategically analyzing conflicts. Our study highlights distinct features of both methods, and provides an understanding of the potential of drama theory as a technique to be used in conflict studies in conjunction with the graph model.

2. THE GRAPH MODEL FOR CONFLICT RESOLUTION

The graph model for conflict resolution (Fang et al., 1993) constitutes a significant expansion of conflict analysis (Fraser and Hipel, 1984) which in turn is an extension of metagame analysis (Howard, 1971). All of these procedures are quite different from the classical game theory techniques put forward by von Neumann and Morgenstern (1953), although there are some connections. For example, Fang et al. (1993, Ch. 4) explain relationships between the graph model and the extensive form of the game, while Howard (2004) describes connections of drama theory with the extensive form. Moreover, these conflict analysis and resolution methods focus on analyzing a strategic conflict in terms of its components: decision makers (DMs), options, and preferences, and searching for possible resolutions based on certain stability definitions, which mathematically describe how DMs interact with one another in terms of moves and countermoves. Our specific interest is the *graph model for conflict resolution* with its associated decision support system software called GMCR II.

In the graph model for conflict resolution, each DM has a *directed graph*, which records its unilateral moves in one step (arcs) among states or scenarios, represented as nodes. Thus, the directed graphs for the DMs systematically keep track of moves as DMs interactively jockey for position during the evolution of the conflict. Once the directed graphs are established, the analysis of the conflict is carried out by examining the stability of each state for every solution concept listed later in Table 1 for each DM. Assuming all other DMs' strategies remain the same, a unilateral improvement (UI) from a particular state, for a DM i, is a strictly preferred state to which DM i can unilaterally move in one step. A given DM may be tempted to take advantage of a UI and move. However, a state is stable for DM i if all of i's moves away from that state are deterred in some sense. That is, at least one of the other DMs can invoke a unilateral action that results in a less preferred outcome for DM i. A possible resolution or equilibrium of the graph model is a state that all players find to be stable. For details about the *graph model for conflict resolution*, see Fang et al. (1993) and Hipel et al. (2002), and for a description of GMCR II, see Hipel et al. (1997), Peng (1999), and Fang et al. (2003a,b).

3. DRAMA THEORY

3.1 Overview

Rationality, in a nutshell, implies consistency in choosing in accordance with one's preferences (Bennett and Howard, 1996). This principle of choice behaviour becomes complicated when decisions are made in interdependent situations and among competing DMs who have symmetrical influence. Under such conditions, the individuals' pursuit of gain often leads to a suboptimal collective outcome (Green and Shapiro, 1994). In other words, the rational pursuit of what we want may hinder us from getting it. Hence, the paradox of rational choice is where two or more rational DMs may actually fare worse in the final outcome than irrational ones (Howard et al., 1992). In conflict situations, these paradoxes appear due to unwilling threats – "cheap talk" (Danilovic, 2001) – or promises, which characters may state to exhort others into accepting their positions but would prefer not to carry out because ultimately they will end up in an unfavourable position.

Threats in confrontations are an essential element in shaping individuals' behaviours when they make choices. Characters threaten to bring about drastic and harmful futures to make others worse off if their demands or positions have not been met (Howard, 1999). When all DMs act on their threats this creates what is called a *threatened future* (Bennett, 1998). Emotions play a major role in this situation by expressing radical intentions and making them credible (Danilovic, 2001; Schelling, 1963). Recent neurobiological studies by Damasio (1994) show that emotions are indispensable to rational decision making. In his hypothesis called 'somatic marker', Damasio suggests that people develop emotional memories, called *somatic markers*, which affect the decisions that are made in circumstances similar to previous experience. These emotional memories are shaped from experience within certain social environments (Damasio, 1994). Gordon and Arian (2001) conducted an empirical study examining the effects of emotion and threats on decision making. According to them, "the more threatened people feel, the more their policy choice tends to maintain or intensify the conflict." Their study also stipulates that, "when one feels very threatened, the decision-making process about policy is dominated by *emotion* rather than logic or rational consideration."

While the game-theory-related methods for conflict analysis construe conflicts as rational interactions among DMs, and treat all positions as part of an exhaustive array of outcomes with no consideration of psychological effects and tendency to change, drama theory focuses on analyzing the behaviour and tension created amongst and within the DMs as a result of dilemmas generated as they seek to be rational. That is, within a character there is a tension created between the futures he or she seeks and the credibility he or she has to show to convince others of perseverance (Howard, 1999). Usually, these tensions fully develop at the moment of truth when DMs realize that their positions are diametrically opposite to one another or they do not trust each other on the positions they agree on. They face dilemmas which engender negative or positive emotions and they come under duress to change either their positions or their preferences from their original positions (Bennett and Howard, 1996; Bryant, 1997, 2003; Howard, 1999, 2002). In drama theory, a conflict is treated as a dynamic phenomenon. As characters engage in confrontation they keep changing their positions and the way they view each other's positions. The confrontation goes through successive development of episodes before the conflict can be resolved, where DMs try to eliminate or come to terms with their own dilemmas. The application of drama theory to a practical problem is sometimes referred to as confrontation analysis (Howard, 1999) or dilemma analysis.

3.2 Confrontation Dilemmas

Dilemmas represent psychological contentions that characters face and have to resolve during their engagement in a confrontation. Howard (1999) argues that they represent the "credibility problems characters face at the moment of truth." Howard (1994a, 1998a, 1998b, 1999, and 2002)

identifies six dilemmas, which could be classified into two sets: agreement and disagreement. If characters' positions are compatible, they will be in a collaborative mode, yet they will be vulnerable to the agreement dilemmas, such as co-operation and trust. Whereas, if characters' positions are not compatible, they will be in a confrontational mode, yet they will be subject to a number of the disagreement dilemmas, such as rejection, persuasion, positioning, and threat dilemmas.

The following is an outline of these dilemmas as they are defined by Bennett and Howard (1996), and Bryant (1997, 2003), where the first two dilemmas constitute agreement dilemmas and the last four disagreement dilemmas:

Co-operation dilemma: If a character has the potential to unilaterally improve her position, she may be tempted to defect from her original position. This dilemma will cast doubt on the character's sincerity because a rational character would be better off not implementing her position and adopting a new one. By affirming her position, therefore, she is making an incredible promise to others. An example of this dilemma can be found in the Prisoner's Dilemma game. Each prisoner is under temptation to confess by the promise of a lighter sentence, yet both prisoners know that if they both confess, they will be worse off than if they had both remained silent.

Trust dilemma: A character faces this dilemma when he might not be able to trust others to implement their parts of his position, even if they agree to it. For example, consider two characters A and B. From A's position, B has a potential improvement to a more preferred future other than A's position. A, therefore, will have difficulty in trusting B if the latter agrees to his position. A's trust dilemma is B's co-operation dilemma.

Rejection dilemma: If a character finds another's position preferable to the *threatened future*, she will face a rejection dilemma since it would be irrational for the character to accept the *threatened future* rather than the other's position which constitutes a potential improvement. An example of such a dilemma is the Cold War. When the Soviet Union and the United States threatened each other with total annihilation, which neither would prefer, both would prudently accept the other's position to avoid such a disastrous *threatened future*.

Persuasion dilemma: A character will face this dilemma when an opponent finds his position preferable to the threatened future. The deterrer must contribute to the *threatened future* in such a way as to make it less attractive to others than his own position, yet there is no rational reason for actually adopting such a drastic strategy.

Positioning dilemma: A character may find another's position preferable to her own. The character has to make the incredible claim that she still advocates her position. Thus, the pursuit of her objectives requires arguing against them! An example to this dilemma may happen when the deterrer and challenger are ideologically antithetical, yet the deterrer may see some merits in the challenger's position, but would be embarrassed to accept it.

Threat dilemma: A character may have an improvement from the *threatened future* which does not lead to his own position. Thus, a character's threat to adopt his fallback strategy if he cannot achieve his position is not credible.

4. SOLUTIONS CONCEPTS IN THE GRAPH MODEL AND DRAMA THEORY

Within the paradigm of the graph model for conflict resolution, nodes or states which are stable for a given DM, in the sense that he or she will not be motivated to unilaterally depart from them, are mathematically defined using the solutions concepts which describe a rich range of potential human behaviour under conflict. When a given state is stable for all DMs with respect

Table 1: Solution Concepts and Human Behaviour

Solution Concept	Stability Description
Nash stability (R)	Focal DM cannot unilaterally move to a more preferred state.
General metarationality (GMR)	All of the focal DM's unilateral improvements are sanctioned by subsequent unilateral moves by others.
Symmetric metarationality (SMR)	All focal DM's unilateral improvements are still sanctioned even after possible responses by the focal DM.
Sequential stability (SEQ)	All of the focal DM's unilateral improvements are sanctioned by subsequent unilateral improvements by others.
Limited-move stability L_h	All DMs are assumed to act optimally and a maximum number of state transitions (h) is specified.
Non-myopic (NM)	Limiting case of limited move stability as the maximum number of state transitions increases to infinity.

to a given solution concept, it is called an equilibrium or potential resolution. Table 1 outlines the *solution concepts* available for use with the graph model. Exact mathematical definitions and original references are provided by Fang et al. (1993, Chapter 3).

The solution concepts listed in Table 1 can be divided into three sets: the first is Nash stability (R), general metarationality (GMR), and symmetric metarationality (SMR); the second is the sequential stability (SEQ); and the third comprises the remaining concepts. The first set represents the behaviour of a conservative and very rational DM who has a risk-averse personality. This type of DM believes that an opposing DM may act in an irrational way by putting himself in a worse position in order to prevent any unilateral improvements by the given DM. This focal DM is also unwilling to move to a worse state in order to eventually reach a more preferred state. He demonstrates circumspection and thus is only planning for one or a few future moves and countermoves, and may be uncertain about the opponents' preferences, though their abilities to move to other states are considered. The second set comprised of SEQ represents the behaviour of a more moderate person, who is willing to take some risks in a search for satisficing solutions. The focal DM takes into account the preferences of all involved DMs in the stability calculations but will not make any strategic disimprovements, plans ahead only a few moves and countermoves, and assumes that sanctioning DMs will only sanction the focal DM's potential unilateral improvements using their own unilateral improvements. The third type describes a proactive personality. The DM is a cunning player and has either unlimited foresight (ability to think about future possible moves or countermoves), or is limited to a certain horizon h. That DM is willing to make difficult and risky moves, is capable of temporary disimprovement in order to achieve a better state eventually, and has full knowledge of all DMs' preferences.

According to Kilgour et al. (2001, p. 161), "different stability concepts (or "types") may give rise to different equilibria, and in principle each decision maker may be of a different stability type." Therefore, in the analysis of a conflict it is important to consider different stability concepts or solution concepts for each DM, allowing for a more robust prediction of the evolution of the conflict.

In drama theory, the definition of an equilibrium is akin to some of the solution concepts used in the graph model, especially the Nash equilibrium, with an added condition. According to Howard (1994b, 1998a), a *dramatic resolution* to the conflict is bound to occur if characters do not have co-operation, persuasion, and rejection dilemmas and there are no further potential improvements. When this happens, all characters converge to a common position called a strict, strong equilibrium that possesses a high degree of stability and sustainability. All characters in this *"strict, strong equilibrium"* are free of negative emotions and psychological tensions which may compel them to change their positions, and therefore agree upon a sincere resolution (Howard, 1998a).

5. CASE STUDY: SUN BELT VS. BRITISH COLUMBIA GOVERNMENT

5.1 Historical Background

In 1990, Sun Belt Water Inc. (Sun Belt) of California had become a participant in a joint venture partnership with a Canadian corporation that had a license to export 200 acre-feet (247 million liters) per year of fresh water in bulk by marine tanker from British Columbia, Canada, to the United States and elsewhere. The Canadian corporation's license was one of six licenses granted to private investors in the early 1990s for the withdrawal of water. Soon after the partnership had formed, the Goleta Water District in California invited Sun Belt to enter into contractual relations with it to supply water in bulk by marine transport. As a result of this partnership and the potential increase in water demands, the Canadian company applied to increase its right to annual water quantities to 15,000 acre-feet (18.5 billion liters). According to Sun Belt (by telephone interviews with the President of Sun Belt), the British Columbia government (BCG) advised Sun Belt that if the Canadian company's request met the usual requirements of the Water Act, it would receive permission to expand the license in order to meet Goleta's fresh water requirements. On March 14, 1991, Goleta selected Sun Belt as the supplier with whom it would negotiate a contract for the purchase of bulk water. Subsequently, on March 18, 1991, BCG imposed a moratorium on the issuance of new or expanded water export licenses, thereby obstructing Sun Belt's potential business with Goleta. Sun Belt contended BCG's action and filed a lawsuit claiming damages because of the moratorium.

In 1995, BCG agreed to engage in negotiations in order to resolve the issue out of court with the two companies separately, which led to reaching a cash settlement with Sun Belt's Canadian joint venture partner for the amount of US$ 220,000, but not with Sun Belt, which requested a compensation of US$ 46.8 million. Subsequently, in June 1995, the Provincial Legislature enacted the Water Protection Act of 1995 prohibiting the export of water from British Columbia in containers of sufficient size or capacity. As a result, Sun Belt's business was hypothetically undermined. Sun Belt unsuccessfully pursued a claim for compensation in the courts of British Columbia, and in December 1998 it chose to resort to the investor-state dispute resolution process under the North American Free Trade Agreement (NAFTA) by filing a *Notice of Intent to Submit a Claim for Arbitration* against Canada. In its notice of intent, Sun Belt alleges that Canada breached its obligations under Chapter 11 relating to national treatment (Article 1102), the minimum standard of treatment (Article 1105), and expropriation (Article 1110) as well as breaches of Articles 26 and 27 of the Vienna Convention on the Law of Treaties and various torts by Ministers and employees of the Federal and British Columbia governments, and Judges (for detailed information about the case and full references, refer to Obeidi (2002)).

5.2 Phases of the Conflict

The chronological conceptualization illustrated in Figure 1 for the progression of the Sun Belt dispute, is needed to simplify the analysis and to understand how these events evolved to include the Canadian federal government as well as other provinces. By the time BCG imposed a temporary moratorium on bulk water withdrawals, Goleta Water District and Sun Belt did not have a binding contract for the supplying of water, and NAFTA agreement did not exist. Therefore, from March 1991 to December 1998, the main parties in this dispute were Sun Belt and BCG. When Sun Belt realized that it could not get justice in the courts of British Columbia, it decided in 1998 to use Chapter 11 of NAFTA and thereby sue the Canadian federal government. By doing that, Sun Belt transmuted the conflict to a new stage that involved all of Canada.

As depicted in Figure 1, the conflict between Sun Belt and BCG can be divided into three phases. Phase 1 is from March 18, 1991 to January 1, 1994, when NAFTA was implemented. Phase 2 goes from 1994 until BCG enacted the Water Protection Act in June 1995. Phase 3 covers the period up to December 1998 when Sun Belt submitted the notice of intent.

As shown in Table 2, in Phase 1, Sun Belt had only two options, either to engage in a legal bat-

Figure 1: Chronology of the Sun Belt Dispute

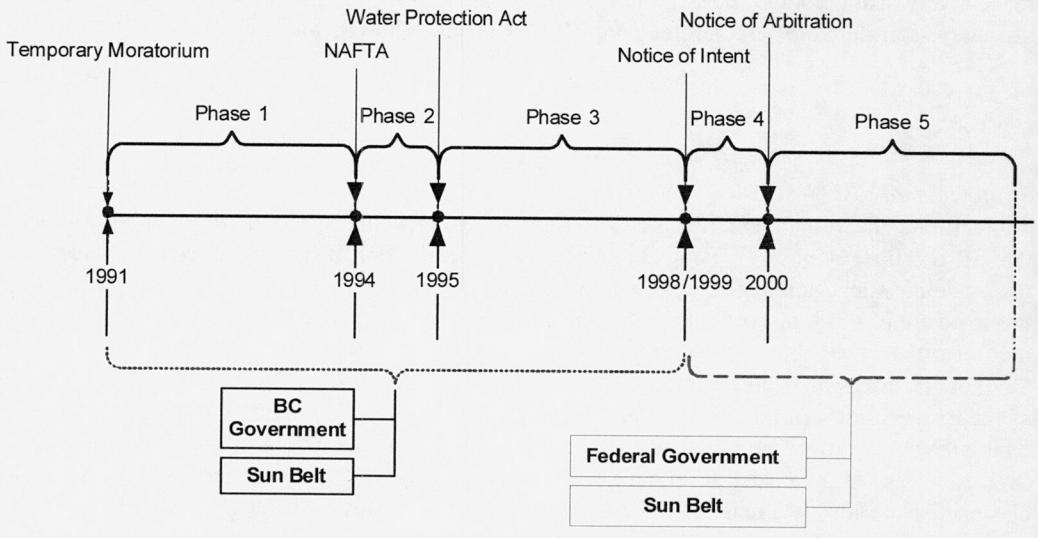


Table 2: Summary of Characters and Options

	Phase 1 (1991–1994)	Phase 2 (1994–1995)	Phase 3 (1995–1998)
Sun Belt	Litigate in court Negotiate	Litigate in court Negotiate NAFTA	Litigate in court Negotiate NAFTA
BCG	Litigate in court Negotiate Annul Enact	Litigate in court Negotiate Annul Enact	Litigate in court Negotiate

tle in domestic courts (Litigate in court) or to negotiate a fair settlement (Negotiate) with BCG. Since the latter would not have been as costly as the former, Sun Belt preferred the negotiation option. The enacting of NAFTA, on January 1, 1994, afforded Sun Belt the opportunity to use Chapter 11 (NAFTA), but since there was no evidence that Sun Belt made a substantial change in its options and preferences, that option was not considered the most preferred one. By December 1998, when Sun Belt had submitted its notice of intent, it was clear that Sun Belt had dismissed the legal suit before the court and adopted the NAFTA option, but, still, since the agreement was new and untested, it preferred to negotiate with the Canadian federal government.

From Table 2 we can see that BCG had the same options during Phases 1 and 2. If Sun Belt had resorted to going to court, BCG would have been forced into litigation (Litigate in court). BCG also had the option to negotiate with Sun Belt and its Canadian partner to settle the issue (Negotiate). In addition, BCG could have changed its position with regard to allowing bulk water exports and granted Sun Belt's partner an extension to its license (Annul). Finally, BCG had the option of enforcing a permanent law (Enact) on the export of bulk water. There is no information concerning what BCG most highly preferred among these options. In our analysis of Phase 1, we will explain more about this point. In Phase 3, with the enactment of the 1995 Water Protection Act, BCG had only two options, either to litigate or negotiate; it became obvious, by then, that it preferred the former over the latter.

Phases 1 to 3 of the Sun Belt conflict shown in Table 2 are analyzed in Sections 6.1 to 6.3, respectively, using both GMCR II and dilemma analysis. Obeidi et al. (2002) carry out a strategic analysis of the Sun Belt conflict using GMCR II during the period from 1999 to 2002.

6. MODELING AND ANALYSES

6.1 Phase 1

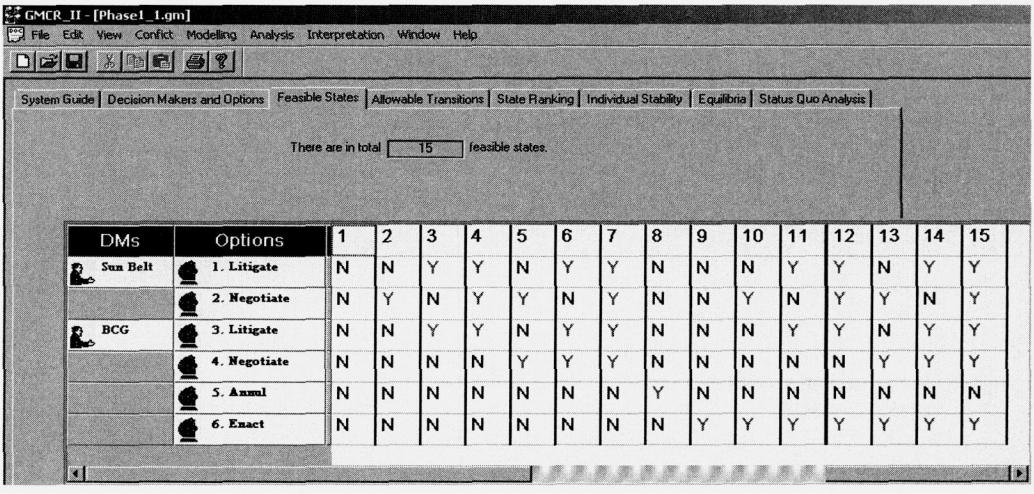
Strategic analysis: GMCR II

To facilitate the implementation of the graph model, the decision support system software GMCR II (Hipel et al. 1997; Fang et al., 2003a,b) is used. GMCR II offers three functionalities: the modeling subsystem, an analysis engine, and an output interpretation subsystem. The user of the software has to input rudimentary information pertaining to the conflict, such as the parties involved, their available options (which defines both the states and the unilateral transitions in the model), infeasible states, preferences for the generated states, and special information, such as the irreversibility of moves between states. This information is arranged in an option tableau where the states are defined by the status of every option for each DM and appear as a sequence of Ys and Ns. A 'Y' placed beside a DM's option means 'Yes' and indicates that the DM has chosen that option, whereas an 'N' means 'No' and indicates that the DM has rejected that option. A combination of Ys and Ns opposite all the options of a given DM represents a strategy for that DM, and the aggregation of all the DMs' strategies represents a state. This means that a conflict with m options can theoretically have 2^m possible states. However, not all of them are feasible, and part of the modeling process is removing those infeasible states. An important step at this stage is the ascertainment of each DM's relative preference ranking of the feasible states. For a rational DM, a state having a higher ordinal payoff is more preferable than a state with a lower payoff, and equally preferable states are assigned equal payoffs. No information is needed about the degree of preference since the software can proceed with the analysis without such knowledge. The modeling subsystem processes this information and generates the necessary information for the analysis engine model. The engine performs stability analyses for each feasible state in the conflict and for every DM using the different solution concepts outlined in Table 1. For a state to be stable for all DMs, no DM should have an incentive to move unilaterally away from it. When this happen, the state represents an equilibrium and could be a possible resolution to the conflict. The output interpretation subsystem responds to user requests by controlling which output is displayed via the user interface on the monitor.

In Phase 1, the total number of options that are available to the two DMs, as shown in Table 2, is six. This would give rise to sixty-four (2^6) mathematically possible states. Not all of these states are realistic. First, BCG will never annul its temporary moratorium and enact a new Water Protection Act. There are 15 states of the total of sixty-four possible ones that contain these two mutually exclusive options. Second, since BCG will never initiate legal action, the litigation option will only be selected after Sun Belt chooses to litigate. However, if Sun Belt selects its litigation option, BCG will be forced to choose its litigation option (as a defense). Third, if Sun Belt will not select either of its options, BCG will not offer to negotiate. Finally, if BCG annuls its decision on the temporary moratorium, it will be highly unlikely that Sun Belt will either take the case to court or negotiate. This reduces the number of possible states to 15, which are listed as columns of Ys and Ns in the screen produced by GMCR II shown in Table 3, with state 1 as the status quo.

To further illustrate the concept of the graph model, Figure 2 shows the graph model for the conflict in which the upper and lower graphs are Sun Belt's and BCG's directed graphs, respectively. In this figure, the number in each node refers to a specific state as defined in Table 3, while each arrowhead on an arc connecting two states indicates the direction of unilateral movement that a DM can make in one step. For example, Sun Belt can move from the status quo (state 2) to any of states 1, 3, or 4 in one move (upper graph), but will not be able to go to state 9

Table 3: Phase 1 Decision Makers, Options and Feasible States



DMs	Options	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Sun Belt	1. Litigate	N	N	Y	Y	N	Y	Y	N	N	N	Y	Y	N	Y	Y
	2. Negotiate	N	Y	N	Y	Y	N	Y	N	N	Y	N	Y	Y	N	Y
BCG	3. Litigate	N	N	Y	Y	N	Y	Y	N	N	N	Y	Y	N	Y	Y
	4. Negotiate	N	N	N	N	Y	Y	Y	N	N	N	N	N	Y	Y	Y
	5. Annul	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
	6. Enact	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y

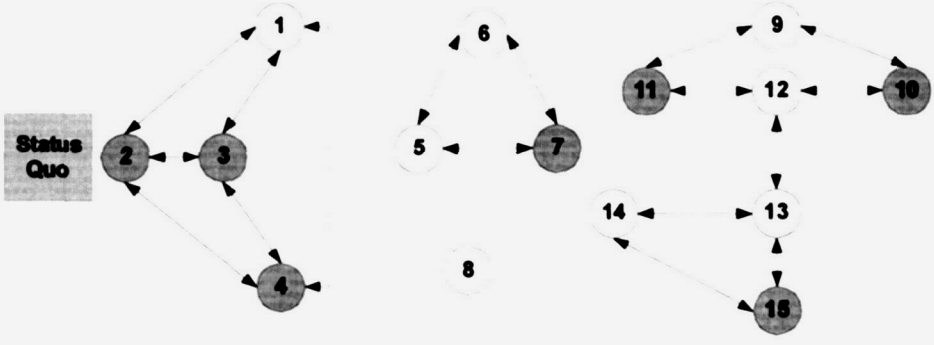
unless BCG moves from state 2 to 10 via states 5 and 13 (lower graph) in two moves. Subsequently, Sun Belt can unilaterally move to state 9 or 12 from state 10 (upper graph).

The DMs' primary goal in this phase is briefly summarized. It is most preferable for Sun Belt that BCG annuls its temporary moratorium and extends the water license for the Canadian partner. Thus, the most preferred outcome for Sun Belt is depicted by state 8, which represents the first element in Sun Belt's ordinal preference ranking. Among the other states, Sun Belt prefers those states in which BCG would not enact the temporary moratorium. In addition, any legal action in court would burden Sun Belt's financial resources; it would prefer, therefore, negotiation over litigation. Sun Belt's ranking of states from the most preferred on the left to the least preferred on the right is shown in Table 4 in option form and is written in text as {8,5,7,3,6,4,2,13,15,11,14,12,10,1,9}. This ordering of states for Sun Belt is also shown below the upper graph in Figure 2.

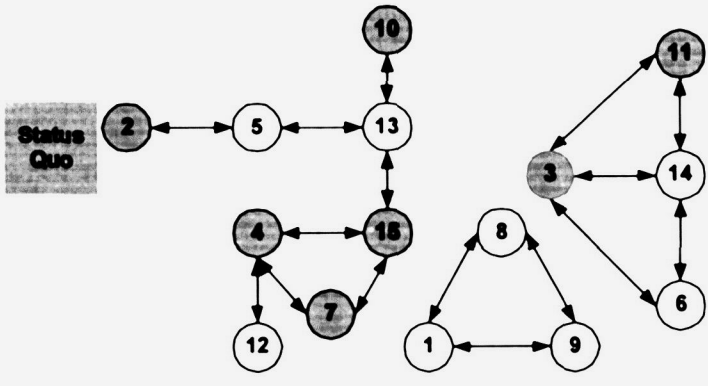
There is no evidence concerning what BCG would most prefer. However, two scenarios can be proposed. The first is that BCG's decision to impose a temporary moratorium was tactically issued to give local competitors of Sun Belt a competitive advantage in the bulk water export market (as has been alleged by Sun Belt in its notice of intent). This indicates that despite what was officially announced to the public, BCG was insincere in protecting and managing its water resources. BCG most prefers that nothing would happen (state 1) and least prefers annulling its decision (state 8). The remaining states are partitioned into two sets, depending on whether BCG enacts a permanent law on bulk water withdrawals. The first set contains the states {2,3,4,5,6,7}, while the second set represents the remaining states {9,10,11,12,13,14,15}. There is a one-to-one similarity between the states in the two sets. For example, states 10 and 2 are identical except for the Enact option. Similarly, states 11 and 3, states 12 and 4, states 13 and 5, states 14 and 6, and states 15 and 7 are closely connected to one another.

The reasoning used for ranking the states in the first set can be employed for the second one. Since it is assumed that BCG is insincere in protecting the province's water, it will not prefer the states containing enacting a permanent law for the protection of water. Therefore, the set of states {2,3,4,5,6,7} is more preferred to the second set. Furthermore, among the first set, BCG prefers the states in which Sun Belt wants to negotiate over those that contain litigate, and prefers the states in which Sun Belt decides to litigate and negotiate to those that contain just litigate. In any case, BCG will not be eager to negotiate. Accordingly, the relative ranking of states in the first set is {2,5,4,7,3,6}, and for the second set it is {9,10,13,12,15,11,14}. In this case, BCG's ranking of states is

Figure 2: The Graph Model Diagram for Each Decision Maker in Phase 1



Sun Belt's graph model. States Ordering are 8,5,7,3,6,4,2,13,15,11,14,12,10,1,9



BCG's graph model. States ordering are: 1,2,5,4,7,3,6,9,10,13,12,15,11,14,8 Insincere

BCG's graph model. States ordering are: 9,10,13,12,15,11,14,1,2,5,4,7,3,6,8 Sincere

{1,2,5,4,7,3,6,9,10,13,12,15,11,14,8}.

In the second scenario, it is assumed that BCG is sincere in protecting the province's natural resources. Therefore, it most prefers imposing complete prohibition on all bulk water exports from the province, as part of a comprehensive new environmental resource management scheme (state 9) and least prefers annulling its decision (state 8). Using the same reasoning as in the first scenario but reversing the state ordering, BCG's ranking of states is

{9,10,13,12,15,11,14,1,2,5,4,7,3,6,8}.

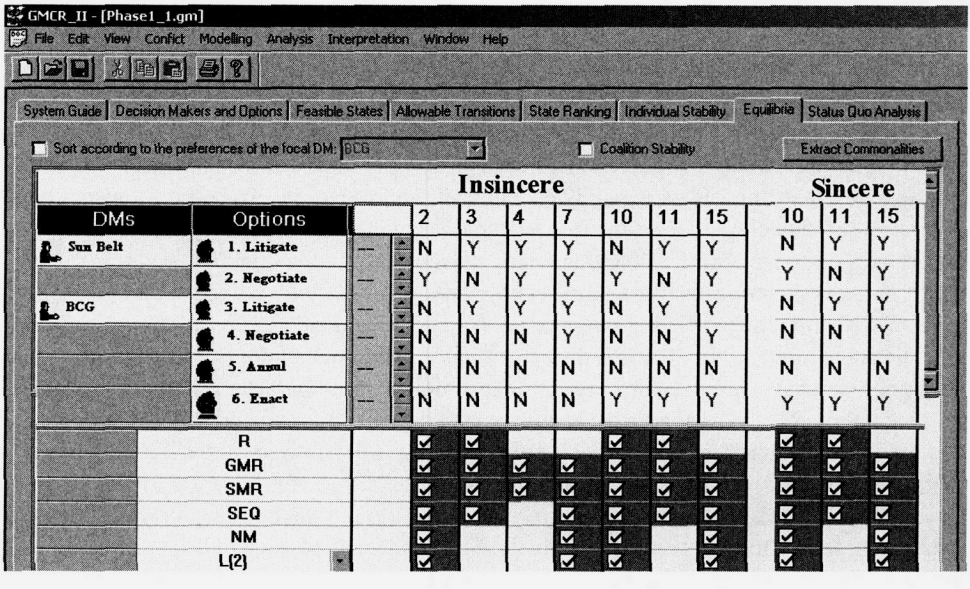
The insincere and sincere ordering of states for BCG are also given below BCG's directed graph in Figure 2. All of the feasible states were analyzed for stability using GMCR II for each of the DMs. In Table 5, the equilibria for the dispute are presented for both the insincerity and sincerity assumptions.

For the first assumption, if BCG were insincere in protecting the province's water resources, states 2, 3, 4, 7, 10, 11, and 15 are equilibria. However, only states 2 and 10 possess a higher degree of stability than any other states since these states are stable for all solution concepts, including the Nash equilibrium – a strong rational solution. For the second assumption, if BCG were sincere in protecting its water resources, only state 10 possesses a strong degree of stability. Notwithstanding the sincerity assumption, states 2 and 10 represent possible resolutions to

Table 4: Sun Belt's Ranking of States in Phase 1

	States														
	8	5	7	3	6	4	2	13	15	11	14	12	10	1	9
Sun Belt															
1. Litigate	N	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	N	N
2. Negotiate	N	Y	Y	N	N	Y	Y	Y	Y	N	N	Y	Y	N	N
BCG															
3. Litigate	N	N	Y	Y	Y	Y	N	N	Y	Y	Y	Y	N	N	N
4. Negotiate	N	Y	Y	N	Y	N	N	Y	Y	N	Y	N	N	N	N
5. Annul	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N
6. Enact	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	N	Y

Table 5: Phase 1 Graph Model Equilibria Calculated Using GMCR II



the conflict at this phase. However, there is a fundamental difference in the behaviour style between the two states. Although state 2 is more preferred to Sun Belt than state 10, it would support Sun Belt's accusations that BCG is not concerned about protecting the water resources in issuing its temporary moratorium. In our analysis, it is fair to conclude that BCG was indecisive or it needed more time to contemplate its next move, putting the burden on Sun Belt and its Canadian partner. If we argue that by 1994, when NAFTA was enacted, BCG had not yet decided on promulgating its temporary moratorium or it was still planning it, then it is likely that the resolution will be state 2, which corresponds to what actually happened. Sun Belt did not initiate a lawsuit but chose to negotiate, and BCG decided to do nothing.

Dilemma analysis: Drama Theory

A fundamental difference between the graph model and drama theory is that models in drama theory are simpler. Since the focus of drama or confrontation analysis is not the possible maneuvers among DMs but rather exploring how the conflict will develop as a result of engendered emotions, there is no need for an exhaustive search for all possible strategies that may result

from the DMs' options. Scholars in drama theory have adopted the card table metaphor to model a frame in the conflict. A frame represents a snapshot of the confrontation at the moment of truth, and it contains the structure of the conflict: characters, options, positions, and the relative preferences among the various positions. In the *card* table, each character has certain cards it can play or not play representing its yes/no options, similar to the Y/N notation used in the decision support system software GMCR II. Each character chooses a subset of its hand to play without knowing the choices of the others. This is called selection, which corresponds to the game-theoretic concept of 'strategies'. The selections are the futures that characters envisage when they act on their positions, intentions, and threats during the confrontation. They represent a simple aggregation of all perceived options.

A card table should show at least three important futures: First, *public position*: this is what each character claims to be trying to bring about, and is trying to convince the others to accept. It is the development of the situation or the proposed solution of the 'problem' as it is seen by the character (Bryant, 1997, 2003). It need not be the most preferred of all technically feasible scenarios (Bennett, 1998). Second, *status quo*: this is the current state of the situation, prior to any of the characters actually carrying out their intentions (Bennett, 1998). Third, *fallback option*: this is what will happen when a character chooses to implement its threat unilaterally if its position is not accepted and which may or may not differ from its public position. Interdependencies among characters as well as among their preferences are realized by using the concepts of *futures* and *consequences*. A future is a particular course of action determined by characters' selections of their cards. For example, a *threatened future* represents a selection of all fallback options that belong to characters. The process of assigning futures and consequences is not theoretically significant, but rather depends on intuition and judgment. In addition, each character has certain preferences as to the selection of cards it would like to see played – possible futures that may happen as a result of other characters' selections.

A drama analysis proceeds by examining how one confrontation evolves to another. Our focus will be on analyzing the psychological pressures created by the dilemmas of rationality facing the characters at the moment they declare their positions and fallback options. Exposing the rejection, positioning, or persuasion dilemmas requires examining each character's position in relation to other characters. Revealing the threat, co-operation, or trust dilemmas requires examining each character's potential improvements that would make one's position or fallback non-credible. The potential dilemmas that could be resolved along with the alternatives that are available to the characters are the reasons for the dynamic nature of confrontations and, therefore, constitute part of the resolution strategy. Modeling and analyzing the conflict at each phase will be at the juncture of the moment of truth, assuming that the protagonists communicated their positions and fallbacks, with no misperceptions. The state rankings used in the GMCR II analyses will be used in all of the drama theory models that will be developed for the Sun Belt conflict.

Table 6 illustrates the card table for Phase 1 of the conflict. (A dark rectangle represents a card that is played by the character who controls it.) At this phase, Sun Belt's (SB's) position is that in order to settle the dispute it hopes that BCG annuls the temporary moratorium of 1991. This position is what Sun Belt communicated to BCG, and corresponds to the most preferred state – state 8 – in the graph model. Although this is its supposedly fixed position, Sun Belt insinuates that it is ready to negotiate a fair settlement. This is shown in the status quo future, which corresponds to state 2 in the graph model. Sun Belt's fallback is that it threatens to resort to litigation in domestic court, as indicated in the fifth column from the left, in which Sun Belt chooses the litigation card. This choice will also force BCG to choose its litigation card as shown by the use of the 'X' sign inside of a picked card. Since BCG has no fallback position, Sun Belt's fallback will be the threatened future, which corresponds to state 3 in the graph model.

As for BCG, two positions are shown in the card table in columns third and fourth. The first position represents what Sun Belts perceives as the reason for issuing the temporary moratorium. Sun Belt alleges that BCG is grandfathering its competitors in the business and, therefore,

Table 6: Phase 1 Confrontation Card Table

Sun Belt	6	2	1	4	5	3
Litigate in court				■		
Negotiate with BCG					■	■
BCG	1	5	5	2	3	4
Litigate in court		⊠		■		
Negotiate with SB					■	
Annul moratorium	■					
Enact water protection	⊠	⊠	■			
futures	SB Position	BCG Position1 (Insincere)	BCG Position2 (sincere)	SB Fallback	SB Settlement	Status Quo future
GMCR II State Number	8	1	10	3	5	2

BCG's position is that it should not choose to play the *enacting of the water protection act* card (this is represented by the use of the 'X' sign inside an empty card). In the same column, BCG should not play the litigation card since Sun Belt is not filing a lawsuit. The fourth column shows another position for BCG, which indicates that BCG is sincere in protecting the province's natural resources. In this column, BCG's position is that it will enact a permanent water protection act promulgating its temporary one.

Extra information such as all external characters who may affect the confrontation but are not directly involved, futures, and the consequences of selecting particular cards, is listed at the bottom of the card table as shown later in Table 10. Characters' rankings of futures are indicated on the card table by numbers written on the same line as their names, where number 1 is assigned to the least preferable future and a higher number means more preferred. As can be seen in Table 6, Sun Belt's most preferable future is its current position, in which is BCG annuls its temporary moratorium. This is indicated by showing number 6 above that future. For BCG, the most preferable future is either that BCG do nothing or enact a Water Protection Act. This is shown by writing preference number 5 above BCG's two positions.

Table 7 illustrates the dilemmas faced by the two DMs with respect to the other, or in relation to any potential improvements that may become available to either one. BCG knows that litigating its decision of imposing the temporary moratorium will take a long time, which in turn will strain Sun Belt's financial resources. Therefore, Sun Belt's predicament is that BCG prefers the threatened future to Sun Belt's position – litigate in court is more preferable to annulling the temporary moratorium. Sun Belt's fallback position puts no pressure on BCG to accept its position, which gives Sun Belt a persuasion dilemma. Also, Sun Belt does not have a rejection dilemma since the threatened future is more preferable to Sun Belt than BCG's position (either one). As for the threat dilemma, we believe that if BCG were sincere in managing the province's water resources, it will obdurate its stance, but will not deprecate any attempt to resolve the matter through negotiation. This is shown in the Table 6, where BCG prefers settling the issue through negotiation rather than through court. The threat dilemma, which Sun Belt has, is due to the fact that the settlement future is more preferable to Sun Belt than filing a lawsuit in court. Finally, Sun Belt does not prefer BCG's position to its own and, therefore, no positioning dilemma exists. Furthermore, since Sun Belt does not have a potential improvement from its position, there is no co-operation dilemma for Sun Belt and, consequently, no trust dilemma for BCG.

Table 7: Phase 1 Confrontation Dilemmas

	Dilemmas					
	Co-operation	Trust	Rejection	Persuasion	Positioning	Threat
Sun Belt	No	No	No	Yes	No	Yes
BCG	No	No	No	Yes	No	Yes

As for BCG, it faces both a persuasion and threat dilemma. Sun Belt prefers the threatened future to BCG's position. This will give BCG a persuasion dilemma in relation to Sun Belt, since the threatened future does not deter Sun Belt from rejecting BCG's positions – rather, it encourages it to do just that. BCG has a threat dilemma since it prefers the settlement to the threatened future. Comparing the preference ranking of these two futures to BCG and Sun Belt, we could surmise that the intensity of this dilemma to BCG is less than that to Sun Belt. BCG does not have a potential improvement to its positions. Therefore, it does not face a co-operation dilemma, and, consequently, Sun Belt does not have a trust dilemma. Finally, BCG does not prefer Sun Belt's position to its own, and, hence, it does not have a positioning dilemma.

For Sun Belt and BCG to eliminate their own persuasion dilemmas, they need to make choices inconsistent to their own preferences by acting irrationally. Sun Belt could choose to adopt BCG's positions, although both are the least preferable among the other futures, or BCG could accept to annul its temporary moratorium, thereby choosing to adopt Sun Belt's position. Another way for removing this dilemma requires either Sun Belt or BCG to work on the preferences or value system of the other character. Sun Belt can engender negative emotion toward BCG, followed by rationalization that would justify escalating the dispute to a higher level by making the threatened future worse for both of them. The difference between Sun Belt and BCG is that the latter has an abundance of time to contemplate the next move and has more power than the former. Because BCG has more power and resources than Sun Belt, the effect of its persuasion dilemma, therefore, is less intense than that of Sun Belt's. Within this frame, there is no reason to believe that they can agree on a single position. When NAFTA was enacted in January 1994, that situation created a reason for Sun Belt to interrupt the confrontation and include the option of resorting to NAFTA in its cards. This forced the frame to move on to Phase 2 of the conflict.

6.2 Phase 2

Strategic Analysis: GMCR II

In this phase, the two DMs have in total seven options; this means there are now 128 mathematically possible states. The infeasible states can be removed following similar arguments as in Phase 1. Since nothing had really changed except introducing the NAFTA option, the reasons for infeasibility that are used before are still valid in this phase. In addition, there exists another reason for infeasibility: Sun Belt will never commence a legal procedure under NAFTA and, at the same time, continue considering the option of suing BCG in local court. These two options, therefore, are mutually exclusive, which means out of the 128 mathematically possible states only 23 are feasible, as shown in Table 8, where state 2 is the status quo.

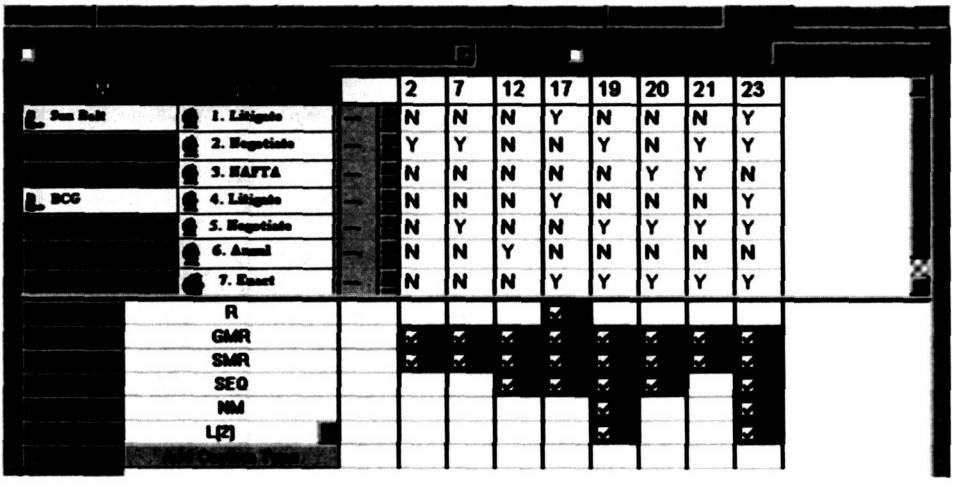
Sun Belt realized the opportunity to appeal its grievance to NAFTA. Nonetheless, its greatest preference is that BCG would annul the temporary moratorium. Since NAFTA was fairly new and untested, Sun Belt prefers to use that option only as a leverage tactic to induce BCG to annul the temporary moratorium. Other preferences remain the same as they were in Phase 1. Sun Belt's ranking of states from most preferred on the left to least preferred on the right is

$$\{12,7,11,5,10,6,8,9,3,4,2,19,23,17,22,18,20,21,15,16,14,1,13\}.$$

Table 8: Phase 2 Decision Makers, Options and Feasible States

		States																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Sun Belt																								
	1. Litigate	N	N	N	N	Y	Y	N	N	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Y	Y
	2. Negotiate	N	Y	N	Y	N	Y	Y	N	Y	N	Y	N	N	Y	N	Y	N	Y	Y	N	Y	N	Y
	3. NAFTA	N	N	Y	Y	N	N	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Y	Y	N	N
BCG																								
	4. Litigate	N	N	N	N	Y	Y	N	N	N	Y	Y	N	N	N	N	N	Y	Y	N	N	N	Y	Y
	5. Negotiate	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	Y	Y	Y	Y
	6. Annul	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
	7. Enact	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table 9: Phase 2 Graph Model Equilibria Calculated using GMCR II



BCG least prefers those states in which Sun Belt would resort to NAFTA, and most prefers to enact its temporary moratorium. In addition, to avoid repercussions from its decision to impose a permanent prohibition on bulk water exports, BCG prefers to negotiate if, in principle, Sun Belt would accept a reasonable settlement. Accordingly, BCG's ranking of states is

$$\{13,14,19,18,23,17,22,1,2,7,6,11,5,10,12,21,16,20,15,9,4,8,3\}.$$

Supplying the above information to GMCR II, the stability analysis for every state is evaluated, and the states that are equilibria and represent possible resolutions for Phase 2 of the conflict are shown in Table 9.

State 17 possesses a high degree of stability, because it is a Nash (R) and therefore also a GMR, SMR, and SEQ (see Table 1) equilibrium – a strong rational solution for both DMs. BCG will enact the Water Protection Act creating a challenge to Sun Belt to proceed and choose the litigation option, which will force BCG to litigate. Nevertheless, the actual outcome was state 23, which is a more preferred state for both DMs and also possesses strong stability, though not rational. BCG proceeded and enacted the Water Protection Act. As a result, Sun Belt filed its lawsuit for damages subsequent to the temporary moratorium in 1991, but kept the negotiation option available to BCG. To mitigate the consequences of its actions, BCG was forced to negotiate with both Sun Belt and its Canadian partner, though separately.

Dilemma Analysis: Drama Theory

Sun Belt added the NAFTA option to its own cards, and has now a second fallback that it hopes will persuade BCG to yield and annul its temporary moratorium. Table 10 shows the new card model at the moment of truth in this phase. Sun Belt's position remains the same; it hopes that BCG annuls the temporary moratorium. Although the status quo and the settlement futures remain the same for Sun Belt, it now has two fallbacks options, thus creating two threatened futures. The first fallback, column four, represents a future that Sun Belt threatens if BCG does not annul the moratorium. The second fallback, column five, represents a more escalated threat that Sun Belt may choose to play if BCG enacts a water protection act. In this threat, Sun Belt abandons the option of using the domestic courts to settle the dispute – the crossed empty card means that this card should not be played. As citizens and environmentalists expressed their concerns over the Sun Belt case and objected to exploitation of Canada's fresh water, BCG became intransigent in its position to protect and manage the province's water resources, and, hence, wanted to enact a Water Protection Act. Drama theory allows incorporating the environ-

Table 10: Phase 2 Confrontation Card Table

Sun Belt	6	1	4	2	5	3
Litigate in court			■	☒		
Negotiate with BCG					■	■
Resort to NAFTA				■		
BCG	2	6	3	1	4	5
Litigate in court			■			
Negotiate					■	
Annul moratorium	■					
Enact Water Protection Act	☒	■		■		
Consequences						
Confrontation with the federal government				■		
futures	SB Position	BCG Position	SB Fallback 1	SB Fallback 2	SB Settlement	Status Quo future
GMCR II State Number	12	13	5	15	7	2

mentalists and other characters into the current conflict through the use of the "nested" drama concept, which allows other tiers of dramas to spring from the main drama model (Bryant, 2003). A second level drama could be created that includes all characters who are not directly involved in the first level drama but whose presence cannot be ignored as they provide a context for the actions or motivation for the characters in the local drama.

The preference rankings of futures are indicated opposite each character. Sun Belt mostly prefers its position, followed, in decreasing order, by settlement, fallback 1, status quo, fallback 2, and finally, BCG's position. BCG's most preferable future is its own, while the least preferable future is the second threatened future, where Sun Belt resorts to NAFTA.

Table 11 illustrates the dilemmas that are created for each character as a result of the confrontation in this frame. The first threatened future creates a persuasion dilemma for Sun Belt since that future is more preferable for BCG than Sun Belt's position; whereas, the second threatened future does not create a persuasion dilemma for Sun Belt since it is less preferable for BCG than Sun Belt's position. Sun Belt does not have a rejection dilemma since it prefers both threatened futures to BCG's position. In addition, Sun Belt has a threat dilemma because it prefers settlement to any of the threatened futures, which vacates the credibility of its threats. After all, Sun Belt understands that resorting to litigation in domestic courts will be a protracted avenue, and approaching NAFTA is a daunting process which has yet to be tested.

BCG has a persuasion dilemma because Sun Belt prefers both threatened futures to BCG's position. Still, Sun Belt is not ready to give up and abandon its fallbacks. The existence of two threatened futures creates a situation in which BCG does and does not have a rejection dilemma. With respect to the first threatened future – Litigate – BCG prefers that future to Sun Belt's position, and, therefore, no rejection dilemma exists. Whereas, with regards to the second threatened future – NAFTA – BCG prefers Sun Belt's position to that future, and, therefore, BCG is facing a rejection dilemma. Finally, since BCG prefers settling the issue with Sun Belt through negotiation, this creates a threat dilemma for BCG. For the same reasons indicated in the first frame, neither BCG nor Sun Belt has co-operation, positioning, or trust dilemmas.

Table 11: Phase 2 Confrontation Dilemmas

	Dilemmas					
	Co-operation	Trust	Rejection	Persuasion	Positioning	Threat
Sun Belt	No	No	No	Yes/No	No	Yes
BCG	No	No	No/Yes	Yes	No	Yes

Table 12: Phase 3 Decision Makers, Options, and Feasible States

		States										
		1	2	3	4	5	6	7	8	9	10	11
Sun Belt												
	1. Litigate	N	N	N	N	Y	Y	N	N	N	Y	Y
	2. Negotiate	N	Y	N	Y	N	Y	Y	N	Y	N	Y
	3. NAFTA	N	N	Y	Y	N	N	N	Y	Y	N	N
BCG												
	4. Litigate	N	N	N	N	Y	Y	N	N	N	Y	Y
	5. Negotiate	N	N	N	N	N	N	Y	Y	Y	Y	Y

In this frame, Sun Belt's ability to remove its persuasion dilemma in the previous phase by introducing a new fallback to the confrontation creates a rejection dilemma for BCG, which is a matter of its own preference. For BCG to get rid of this dilemma, it needs to bring emotions that underline its concern for the sustainability of British Columbia's ecological system, followed by a scheme demonizing Sun Belt in the public as the one that would drain the province's water resources for commercial purposes without consideration to the environment. Not to mention that it will not be directly involved in a NAFTA tribunal, the burden will be on the Canadian federal government. As for the persuasion dilemma, BCG could make the first fallback less attractive to Sun Belt by complicating and protracting the litigation process.

6.3 Phase 3

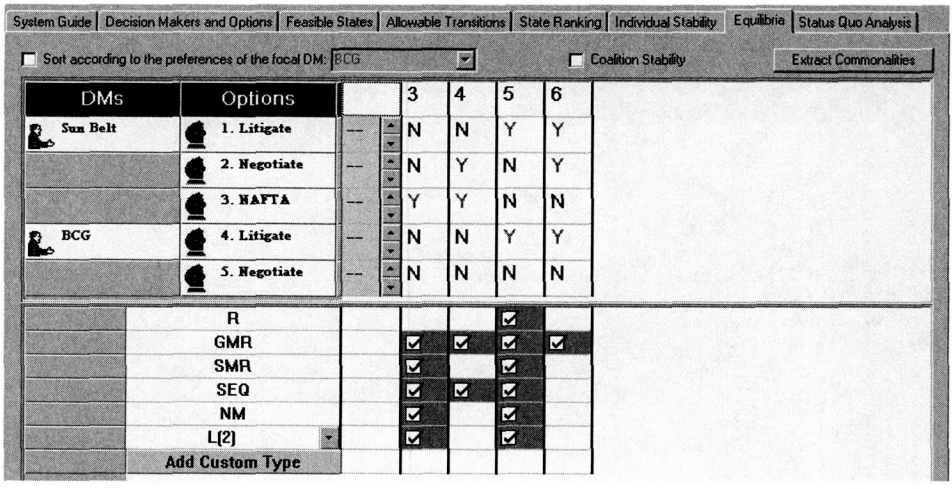
Strategic Analysis: GMCR II

By June 1995, BCG enacted the Water Protection Act. This reduced BCG's options to two: negotiate and litigate. Removing the infeasible states following reasoning similar to that which was used in Phases 1 and 2 reduces the number of feasible states to 11, which are shown in Table 12.

With the determination of BCG to strengthen its bulk water export policy, Sun Belt had to change its preference ranking. Litigation is now the most preferred option, followed by negotiation and the NAFTA option. The new ordinal ranking of states for Sun Belt is {5,11,6,3,10, 9,4,8,7,2,1}. BCG prefers negotiation over litigation, and does not like the idea of using NAFTA for arbitration. BCG's ordinal ranking of states is {1,2,5,6,11,8,7,3,4,10.9}. Using GMCR II for evaluating the stability of each state results in obtaining states 3, 4, 5, and 6 as equilibria, as indicated in Table 13.

State 5 possesses the strongest degree of stability since it represents a Nash equilibrium. The actual outcome was that Sun Belt decided not to continue its litigation and served the Canadian federal government with the notice of intent for arbitration under Chapter 11 of NAFTA. This outcome corresponds to state 3, which is, coincidently, less preferred than state 5 by Sun Belt.

Table 13: Phase 3 Graph Model Equilibria Calculated using GMCR II



To explain why, surprisingly, this happened, we need to examine the state transitions of the conflict in this phase. Figure 3 displays an integrated graph model in which the directed graphs for the two DMs are combined. The DM who controls movement between two states is indicated by writing its name near the appropriate arc. Additionally, the ranking of states for each DM is written below the integrated graph in Figure 3.

The status quo of this phase is state 7. Sun Belt and BCG are engaged in negotiations, based on the hope of reaching a satisfactory resolution to the conflict. While Sun Belt's patience is wearing thin, its attitude toward BCG has changed to hostility. As is shown in Figure 3, Sun Belt controls most of the movements in this phase and can sanction all of BCG's moves. For example, if BCG would refuse to negotiate, Sun Belt could chose to bring the conflict to state 5, which is more preferable to both DMs, but that would mean improving BCG's position. In reality, knowingly or unknowingly, Sun Belt selected a least preferred state that would make, via a strategic disimprovement, the final state worse for BCG than the status quo, in hopes that justice will be served in its next encounter with the Canadian federal government through a NAFTA tribunal. This behaviour could be deemed as irrational according to the rational choice theory, but by considering the dilemma analysis of both players, we will conclude something else.

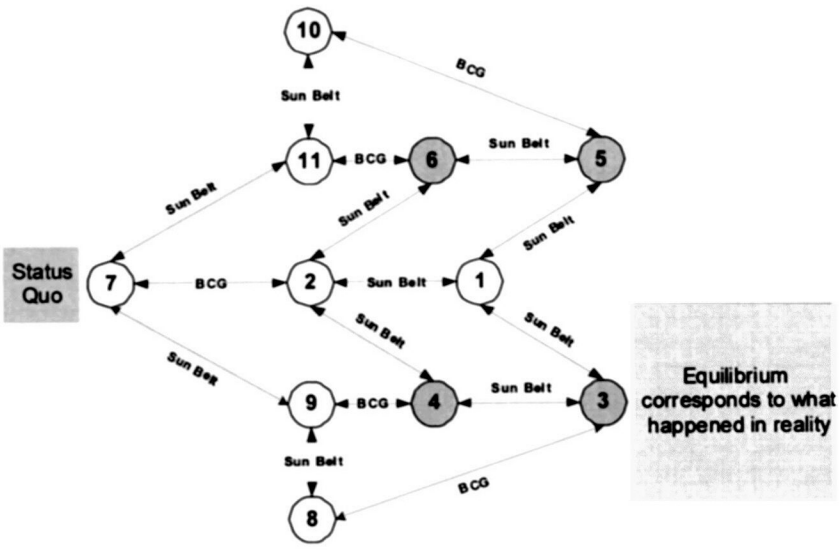
Dilemma Analysis: Drama Theory

BCG has now only two cards: 'Litigate in court', which it is always forced to do if Sun Belt chooses its 'Litigate in court' card, or continue negotiating with Sun Belt. The new confrontation in this phase at the moment of truth is depicted in Table 14.

Sun Belt has changed its preference ranking of futures. The new threatened future is Sun Belt's fallback position, where it will take its complaint of BCG's act to a NAFTA tribunal. BCG's position is not to do anything. It does not reject, however, the idea of engaging in protracted litigation in court as is shown in its preferences between different futures. Comparing Tables 14 and 15, we notice that Sun Belt's position and the threatened futures correspond to states 5 and 3, respectively, and BCG's position corresponds to state 1. Table 15 illustrates the dilemmas that both characters face in this confrontation – Sun Belt does not have any, whereas, BCG has many.

Sun Belt prefers the *threatened future* to BCG's position; this makes BCG face a persuasion dilemma. Also, BCG prefers Sun Belt's position to the threatened future, which means that BCG has a rejection dilemma. As for the threat dilemma, BCG's continuous rejection of Sun Belt's

Figure 3: Phase 3 Integrated Graph model and State Transitions



position could drive the confrontation to the *threatened future* where Sun Belt implements its fallback position. However, BCG has a potential improvement from that future by remaining at the status quo, provided that it shows some flexibility in its attitude in an attempt to change Sun Belt's preferences. Another way for BCG to get rid of its threat dilemma is by raising its valuation of the *threatened future* so as to change its preferences of the faced futures. In addition, in order to eliminate the rejection dilemma, BCG should downplay the temptation of accepting Sun Belt's position. However, the most difficult dilemma for BCG is the persuasion one. BCG needs to work on Sun Belt's value system and preferences in order to get rid of this dilemma. BCG may have prolonged the litigation procedure by not producing all of the evidentiary documents that support Sun Belt' allegation of a conspiracy while, at the same time, continuing to deceive Sun Belt into believing that it wants to fully cooperate. In real life, this did not happen and Sun Belt acted on its threat and submitted a notice of intent to the Canadian federal government, putting the onus on Canada as a state.

7. COMPLEMENTRAY ROLES OF THE GRAPH MODEL AND DRAMA THEORY

The graph model and drama theory for conflict resolution differ over two aspects: focus of interest and simplicity of preference specification. The graph model relies on the strategic analysis of a situation, taking into consideration stakeholders' options and preferences, and the search for certain stabilities that are used to predict possible resolutions to the conflict. The analyst assumes that the DMs will behave logically, within the limits of the model assumptions and the chosen solution concepts, throughout the conflict. Stability definitions assume the DMs behave in a rational way, subject to various limitations. The graph model ignores issues related to the psychology of DMs and their perceptions of uncertainties.

Drama theory, on the other hand, recognizes the importance of emotions and irrationality of players, and incorporates these concepts into the analysis process. The focus of drama theory is on how confrontations develop and how characters keep changing their positions and their understanding of the situation in an attempt to eliminate any psychological pressures they have.

Table 14: Phase 3 Confrontation Card Table

Sun Belt	4	1	3	2
litigate in court	■		⊠	
negotiate with BCG				■
resort to NAFTA			■	
BCG	3	4	1	2
litigate in court	■			
negotiate with SB				■
Consequences				
Confrontation with the federal government			■	
futures	SB Position	BCG Position	SB Fallback	Status Quo
GMCR II State Number	5	1	3	7

Table 15: Phase 3 Confrontation Dilemmas

	Dilemmas					
	Co-operation	Trust	Rejection	Persuasion	Positioning	Threat
Sun Belt	No	No	No	No	No	No
BCG	No	No	Yes	Yes	No	Yes

Therefore, it analyzes the changes that may occur in a conflict situation and how the confrontation may transmute. In doing so, drama theory drops the constraints imposed by the rationality assumption and considers the effects of DMs' temperaments on the confrontation.

In the graph model, preference specification assures the ordered evaluation of all conceivable outcomes or states. Relative preference information among states for each DM is the only thing needed for ranking the states from most to least preferred, where sets of equally preferred states are allowed. Therefore, rudimentary information about DMs' preferences is sufficient for starting the analysis, and subsequently one can refine the structure of preferences as more information becomes available. By carrying out a sensitivity analysis, one can determine the robustness of the conflict model, and the accuracy of the ascertained DMs' preferences. In contrast, preference specification in drama theory is a simple process, and is done in an unstructured way. DMs express their dispositions towards the available cards, and evaluate their own ordinal preference ranking by juxtaposing the different futures. In simple models with few DMs, this process is adequate, but for large models, the evaluation of preferences can often be imprecise, labile, and vague (Böhm and Pfister, 1996; Druckman and Lupia, 2000; Gulliver, 1979). In our drama analysis of the Sun Belt case, the opportunity of analyzing the same case using GMCR II provided us with the preference ranking of the different futures.

Notwithstanding, these disparities is the motivation for the necessity of integrating the two techniques. While, the graph model is effective in the modeling and analysis of conflicts, it does that in a strategic and static fashion. Certain realizations in the current water export dispute could not be explained by the graph model alone. For example, in Phase 1 of the conflict between Sun Belt and BCG, the graph model analysis revealed that states 2 and 10 are rational

and stable for both DMs. Any one of these states could constitute a predicated resolution. However, the conflict evolved to another phase, and the graph model could not explain why and how that happened. Drama theory showed the rationale for this transformation. Both DMs have persuasion dilemmas that sustained the tension and the negative emotions among the DMs, which they could not eliminate in that frame. Therefore, a change was bound to happen before the two DMs could converge to a single position, representing a *Strict, Strong Equilibrium*. That change included the NAFTA option in Sun Belt's cards. The graph model did not capture the dynamics of that phase at the moment of truth, while drama theory did.

In Phase 2, although the graph model suggested state 17 as a rational resolution that is strategically stable for all solution concepts, it is state 23 which actually materialized, even though it was not a Nash equilibrium. The conflict was still far from ending – at least not as long as Sun Belt still believed it had a just claim and hoped to win the case. Drama theory analysis, however, provided insights about what actually happened. It showed the psychological pressures created by the dilemmas on both Sun Belt (persuasion and threat) and BCG (persuasion and rejection). BCG made an irreversible choice by enacting the Water Protection Act of 1995 and at the same time induced Sun Belt to negotiate, hoping to dissipate Sun Belt's anger and discourage it from resorting to NAFTA.

Finally, the same phenomenon happened in Phase 3. In the graph model analysis, state 5 is the most stable and rational outcome. Nonetheless, we have noticed that the resolution of the conflict is state 3, which corresponds to a *threatened future*. Sun Belt acted against its preferences, and chose a less preferred outcome, which was not completely understood using logical reasoning. The graph model could not provide an easy explanation without concluding that Sun Belt's choice was apparently irrational. However, from the drama theory perspective, Sun Belt's lack of any dilemma meant that the threat of resorting to NAFTA was in fact a final warning conveying its frustration of pursuing the case in domestic courts. To Sun Belt, its action was sensible and did not create paradox or emotions. From a game-theoretic perspective, Sun Belt perceived the conflict as a zero-sum game.

Combining drama theory and the graph model methodologies may produce a confrontation analysis and resolution technique that is versatile and comprehensive for modeling conflicts or disputes of any nature. In particular, ethnic and environmental disputes that carry high emotional content and require diligent treatment could be more realistically studied. In this way, the dilemma elimination concepts of drama theory could mediate possible resolutions to the confrontation that are rational and emotion-free, and thus sustainable.

8. CONCLUSIONS

Every conflict or dispute burdens the parties with psychological pressures, which compel them to engage in a confrontation, and require the use of two spheres of mind: cognitive and emotional. Much of what happens in an actual real world confrontation, such as negotiation, involves attempts by the DMs to restructure the situation and alter each other's perceptions of the costs associated with no-agreement and the benefits of the proposed agreement. Some DMs need not take a position on every issue in the conflict because they may not care deeply about certain issues, thereby allowing themselves to be flexible in the process of reaching an agreement. This corresponds to the negotiation strategy of logrolling, where DMs capitalize on different strengths of preferences.

The objectives of most conflict analysis and resolution techniques are the assessment of disparities of aims and differences of perceptions among DMs as well as the finding of stable resolutions to a given situation. While characters use rational thinking in appraising the available alternatives based on a set of criteria that reflects their own preferences, the evaluation process is often susceptible to characters' feelings and various cognitive biases (Bazerman, 1994). Understanding the effects of emotion, therefore, is tantamount to the study and application of conflict analysis.

The graph model and drama theory for conflict resolution are two techniques that were used for modeling and analyzing the foregoing water export dispute. A key advantage of the graph model is that only rudimentary information is required to calibrate a model and execute an exhaustive stability analysis. This information is comprised of the DMs, the options controlled by each DM, and ordinal preference information. The decision support system software GMCR II facilitates the modeling and analysis processes based on the graph model technique (Fang et al., 1993; Hipel et al., 1997; Fang et al., 2003a,b).

Drama theory, on the other hand, is a novel technique for modeling and analyzing human interactions. It focuses on analyzing the dilemmas arising in rational debates and its effect on the emotional processes on the part of DMs. It is not concerned with characters' strategies, but with their behaviour and concomitant feelings during the confrontation (Howard, 1999). Drama theory does not supplant the graph model for conflict resolution for analyzing confrontations. The two methods can be employed in a complementary fashion. Drama theory analyzes interactions among DMs for the paradoxes of rationality, while the graph model analyzes them for stability. Hence, a new technique that focuses on characters' emotional states and rationality will be a valuable tool for modeling and analyzing confrontations.

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