

A Theoretical Framework Exploring Perceptions Affecting Decision-Making Behaviour  
of Members in an Alliance

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## **Abstract**

Negotiation and decision-making processes are complex interactions. People behave and perceive situations differently often having opposing opinions on the best course of action.

This thesis considers perceptions that influence negotiation and decision-making behaviour of members in an alliance. Alliances are formed for the purpose of advancing a common interest or establishing an agreement. While alliance members have shared interests and goals, conflict can still exist.

A game theory approach was used to develop the theoretical framework presented. The Crisis game by Vitz and Kite (1970) was chosen as the basis for the research. Crisis is set up as a NATO-type scenario. Members (players) must oppose an external threat by creating a defense fund containing resources contributed by the members. If members survive five threats and still hold resource units, they can convert these to cash as winnings. Using survival and economic gain the Crisis game captures the mixed-motive element common to many negotiation situations. While the game simulates this aspect of negotiation and decision-making well, this thesis argues that changes must be made to improve its range of application and generalizability.

In addition to critiquing and revising the Crisis game, a new theoretical model of the game is presented. The model's components are essential for developing of any model attempting to understand negotiation and decision-making behaviour. These components are: (1) perception of power, (2) perception of fairness, and (3) number of players (negotiators). Each component is based on solid psychological reasoning that includes elements of social impact theory and perceptions of previous negotiation processes. A general discussion of the model is given that outlines the advantages and disadvantages of the approach and areas for further research.

The model presented addresses weaknesses of the original Crisis game and builds on other models of negotiation to capture a broader range of situations.

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## **Introduction: Problem Being Addressed**

Conflict often occurs in communication even when two or more parties agree to work toward a solution, decision, or some other type of shared goal. Despite these intentions to work together potential for conflict is not eradicated, nor the intensity of conflict lessened. This situation is often observed in alliances such as the North Atlantic Treaty Organization (NATO) and other international bodies. In general, an alliance is formed for the purpose of advancing a common interest or establishing an agreement. While there are shared interests and goals among the members of alliances, conflict is still common during negotiation and decision-making processes. This thesis offers explanation for underlying forces driving negotiation behaviour and decision-making processes of members in an alliance, specifically those leading to conflict.

Members in an alliance can be individuals, representing themselves, or a member can be the aggregate term for a larger group. When a member is a large group, such as a member country in NATO, these groups typically have a representative who is charged with communicating on behalf of the group. For example, at the time of this writing Canada's representative to NATO is Ambassador Yves Brodeur. When representatives are negotiating they are not representing their individual self-interest but that of the larger group. Thus, they represent the self-interest of the group (e.g., Canada's self-interest).

In an alliance it is possible for members (through their representatives) to join together to create a "sub-alliance". Similar to an individual member, the sub-alliance also has its own collective self-interest. For example, several members in NATO may find it strategic to form a sub-alliance in order to advance their shared purpose (e.g., a particular stance on a security issue). In forming a sub-alliance, members create the potential to increase their influence in a negotiation process through combining resources.

Often alliances are negotiating to prevent or respond to some form of opposition (some external force, constraint, or threat) that would be detrimental to some or all of the alliance members. To overcome opposition, members are often required to contribute resources to create a “defense”. Due to variation in self-interest, each member will subjectively weigh the importance of the opposition against the importance and amount of each resource deemed necessary for contribution. Therefore, the negotiator has a mixed-motive interest in the negotiation process. They must balance both the shared-interests of the alliance and the self-interests of the group or sub-alliance they represent.

This thesis will look at negotiation within alliances. These negotiations are characterized by shared goals and intentions to cooperate. Following are examples of different types of negotiating alliances for which the new model presented in this paper could be applied to.

### **Three Examples of Negotiation Within Alliances**

The term alliance refers to the shared interest characteristic of a group and does not necessarily define the group’s structure. The structure of an alliance is defined more by the alliance’s intended purpose. Following are three examples of alliances with different purposes and structures.

**North Atlantic Treaty Organization (NATO).** A commonly known military alliance is NATO which is a large alliance made up of 28 countries from North America and Europe. NATO is tasked with guarding the freedoms of its member countries and ensuring each member’s security. Each country has a representative in NATO who acts as a spokesperson for that country. The representative’s purpose is to negotiate on behalf of the country and convey the country’s standpoint on issues regarding freedoms and



security. Decisions are made by member consensus which means negotiation is the process for decision making, not voting. NATO decisions represent the collective will of the alliance members.

Much of the negotiation in NATO revolves around the contribution of resources of member countries be it military, economic, technological, or other. These resources are limited and often spread across several endeavours. NATO members must negotiate within these constraints to ensure an adequate supply of resources is available to ward off potential attacks.

**Union Negotiations.** Union negotiations generally occur between an employee union and a corporation. Sometimes a trade or industry association may also be involved. Together these are the members of the alliance.

In a union negotiation, the broad purpose or shared-interest is to reach agreeable working terms. While all members are trying to work toward this goal, tension often occurs over how to achieve it. Corporations, industry associations and union representatives are tasked with balancing each party's self-interests (e.g., company operations, industry standards and union requests), with the shared interest of achieving agreeable work terms.

Negotiations may be over a variety of topics from safety education and training, the length of lunch breaks or wage increases. These negotiations may be constrained by limited economic resources, market demand, and overall health of the economic environment.

**C-Suite Alliances.** An example of a smaller alliance is a "c-suite" in business. C-suite refers to top-level management in an organization since most of those positions begin with the letter "C", e.g., Chief Executive Officer (CEO), Chief Financial Officer

(CFO), Chief Operating Officer (COO), and Chief Information Officer (CIO). These senior executives are responsible for high-level and high-risk decision-making. They may work toward a common vision, but negotiations over how to achieve the vision can create conflict.

In a c-suite each senior executive generally represents a different functional part of the corporation. For example, the Chief Operations Officer (COO) is responsible for the functioning of the operations of the organization, its efficiency in this area, input and output factors and all other tasks related to the operational side of the company. Therefore, a c-suite represents the alliance of the different functional areas of the organization. Each executive acts as a representative for their respective functional area, bringing their functional perspective and self-interest to the negotiation process.

During negotiations members have a shared-interest in the company remaining a going concern. How the company achieves this leads to negotiation over strategy. Often, elements of strategy are contingent on the amount and type of resources available. It is sometimes necessary to reallocate resources, constrain budgets or place projects on hold to achieve company and organizational goals. Senior management needs to negotiate and come to consensus on how to move forward.

Common threats to a c-suite alliance are generally economic based. For example, competition, market demand, and global economic turbulence can negatively affect the stability and ultimate survival of the company.

## **Conclusion**

It is known that conflict exists among alliances despite the shared-interests of its members. Regardless of structure, alliances are formed with the intention of creating an

agreement or advancing a common goal. This thesis examines underlying perceptions affecting the behaviour of alliance members and the relationship of these to the intensity of conflict.

The next chapter discusses the game theory approach used to analyse negotiation behaviours and presents the Crisis game by Vitz and Kite, which forms the basis for the new model. Chapter 3 discusses additional research based on Vitz and Kite's study, and chapter 4 notes limitations to the Crisis game and proposes changes to the game. Chapter 5 discusses Vitz and Kite's model as well as other model of negotiation behaviour. The last two chapters focus on the proposed new model. Chapter 6 introduces the proposed new model for understanding perceptions influencing negotiation and decision-making behaviours within alliances and chapter 7 is a general discussion of the model and approach.

## **Vitz & Kite Crisis Game**

Vitz and Kite developed the Crisis game in 1970 to explore factors affecting conflict in alliance negotiations. Their research is the base for the development of the theoretical model presented in the thesis. This chapter presents Vitz and Kite's research and begins with a discussion of their approach. The chapter then describes the Crisis game characteristics in detail, as originally developed by the authors.

### **Game Theory Approach**

Game theory is a method of studying real world situations by breaking these situations down into fundamental elements. Complexities and details of human interaction are left aside during game design. Having individuals play a game that mimics fundamental characteristics of a real world situation allows a researcher to determine whether particular characteristics or behaviours influence or correlate with the expected outcome being studied. "Game" suggests a leisure activity and is perhaps a poor descriptor as Myerson (1991, p. 1) criticizes offering "[c]onflict analysis", or "interactive decision theory" as more accurate alternatives. "Game Theory", however, has become the common expression and will be used throughout this thesis.

A game itself is only one part of game theory. To analyze game play a mathematical model is used to describe the structure of the game. Math models allow for the prediction, explanation and prescription of the players' behaviours (Camerer, 2003). Myerson (1991) describes the application of mathematical models in his definition of game theory:

Game theory can be defined as the study of mathematical models of conflict and cooperation between intelligent rational decision-makers. Game theory provides

general mathematical techniques for analyzing situations in which two or more individuals make decisions that will influence one another's welfare. (p. 1)

Therefore, it is fundamentally imperative to have a well-designed game and a strong mathematical model of the game structure to generate a strong analysis.

### **Rationale for Approach**

Game theory analysis according to Brandenburger and Nalebuff "focuses directly on the most pressing issues of all: finding the right strategies and making the right decisions" (1996; p. 7). Each member in a negotiation is attempting to find the best strategies and make the right decisions to serve their purpose. As mentioned earlier in chapter 1, negotiators attempt to balance both shared- and self-interests to achieve their goals.

The Crisis game highlights the mixed-motive negotiation process within alliances through the way the game is structured, thus making Crisis a good foundation for exploring conflict in negotiation (Vitz & Kite, 1970). Through the use of the Crisis game, relationships between a player's behaviour and the intensity of conflict can be identified. In addition, information on how each player strategizes during the game aids in determining psychological drivers behind behaviours and ultimately assists in explaining the intensity of conflict in the negotiation.

### **Crisis Game Overview**

Vitz and Kite's Crisis game is set up as a NATO-type alliance where the players, who represent member countries of the alliance, must survive an external threat. In the game the threat is represented by the summed total of three rolled dice. At the beginning of the game each player is given a predetermined number of resources (represented by small round discs) to use in creating a defense fund against the threat. Once players

negotiate the size of the defense fund they negotiate the amount of resources each player contributes to the fund. After the two decisions are made and agreed upon the dice are rolled. For the alliance to survive the threat the number of resources (discs) in the defense fund must be higher than the total of the three rolled dice. If the alliance survives, players go on to a second trial (round of play). All trials are the same in that the players must negotiate the size of the defense fund and player contributions. At the end of each trial the dice are rolled and survival is determined. The difference from one trial to the next is in the resources each player has. Resources are not replenished during the game and players must negotiate with what remains from each previous trail.

If the alliance continues to survive, a maximum of five trials are played. If, however, the defense fund is insufficient to oppose the threat (total on dice is higher than the number of discs in the defense fund), the alliance is overthrown, and the game ends on that trial. At the end of the game (when all five trials have been played), any remaining resources a player still possesses can be converted to cash and constitutes the player's winnings for surviving.

The possibility to receive monetary compensation at the end of five trials creates tension over the two negotiated decisions, the size of the defense fund and amount of contributions. On one hand, it is necessary to survive all five trials so contributions to the defense fund need to be adequate enough to resist the threat. On the other hand, contributing fewer resources to the defense fund could mean a greater cash reward at the end of the game. All players would agree that survival is the number one priority; without surviving the players cannot reap any monetary benefits. Players will, however, consider the shared-interest of survival and the self-interest of maximizing winnings differently.

The combination of survival and economic gain create a mixed-motive for the players during negotiations.

### **Game Characteristics**

The following subsections describe the set up and rules for conducting the Crisis game.

**Purpose of the Game.** An external threat is about to destroy the alliance. Members of the alliance (players) need to create a defense fund to ward off the threat in order to survive. To oppose the threat, alliance members must agree on the size of the defense fund and the amount of resources each member will contribute to the fund.

**Threat.** To represent an external threat, three dice are rolled and the numbers totalled. A potential threat could range from 3 to 18, with the most probable threat equalling 10 or 11. This probability is explained to the players at the beginning of the game. The reason given is there are more potential combinations that equal 10 or 11 versus 3 or 18 as only one combination equals these latter totals.

**How to Survive.** Players need to negotiate two decisions: (1) the size of the defense fund and (2) the number of resources each player will contribute the fund. In order to survive, the number of resources in the defense fund must be larger than the total of the dice. If the defense fund is greater than the threat, the alliance survives. Extra resources in the fund beyond the level of the threat (higher than the total of the dice) remain in the fund for the next trial.

**Trials, Game Length, and Player Winnings.** A trial consists of a round of negotiations and rolling of the dice. Once players negotiate and come to an agreement the dice are rolled. If the alliance survives the threat, the players move on to a second trial with any excess resource in the defense fund to put toward the new defense fund. If the

alliance continues to survive, a total of five trials are played. If the alliance survives the fifth and final trial, any remaining resources a player holds (excluding excess resources in the defense fund, these are considered “wasted”) can be exchanged for monetary compensation. These are the player’s winnings for surviving the game. Alternatively if the defense fund is lower than the total of the dice on any trial, the alliance is defeated and the game ends with no player receiving winnings..

**Number of Players.** Crisis can be played with two or more players where each player is the representative of a separate country. Vitz and Kite used 40 two-person groups in their original study (1970). Each player in these two-person groups was a representative (negotiator) for a fictional country, Alpha or Beta. Both Alpha and Beta belonged to the alliance.

**Allocation of Resources.** A total of 75 resource units, represented by poker chips (one chip equals one resource), are divided between the two players at the start of the game. These are all the resources the players will have to work with for the duration of the game. Vitz and Kite had four variations of resource allocation. Ten two-person groups played Crisis at each of the four resource variations. This means ten groups played the Crisis game with starting resources of 39 for player A and 36 for player B, another ten groups played with starting resources of 49 for player A and 26 for player B, and similarly for the remaining two resource allocations of 59 and 16, and 69 and 6.

**Mode of Communication.** In the original Vitz and Kite game, variations in communication methods (modes of communication) were explored. The Crisis game was conducted with 20 of the 40 two-person groups negotiating via an intercom, similar to a telephone, and the groups were in separate rooms (p. 238). The other 20 two-person groups were also separated in different rooms, but negotiations were conducted through



typewritten messages. A typist would type the group's message and the experimenter would then deliver the message to the group's counter-parts in the other room (p. 239).

### **Conclusion**

Through the use of game theory, Vitz and Kite developed the Crisis game to mimic alliance negotiations similar to those observed in NATO. The Crisis game effectively highlights a mixed-motive negotiation situation. It creates a scenario where negotiators are challenged to balance both shared- and self-interests. The design of the Crisis game is a good foundation for exploring behaviour and conflict in negotiations. To predict occurrences of conflict, Vitz and Kite created a math model based on the game. This model, along with other models of negotiation behaviour based on the Crisis game, is discussed in the following chapter.

## **Models of Negotiation behaviour**

Vitz and Kite developed a model of the Crisis game to predict conflict in negotiations. Alternative theories for the original findings have been proposed (Lee, 1986; Schmidt, 1988), which challenge the underlying theoretical assumptions of Vitz and Kite's predictions. Three alternative models based on the original study, as well as Vitz and Kite's model, are discussed in this chapter.

### **Vitz and Kite Model**

Vitz and Kite (1970, p. 235) predicted that conflict increases as the discrepancy in resources increases but only to a point. When discrepancies become large enough the smaller resource holder will no longer compare him or herself to the larger resource holder, and conflict diminishes. This prediction is based on social comparison theory. The authors assume resource strength acts on an individual similar to discrepancies in opinion or ability and that an individual will want to try to equalize or reduce these discrepancies. According to Vitz and Kite, through the use of social comparison theory "one can predict (a) a tendency to try to reduce resource discrepancy on the part of the smaller member; and (b) a tendency to cease comparing with those who are very discrepant" (p. 235).

Using the Crisis game, Vitz and Kite developed a mathematical model to predict conflict at various resource allocation levels. Their model produces an upside-down-U shaped (curvilinear) function, " $\cap$ ", showing the increase and subsequent decrease in conflict. There are three components to the Vitz and Kite model. The first component is the "importance of discrepancy" (ID). This is the difference between the proportional resources of the two players. For example, if player A has 80% of all resources and player B has 20%, the importance of discrepancy would be  $.80 - .20 = .60$ . The second

component is the “pressure to reduce discrepancy” (PRD). This calculation is proportionally related to the first component and expressed as  $1 - ID$ . This second component connects to social comparison theory. The lower resource player is motivated to close the gap (discrepancy) between his or her resources and those of the other player. Finally, “conflict” (C) is the multiplicative function of the importance of discrepancy and the pressure to reduce discrepancy, expressed as  $C = ID * PRD$ .

From this model, the authors predicted the highest level of conflict would occur in a negotiation when proportional resources between two negotiators were 75% and 25%. In the Crisis game, the closest allocation of resources to this prediction is a 78% and 21% split between player A and B respectively, with a discrepancy of  $.78 - .21 = .57$ . Therefore, it is at this resources allocation Vitz and Kite anticipated the highest level of conflict. In actuality, the data showed a peak (highest level of conflict) when the allocation of resources was 65% and 35% with a discrepancy of  $.65 - .35 = .30$ . Vitz and Kite explain, that while the findings support the curvilinear function between resource discrepancies and conflict, there is little support provided for the prediction of conflict to be highest with a .57 discrepancy. Vitz and Kite state that “[u]nfortunately, the data are not stable enough to test if the obtained peak is significantly deviant from the predicted“ (p. 241).

### **Lee Model**

Lee (1986) proposed an alternative explanation for the conflict noted by Vitz and Kite. In her research, she claims it is players’ fairness strategies that create conflict. A fairness strategy is a player’s perception of fairness, which is based on a set of criteria or principles. Lee asserts that this more complex cognitive function is the underlying driver

behind the intensity of conflict within negotiating alliances. According to Lee, player's use fairness strategies to determine their resource contributions to the defense fund. Lee concludes that it is the differences in players' interpretations of fairness that creates conflict, and not discrepancies in resource allocation as Vitz and Kite suggest (p.16).

In her study, Lee (1986) defined five different fairness strategies that a player could employ in the Crisis game. Lee presents mathematical expression for each fairness strategy, but upon close examination it was found that three of the expressions fail to accurately capture the strategies definition. Table 1 presents new formulas, based on Lee's descriptions, for the strategies of absolute difference maintained, proportional division of winnings, and equal division of winnings (see Table 1 on page 16, equations (c), (d), and (e)).

Lee's five strategies are divided into short- and long-term focus. This is because two of the strategies (a and b) focus on fairness perspectives relating to resource contribution to the defense fund for a single round of negotiations (one trial). The remaining three strategies (c, d, and e) have a long-term perspective

Strategy (a) has a proportional perspective of fairness. This strategy implies that players should act fairly by contributing resources to the defense fund based on the proportion of total resources the player possesses. For example, players agree the defense fund is to be 10 resource units. Player A has 60% of all resources and player B has the other 40%. If player B uses a proportional fairness strategy, he or she would expect player A to contribute 60% of the resources to the defense fund (a total of six resource units). Player B would then contribute the remaining four resource units to the defense fund.

Strategy (b) employs an equity perspective of fairness. This implies that each player share the burden of contribution equally. For example, say the defense fund is

again 10 resource units. Player A and B have 60% and 40% of total resources, respectively. If player A uses an equality perspective of fairness, he or she would want to contribute five resource units to the defense fund, and expect Player B to contribute the same. In this strategy both players contribute equal resource units to the defense fund regardless of the amount each player holds.

Both strategies (a) and (b) have a low-cost motive. A player uses these strategies so that contributions to the defense fund consume as few resources as possible. As Lee notes, the player with fewer resources will opt for a proportional strategy, as it has the least cost to their country's resources; and, the player with more resource units will employ an equality strategy, as this will be the least costly to their country's resources. By choosing the strategy that requires the least amount of resource units to be contributed to the defense fund, a player is increasing the potential for more winnings at the end of the fifth trial.

Long-term strategies (c), (d), and (e) focus on the division of winnings at the end of the game. Strategy (c) maintains the absolute difference between the two players resources for the five rounds of negotiation. This strategy employs the concept of equal division of costs over each trial. At the end of the game, the difference between the two players amount of resources is the same as it was at the beginning of the game. Strategies (d) and (e) focus on expected winnings at the end of the game. Players agree to divide winnings either proportionally, strategy (d), or equally, strategy (e). Therefore, fairness is connected to the allocation of resources to the defense fund over the five trials (the entire game) as oppose to a single trial.

Table 1

*Mathematical Expressions of Fairness Strategies Based on Lee's Model*

Strategy	Equation
(a) Proportional Division of Costs (PC)*	$PC = (P_A/T_x)DF$
(b) Equal Division of Costs (EC)*	$EC = DF/2$
(c) Absolute Difference Maintained (AD)**	$AD = DF/2$ for each trial
(d) Proportional Division of Winnings (PW)***	$PW = (P_x + P_y)(P_x/T_1)$
(e) Equal Division of Winnings (EW)***	$EW = (P_x + P_y)/2$

*Note.*  $P_A$  = Total current resources of Player A;  $P_B$  = Total current resources of Player B;  
 $T_x$  = Total number of resources for a particular round; DF = Amount of defense fund for a single round. Adapted from "A Fairness Model of Conflict and Negotiation in Alliances", K. Lee, 1986.

\* Short-term strategies, maintained for a single trial

\*\* Long-term strategy, maintained for all five trials

\*\*\* Long-term strategies, agreed to for all five trials, and calculated at the end of the game

**Schmidt Model**

Faye Schmidt (1988) used the Crisis game to explore negotiation behaviour leading to conflict among members of an alliance. Several factors were identified as contributing to negotiation behaviour among members of a mixed-motive alliance: (1) mutual dependence of members to achieve the alliance goal of survival, (2) perceived power of members, and (3) a members fairness strategy used as a means to achieve individualistic goals and justify negotiation stances. In combination, these factors are used to predict levels of conflict and economic realizations in mixed-motive negotiating alliances.

Schmidt's work builds on Vitz and Kite's model and the fairness models developed by Lee (1986). The insight of dependencies in Schmidt's model adds another dimension to understanding causes of conflict within alliances. Schmidt's results mirror those of past researchers (Vitz & Kite 1970; Lee 1986), and her model gives stronger reasons for why conflict occurs beyond resource discrepancies.

## **Conclusion**

Various researchers have proposed new models of conflict and negotiation behaviour based on the Crisis game. These models consider factors affecting negotiation behaviour and conflict among members in alliances. Vitz and Kite offer rationale for conflict based on social comparison theory and economic discrepancy. Lee and Schmidt expand upon the economic discrepancies, providing a more complex psychological rationale for the existence of conflict in a mixed-motive intra-alliance negotiation.

The following chapter examines limitations of the structure of the Crisis game and what changes should be made to improve its generalizability.

## **Crisis Game limitations and Proposed Changes**

This chapter focuses on the structure of the Vitz and Kite Crisis game. Discussion in this chapter considers the game's purpose, its design strengths and weaknesses, and its range of application. Once limitations are identified, proposed changes are recommended. The chapter begins with a summary of the original Crisis game and ultimately ends with a recommended revised version of the game.

### **Summary of the Vitz and Kite Crisis Game**

Vitz and Kite (1970) developed the Crisis game to study factors affecting negotiation behaviour within alliances. They were interested in predicting which factors were influencing the intensity of conflict among alliance members. To conduct their research the authors used a game theory approach in order to mimic fundamental aspects of real-world negotiation situations.

Crisis game creates a NATO-type scenario in which members of an alliance must survive an external threat, which is represented by the summed total of three rolled dice. To survive, members (players) need to contribute resources to a defense fund and the number of resource units in the fund must exceed the sum of the dice. The players are instructed to negotiate two things: (1) the size of the defense fund, and (2) the amount of resource units each player will contribute to the defense fund. At the beginning of the game each player is given a set amount of resource units. If the players survive five rounds of negotiation, any remaining resource units a player holds can be converted to money and becomes the player's winnings. If they do not survive, the game is over and no payoff is received.

Forty groups of two were used to play in the original Crisis game experiment. These groups were asked to imagine themselves as members of an alliance who were



representing a nation during negotiations. Two modes of communication were used for negotiating during the experiment. One was an intercom system (similar to a telephone) where players spoke to one another while they remained in separate rooms. The other was a typewritten system where players would dictate their message to a typist, which was then delivered to the other group in a separate room.

### **Limitations of the Crisis Game Structure**

Vitz and Kite attempted to simulate negotiations within alliances. In some aspects they achieved this goal. The combination of shared- and self-interest in the Crisis game (survival and payoff) creates a non-zero sum mixed-motive game that captures the complexity of many alliance negotiations. Negotiators often have to balance varying and sometimes competing objectives. Also, negotiations regarding economic resources are common across industries, governmental levels, and cultures, thus adding to the range of application of the game. While at first glance it seems Vitz and Kite captured fundamentals of alliance negotiations, a deeper look reveals significant structural issues with the Crisis game that limit its real-world replication.

One major limitation of the Crisis game structure is the modes of communication used in the original experiment. The intercom system and typewritten messages are used with the negotiators (players) separated in different rooms. This limits the application of the game to these two modes of communication. Since the study, globalization and technology have significantly changed the way people communicate. Regardless of the advancements in technology, the author's structure of the game fails to consider a timeless and important mode of communication, face-to-face. Lack of exploration of face-to-face communication in the game limits the ability of the game to mimic these

types of negotiation situations. This greatly decreases the range of application of the game in a world where face-to-face negotiation is the norm.

A second major shortcoming of the game structure is the limitations around using only two-person groups. Some negotiations are only between two parties while most have more negotiators involved. Vitz and Kite do mention that players can be added to the Crisis game (they explored this but not systematically) but their research does not examine the implications of an additional person. Adding another player changes the way the negotiation takes place and affects negotiation behaviour. There is now another person that must agree to the size of the defense fund and player contributions. Another player involved in the negotiations creates a social impact that affects the relationships and behaviours among the negotiators. An increased number of players in the game have a significant influence on the negotiation behaviour of other players. Vitz and Kite did not account for the multifaceted impact another player would have on behaviours. Even though the game structure alone may be able to handle an additional person, the math model is weak in handling the implications of the extra player(s). This same argument also holds true in considering the existence of sub-alliances.

For the potential of a sub-alliance to form in the Crisis game there must be at least three players. Sub-alliances are a common occurrence in negotiations within alliances, especially in international ones such as NATO or the World Trade Organization (WTO). Limiting the game to dyads restricts the potential for sub-alliances to emerge and affect negotiation behaviour. Vitz and Kite mention more players can be added to the game, but their model does not expand well to capture the effects of sub-alliances on negotiation behaviour. The model incorporates additional players through an additive mechanism, but

does not recognize the multiplicative impact of more players. This again limits the game's range of application.

Finally, the Crisis game does not account for the negotiation relationship or history between players. During the negotiation process players create a negotiation relationship between them. This relationship can be perceived as being positive, negative, or neutral. How a player perceives the negotiation process can influence future negotiations among the same players.

Vitz and Kite have players negotiate five times in the Crisis game. Each negotiation is somewhat dependent on the next, creating a partial resemblance of a historical negotiation relationship. It is partial because the Crisis game could be perceived as a single negotiation process with five intermittent negotiations (the five trials). Rationale for this argument is as follows: At the beginning of the game players are given a set sum of resource units, which is not replenished. Self-interest motivates players to negotiate each trial with intentions of contributing as few resource units as possible (maximizing winnings at the end of the fifth trial). Therefore, each intermittent negotiation is part of the larger negotiation through the possibility of payoff. As a result, the Crisis game captures only part of the history of the negotiation relationship between players.

A negotiator's behaviour is affected when their goal is dependent on the outcome of a previous or future negotiation. This is because the negotiator recognizes that each negotiation is linked in terms of outcomes. A negotiator will then strategize according to the final (or arguably the most important) outcome in the string of linked negotiations; the negotiator's behaviour is influenced by the past and potential future negotiations.

On the other hand, when negotiations are not as closely linked, a negotiator can strategize according to the desired outcome for a single negotiation. Negotiators are no longer influenced by future negotiation outcomes and are less affected by adverse consequences of their behaviour (as it relates to the immediate outcome being advanced). As Welsh (2004) mentions, the absence of past and future negotiations creates a situation where self-interest will drive the negotiators strategy. Negotiators will be motivated to achieve the best outcome for themselves, rather than for the group. This situation is not all that common in alliances as members negotiate often with one another. It is important to recognize that while negotiations in alliances can be linked in their outcomes (e.g., the Crisis game), there are times when the negotiations are less dependent on previous agreements. When this occurs, perceptions of past negotiations can influence behaviour. If a past negotiation process was perceived as negative a negotiator may not be as interested in preserving the negotiation relationship (at least for a short amount of time). He or she may act in a begrudging or stubborn way as a form of retribution. For example, consider a budget negotiation where the CFO is unwilling to listen to the CIO's request for a budget increase to improve the efficiency of the organization's technological infrastructure. As a result the CIO may be less inclined to vouch for a technological upgrade for the CFO during negotiations on the re-evaluation of organizational technologies.

Lack of consideration of negotiation history dismisses a vital factor influencing negotiation behaviour in alliances. Members of alliances negotiate with one another regularly on ever changing issues and topics. The relationship these members have with one another in decision-making is a major factor in determining levels of conflict.

Ignoring the influence of past negotiation encounters limits the understanding of conflict among members of negotiating alliances. This decreases the generalizability of the game.

Vitz and Kite capture the mixed-motive aspect of alliance negotiations well but fail to incorporate other important features in their Crisis game. Face-to-face negotiation is not examined and the implication of additional players is not systemically explored. The game also does not have a strong mechanism for eliciting consequences of a previous positive, negative or neutral, negotiation process. The shortcomings of the Crisis game limit its ability to adequately simulate real-world alliance negotiation situations.

To address the limitations of the Crisis game, changes are proposed to increase its range of application and generalizability. These changes are discussed in detail in the following section.

### **Proposed Changes to the Crisis Game**

In their original study, Vitz and Kite (1970) had players negotiate with one another through the use of either an intercom or a typewritten message delivery system. Modern-day versions of these situations would be negotiation via the telephone and e-negotiation, which is negotiation through electronic media, such as email . In the original game players did not negotiate face-to-face. This limits the application of the results to the two modes of communication used.

Face-to-face communication reflects the type of environments in which many negotiation situations occur. At present it is common to hear of a manager flying across the world to have a meeting, even a brief one, face-to-face with suppliers or clients. International government bodies (e.g., NATO, United Nations (UN), WTO, International Monetary Fund (IMF)) regularly meet in person to discuss important international issues. Face-to-face communication is linked to cooperation in mixed-motive negotiation

situations (Drolet & Morris, 2000). Cooperation is a key characteristic of an alliance. Therefore, face-to-face communication is representative of real-world mixed-motive alliance negotiations and should be an additional mode of communication in the Crisis game structure.

Without face-to-face communication the complexity of negotiation behaviours that occur in these types of situations is left out. It is essential to mimic the negotiation environment in which these behaviours exist in order to understand factors affecting decision-making behaviour in alliances. The generalizability of the game significantly improves by changing the game to include players negotiating face-to-face.

Another recommended change is the expansion of the game beyond a two-person negotiation. Vitz and Kite's used forty groups of two in their study. It is recommended that a minimum of three persons be involved to stimulate more complex negotiation situations. The majority of negotiation situations involve more than two parties. Studying the behaviour between a dyad can be insightful, but conclusions are not necessarily transferrable to larger groups of negotiators. This is due to the multifaceted impact another player has on the negotiation behaviour of others. Incorporating three, four or more players in the Crisis game changes the relationship, strategy, and general behaviour of the other players. This is an important concept to realize if one is to understand negotiation and decision-making behaviour within alliances. The impact of additional players is crucial.

One particular insight of adding another player, which is lost in observing dyads, is the effect the formation of sub-alliances can have on player behaviour during negotiation. It is common in international alliances for sub-alliance to form. A sub-alliance shifts the dynamics of power, relationship, and negotiation strategy. Players who

form a sub-alliance during the game can pool resources and increase their influence in the negotiation process. It can be a strategic move. A real-world example is when countries align themselves to achieve a particular trade agreement during WTO negotiations. Incorporating the ability for sub-alliances to develop, or planting them through the use of a confederate, captures the intricacies of behaviour that occurs beyond a dyad negotiation and broadens the application of the game.

It is also recommended that the game incorporate the perception of previous negotiations. Once players have survived the first round they have created a history of negotiating with one another. This means they have established a negotiation relationship. Psychological elements of previous negotiations have effects on current and future rounds of negotiation and should be considered when examining behaviour (Welsh, 2004).

One way to incorporate the element of history is to consider giving players additional resources throughout the game. This loosens the connection of one round of negotiation to the next. As mentioned earlier in chapter 4, the Crisis game can be thought of as one large negotiation as resource contributions for each trial are connected to payoff at the end of the game. Adding resources throughout the game (perceived as random by the players) decreases the level of predictability a player has on potential winnings. Self-interest strategies of maximizing winnings will remain with the addition of resource units. It is anticipated that since the players are unaware of the scarce resources, from one trial to the next, their strategies and behaviours will be more influenced by the negotiation relationship. For example, in trial one player A - the large resource player, is aggressive in their negotiation tactics toward player B - the smaller resource player. Player A justifies this based on his or her superior resource level. In trial two, additional resources are allocated such that player B now becomes the larger resource player. During trial two

negotiations, player B is less willing to accept an offer from player A. Player B justifies this based on his or her perception of player A's aggressive tactics in the preceding trail. Player B is now holding a grudge toward player A because of the negotiation history. This example highlights how history and negotiation relationships can influence future negotiation behaviour.

All the recommendations improve the game's ability to simulate real-world negotiation situations within alliances. These changes address fundamental elements of negotiation behaviour that previously were not considered or included. With the proposed changes to the original game structure the revised Crisis game has a broader range of application and generalizability.

## **Conclusion**

Recommended changes have been made to the original Crisis game structure to increase its range of application. The goal of the recommendations is to improve the game's generalizability and real-world simulation of intra-alliance negotiations. Changes to mode of communication and an increase to the number of players have been made to improve application. These changes reflect the common structures of negotiation settings, which tend to be face-to-face and consist of more than two negotiators. The addition of more players not only influences negotiation behaviour of others but also creates potential for sub-alliances to develop (a common occurrence within alliance negotiations).

History in the context of a negotiation relationship is put forth as a major psychological element to consider when observing and simulating negotiation behaviour among members of an alliance. Adding resources throughout the game is a mechanism for allowing negotiation relationships to influence player behaviour. These changes create



a revised Crisis game for which a new model for understanding negotiation behaviour is built upon.

Before exploring the proposed new model of negotiation behaviour in Chapter 6, the following chapter is dedicated to discussion of Vitz and Kite's Crisis model and other models of negotiation behaviour.

## **Limitations of the Vitz & Kite Model and Other Models of Negotiation Behaviour**

This chapter begins with an examination of Vitz and Kite's Crisis model and discusses limitations of their design. The chapter concludes the discussion with a brief critique of both Lee and Schmidt's models of the Crisis game.

### **Summary of the Vitz & Kite Model**

Vitz and Kite's model predicted conflict in an alliance to be a curvilinear function (an inverted U). Conflict would first increase, reach a peak or the highest point of conflict and then decrease. The authors believed the source of the conflict was due to a player's desire to reduce resource discrepancy. Their prediction is based on social comparison theory. This theory suggests that when a person is quite discrepant in comparison to another (e.g., one has less of a particular ability than another) the "disadvantaged" person will attempt to equalize or decrease the discrepancy. There comes a point where the discrepancy can be so large that a disadvantaged person no longer attempts to reduce the discrepancy. This results in decreased conflict that creates a curvilinear function.

Vitz and Kite developed three components for their model using social comparison theory as a base. These components are: (1) the importance of discrepancy (ID), which is the difference between the proportional resources of the two players; (2) the pressure to reduce discrepancy (PRD), which is based on social comparison theory; and (3) the level of conflict (C), which is predicted to be the result of multiplying the importance of discrepancy by the pressure to reduce the discrepancy, expressed as

$$C = ID * PRD.$$

Vitz and Kite (1970) accurately predicted the pattern of conflict within negotiating alliances but there are major considerations that the authors failed to address. These

considerations and other shortcomings of their model are discussed in the following section.

### **Limitations of the Vitz & Kite Model**

Vitz and Kite's model predicts conflict as a response to resource discrepancy, but there is little psychological reasoning for why the conflict occurs. Myerson (1991) observes that models can be extreme in their simplicity or complexity. Myerson states, "[a] model structure that is too simple may force us to ignore vital aspects of the real games that we want to study. A model structure that is too complicated may hinder our analysis by obscuring the fundamental issues" (p. 37). This paper argues that Vitz and Kite's model is too simplistic. It ignores fundamental psychological drivers critical to the study of conflict in negotiating alliances. A weak explanation based on social comparison theory is given to describe reasons for conflict. The authors fail to give a convincing argument for the underlying motive or force that would cause a player to want to equalize or reduce a gap in resources.

Another shortcoming of the original Crisis game is its limited range of application. The model lacks complexity necessary to predict a variety of negotiation situations within various types of alliances. Schmidt (1988) poignantly remarks, "...there are weaknesses in the operationalization of Vitz and Kite's assumptions that make them difficult to test or interpret psychologically," and "...it is unclear what either factor in their model is or how they can be measured" (p. 5).

The authors weaken the key assumption of their predictions when they explain that observations of negotiation content did not align with expectations based on social comparison theory. Camerer (2003) explains, however; "If people don't play the way the theory says, their behaviour has not proved the mathematics wrong, any more than

finding that cashiers sometimes give the wrong change disproves arithmetic” (p. 5).

While this may be true, the authors recognize “social comparison rationale is based solely on the aspiration of the disadvantaged negotiator, while our observations implicate both parties” (p. 241). Camerer’s comment speaks to player’s behaviour while Vitz and Kite’s comment speaks to the foundational assumption of their model. This compromises the very cornerstone of their model and creates a lack of confidence in the strength of predictions and range of application.

### **Limitations of Other Models of Negotiation Behaviour**

Schmidt (1988) argues that Lee’s (1986) equal division of cost strategy is problematic. The application of the strategy is limited by the amount of resources held by the smaller resource player. If one player has 6 resource units and another has 69 resource units, the strategy is limited by a maximum of six as this consumes all the resources of the smaller player. There are many instances where the limits placed on equal contribution to the defense fund would create a fund below the most probable threat and jeopardize survival. According to Schmidt (1988), the only situation in which a fairness strategy of equal contribution can be employed is when resources between two players are equal, and therefore, proportional and equal contribution strategies also equal (1988, p. 42).

### **Conclusion**

This chapter has criticized Vitz and Kite’s Crisis game model of being oversimplified, and possessing weak psychological grounding. This results in a narrow range of application. These limitations greatly decrease the model’s generalizability of predictions. Other models, based on the Crisis game, have addressed some of these limitations. These models provide stronger psychological reasoning for conflict and alternative mathematical models that have better generalizability. Both Lee and Schmidt’s

models offer more compelling psychological reasons for conflict. Schmidt's model in particular has greater generalizability over the original.

There are, however, fundamental aspects of negotiations within alliances still not addressed. The next chapter addresses these limitations by discussing essential theoretical components necessary in the development of a new model for understanding conflict and other decision-making processes in alliances.

## **A Proposed New Model Exploring Perceptions Influencing Decision-Making Behaviour of Members in an Alliance**

This chapter discusses the necessary elements for developing a new model to explore negotiation behaviour among members of an alliance. The theoretical model presented provides a rationale for factors underlying decision-making behaviours during negotiation. The generalizability of this model allows for the exploration of various negotiation and decision-making behaviours within alliances. This discussion will focus mainly on factors influencing conflict within negotiations.

The chapter begins with an overview of the model describing the model's components, purpose, and broad predictions. Following the overview is a detailed explanation of the theoretical components of the model. The final section of this chapter, presents a proposed new model for exploring perceptions that influence negotiation behaviour of members in an alliance.

### **Overview of the Model**

A model consisting of three components is used to examine negotiation behaviour among members of an alliance. Together these components offer strong reasoning for decision-making behaviours and the intensity of conflict. Each component is built on psychological theory and represents the effects of different influencers on behaviour. The model's components capture more complex negotiation behaviour and broaden its range of application beyond the original Vitz and Kite model (1970). The three components of the model are:

1. A player's (member's) perception of his or her own power within the alliance.
2. A player's strategy based on fairness.

3. The number of members involved in the negotiation conversation (whole alliance, sub-alliance, or individual member).

Underlying these components are elements of social impact theory and the history of previous negotiation processes. Revisions made to the Crisis game also play a role in the conceptualization of some of the components. A more detailed explanation of the influence underlying factors have on the components is discussed in later sections. Constructing a solid psychological foundation for the model, and increasing real-world simulation, enables more detailed predictions to be made regarding negotiation behaviour of members in an alliance.

The following sections describe each component in detail. Discussion includes explanation of the psychological factors and rationale for the inclusion of each component in the model.

### **Perception of Fairness**

During negotiations perceptions of fairness can influence negotiation behaviour. In a negotiation the intention is to find an acceptable agreement among between two or more parties. Often negotiators are trying to “win” the negotiation or at least come to an agreement they believe to be fair according to their perception of fairness (Welsh, 2004, p. 754).

Perceptions or definitions of fairness are widely subjective, as individuals use different forms of valuation to determine what is fair. In the context of the Crisis game, definitions of fairness are connected to the allocation of resources through the associated benefits of survival and economic gain. Valuating fairness according to expectations of benefits is called distributive fairness. Welsh (2004) states “[t]he concept of distributive fairness focuses on the criteria that lead people to feel that they have received their fair

share of available benefits – i.e., that the outcome of a negotiation or other decision making process is fair ” (p. 754). In the Crisis game, survival and maximization of winnings are the available benefits. While there is a shared goal of survival, the players will often disagree on what a fair strategy or decision process is in achieving this goal. This is due to differing criteria players apply in determining their perception on what is fair (Welsh, 2004, p. 754).

Conflict can still occur when players agree that survival of the alliance is the priority (simply because without surviving no economic gain can be realized) and are motivated to act fairly due to the cooperative nature of alliances. According to Manzini and Mariottie (2005), even though “members of an alliance [players] share the same preference ordering over the feasible alternatives; ... their preferences differ in ‘intensity’. In other words, members [players] exhibit different degrees of keenness on a common good” (p. 129). In Manzini and Mariottie’s statement it is possible to interpret keenness as a form of risk aversion (especially when considering the context of the Crisis game).

A player’s level of risk aversion influences the amount of resources the player deems adequate for the defense fund in order to mitigate the threat. Risk aversion influences the size of the defense fund and subsequent fairness strategies influence the amount of resources a player is willing to contribute. If players have high-risk aversion, they will want to have a larger defense fund to lessen the probability of alliance annihilation. The result is more resource units will need to be contributed. There is a positive relationship between risk aversion and resource contribution; higher-risk aversion leads to higher resource contributions from players and low-risk aversion leads to lower resource contributions from players. The level either inflates or deflates the



amount of resource units determined as fair. This is because the amount of resource units contributed is a direct result of the size of the defense fund. Players determine the responsibility of contributed resources based on their particular fairness strategy. This brings us to the first assumption.

**Assumption 1: Fairness Strategy**

Each player will want to maximize their potential winnings and will choose a low-cost fairness strategy, which is influenced by their level of risk aversion, for individual resource contribution to the defense fund.

Underlying the fairness strategy a player chooses is a player's perspective of fairness. Lee (1986, p. 15) observes that the fairness strategies used most often in the Crisis game were the strategies based on cost (strategies a and b, see Table 1, page 16). Thus, players tend to have a cost perspective of fairness. While distributive fairness perspectives focus on benefits, it is possible to view the criteria that form these perspectives through a cost lens and apply them to the Crisis game. For instance, an equity perspective of distributive fairness states that a person's share of benefits is directly proportional to their contribution (Welsh, 2004, p. 754). In the Crisis game all players share survival equally as it is something that cannot be divided among individuals, but winnings are not necessarily shared equally or proportionally among players. If we use a cost lens, we can apply the principle of equity to the cost of contribution to the defense fund. This implies that a player's contribution is directly proportional to the percentage of total alliance resources he or she has during a single round of negotiations. A player with an equity perspective of fairness would employ strategy (a) Proportional Division of Costs (PC) expressed below (previously defined in Chapter 3):

$$PC = (P_1/T_x)DF \tag{1}$$

A second perspective of fairness is equality. Again, the equality perspective of distributive fairness focuses on benefits where each person shares benefits equally (Welsh, 2004, p. 754). This is true with the benefit of survival, but it is not the case with winnings. Using a cost lens we can apply this perspective to the Crisis game as was done previously with the equity perspective. A player using the equality perspective would expect each player to contribute an equal amount of resources to the defense fund. This is the fairness strategy of equal division of cost and is expressed below (previously defined in Chapter 3):

$$EC = DF/2 \tag{2}$$

For strategy (d), proportional division of winnings and (e), equal division of winnings (see Chapter 3 for a detailed explanation), it is possible to apply an equity and equality perspective of distributive fairness (not viewed from a cost perspective). This is because these two strategies focus on the benefit of winnings. For either of these strategies to be employed, players must agree that if they survive, the winnings will be distributed fairly. Players must also negotiate on what is fair, a proportional division of winnings (based on initial resource allocation (Lee, 1986, p. 7)) or an equal distribution of winnings. For these two strategies to succeed both players must agree to the negotiated terms of shared winnings and their distribution without changing the agreement on any round. There is little psychological reasoning for using these fairness strategies when considering negotiations within alliances. These two strategies do not simulate real-world alliance negotiation situations well and will not be considered in the model being presented.

The strategy of maintaining absolute difference, strategy (c), is also not considered. This is for the same reason as strategies (d) and (e), a need for continual

agreement to the negotiated terms of the strategy over the five rounds without changing or renegotiating the terms on any one round. This does not necessarily mimic fundamental aspects of real-world alliance negotiation. There is also little psychological evidence for why a player would choose a strategy where absolute difference is maintained.

The following predictions can be made based on the assumption that players will wish to maximize their potential for economic gain and the cooperative nature of alliances:

1. Regardless of the existence of conflict or disagreement, players will attempt to cooperate due to the shared-interest nature of alliances.
2. Each player will prioritize survival over economic gain in order to create potential for economic gain.
3. Each player will have different levels of risk aversion and therefore each player will subjectively weight the importance of survival and economic gain.

### **Fairness Continuum.**

#### **Assumption 2: Optimal Position**

A player's resistance to influence will increase the further he or she is coaxed away from their optimal position on their fairness continuum.

Each player, who negotiates in the Crisis game, has a preferred amount of resources they wish to contribute to the defense fund. These preferred amounts of contribution will be referred to as a specified player's optimal position (player A's optimal position, player B's optimal position, etc.) and are based on a player's fairness strategy. Each player's optimal position can be placed a their specific contribution continuum. A player's contribution continuum represents various amounts of resources that the player could contribute to the defense fund, given their current resource holdings. Each point on the continuum represents the percentage of resources the player can

contribute to the defense fund. From the other perspective each point also represents the percentage of resources the player could not contribute to the defense fund. The extreme right of the continuum represents an alliance fund made up of all available resources from the specific player identified. The extreme left represents an alliance fund mix that has no resources contributed to by the specified player. That is, some combination of resources from other members of the alliance makes up the fund. The assumption is that players, due to their minimal cost perspective of fairness, will have optimal positions closer to the left side of the continuum. This is because players are trying to decrease the amount of resources contributed to the defense fund so to maximize their payoff at the end of the game.

Figure 1  
Player A's Fairness Continuum



It is assumed that players will want to increase their potential winnings and negotiate according to this goal. Schmidt (1988) states:

... that both negotiators will subjectively rate payoff as an important goal and that both will want to maximize their individual financial position (a form of economic rationality). As a result, ... both parties will want the other player to contribute more than their proportional share. (p. 43).

This infers that a player would want to contribute less than their proportional share of the defense fund. This means a player is asking another to take on more of the cost of resource contribution. As Welsh (2004) notes:

Even when negotiators express a desire to be fair and to allocate resources in a manner that is equitable, their definitions of “equitable outcomes” are almost inevitably affected by self-interest or an “egocentric bias”. People value their own contributions much more highly than they value the identical contributions of others. (p. 758)

Players value their scarce resources differently depending on their relative amount. An increase or decrease in contribution is evaluated differently from each player’s perspective. For example, 100 resource units are divided between two players at a 75/25 split and the defense fund is set at 20 resource units. The 75 player wants to contribute 14 resource units to the defense fund which is below their proportional share by 1. By asking the 25 player to increase their contribution by 1 resource unit means the 25 player is contributing another 4% of their own resources. Now consider a 95/5 split with the same defense fund of 20. The 95 player wants to contribute 18 resource units, again 1 less than their proportional contribution. The 5 player is being asked to increase their contribution by 1 more resource unit, however, this accounts for an additional 20% of the 5 player’s resources. In the two scenarios, the smaller player is asked to contribute only one additional resource unit to the defense fund, but since resources differ in scarcity, the value placed on one more unit varies greatly (Schmidt, 1988, p. 44).

This discussion on resource contribution and valuation of scarce resources gives rise to the following two predictions:

4. As the scarcity of a player’s resources increases, the value the player places on each individual resource unit will increase.
5. As the discrepancy between players’ optimum positions increases, conflict will also increase due to the difference in the level of scarce resources between players.

## **History of Negotiation Relationship.**

### **Assumption 3: Previous Negotiation Processes**

A player with a negative perception of a previous negotiation process will be less cooperative in a current negotiation. While a player with a positive perception of a previous negotiation process will be more cooperative in a current negotiation.

Another factor influencing the perception of fairness is the past relationship between the two negotiators. The players have developed a negotiation relationship after the first round of negotiations in the Crisis game. They have history. Each player has gained experience negotiating with the other. A player forms an opinion on the previous negotiation process and perceives it as being positive, negative, or neutral (neither overly positive or negative). This opinion is based on the behaviour of the other negotiator as it related to the process of the negotiation. Welsh (2004) explains:

If a negotiator perceives that the other negotiator gave her sufficient opportunity to speak, tried to be open-minded in considering what she had to say, and treated her with respect, she is more likely to view the outcome of the negotiation as fair. (p. 760)

Consequences of a negative negotiation relationship can flow into the other rounds of play within the Crisis game. When the relationship is negative, an offer that would otherwise be perceived as fair from a positive or neutral party is regarded as insufficient (Welsh, 2004, p. 759). This is sometimes seen in Union negotiations. While the negotiation is among members who have a shared-interest in wanting to resolve working issues, the negative perceptions of previous negotiation processes can make current talks difficult. This may be due to parties holding grudges or exhibiting other non-cooperative behaviours. Thus, negotiation relationship can have a potentially significant influence on behaviour. This leads to the following prediction about conflict:

6. An unresolved negative perception of a previous negotiation process will increase conflict in the current negotiation.

### **Perception of Power**

Perception of power is a relative concept. Perceiving oneself as powerful infers the ability to have power over someone or something. A powerful person perceives their level of power in comparison to some other source. In the Crisis game relative power is defined as the comparison of resources of one player to another or to a group of players (as would be the case with a sub-alliance, explained in Number of Players page 43).

#### **Assumption 4: Power and Resources**

A player's power or influence is determined by the amount of relative resources that player has in comparison to another player or group of players (sub-alliance).

Since resources are the token for negotiation, in that it is necessary to contribute resources both for survival and economic gain, they are the source of power. The more resources a player gains the more power and influence the player has. Therefore, power is a function of resources.

In the new model, perceived power is defined as the ability to influence others for the purpose of achieving some desirable outcome. How players perceive their power, and consequently their influence, is important to understand when predicting negotiation behaviour.

#### **Assumption 5: Accurate Perception**

Members of an alliance will accurately perceive their own level of influence when compared to the group's perception of a specific member's influence.

In a study examining perceptions of social status, the authors found that members in face-to-face groups will perceive their own and other's social status, or influence, accurately (Anderson, Srivastava, Beer, Spataro, & Chatman, 2006, p. 1106). Anderson et al. also found that "self-perceptions of status were consistently accurate across group

tasks-whether groups members worked collaboratively, [or] competed with each other for scarce resources, ...” (p.1106).

Since power is a function of resources, determining discrepancy would mean comparing one player’s resources to another player’s. For example, if player A has 50 resource units, and player B has 10 resource units, player A’s perception of power would be  $50 / 10 = 5$ . In other words, player A is 5 times more powerful or influential than player B. From player B’s perspective we find the inverse. Player B’s perception of power is  $10 / 50 = 1/5$ ; therefore, player B is one-fifth as powerful as player A.

Calculating the discrepancy in power between players determines the intensity of force or push back a player will encounter during the negotiation. In the scenario above, player A has more influence or force compared to player B in the negotiation process. The assumption is player A will be able to draw player B toward player A’s optimal position and move player B away from his or her own optimal position. This results in player B moving toward the right on their fairness continuum and ultimately further away from their optimal position.

It is important to note there are diminishing returns with increased discrepancies between players’ power. For example, if two players start with equal levels of power they have the same level of influence on one another. If one player becomes twice as powerful, there is a large difference in the potential influence the now more powerful player has on the less powerful player. The relative power ratios are  $2/1$  for the more powerful player (twice as powerful) and the inverse for the now less powerful player  $1/2 = 50\%$ . The less powerful player has only half as much power and influence as the more powerful player. This is a significant change in power for the less powerful player (50%). Now consider a situation where one player has 99 times more power than another ( $99/1$ ) and then



increases their level of power to 100 times ( $100/1$ ). The difference in influence on the less powerful player from 99 to 100 is very little. This is easily seen when considering the inverse relationship;  $1/99 = .0101$  or 1.01%, meaning the less powerful player feels only 1.01% as powerful as the more powerful player. When the more powerful player increased their level of power to 100, the less powerful player feels only one-tenth of a percent less powerful than before ( $1/100 = .1$  or 1%,  $1.01\% - 1\% = .01\%$ ). This is not a very large change in perception of power when considering the perspective of the less powerful player. This illustrates the diminishing effect of increased power discrepancies and leads to the following prediction about power:

7. As the discrepancy between players' perceptions of power increase, the more powerful player will pull the less powerful away from their optimal position with diminishing influence

### **Number of Players**

In the revised version of the Crisis game described in chapter 4, the addition of more players was included to increase the generalizability of the game. Vitz and Kite stated the game could expand beyond a dyad, but their model failed to incorporate the implications of additional players. The model presented includes a component to capture the complexities additional players have on the behaviour of others. Social impact theory provides rationale for the multifaceted affect additional players have on others.

Social impact theory developed by Latané (1981) implies that a variety of social situations, including the "presence and actions of others", affect a person's values and behaviours among other things. The theory has three principles, which can be applied to negotiations. First, social impact is the result of a variety of sources and the strength, intensity, and number of these sources. Latané explains:

... when some number of social sources are acting on a target individual, the amount of impact experienced by the target should be a multiplicative function of the strength, *S*, the immediacy, *I*, and the number, *N*, of sources present. By strength, *I* mean the salience, power, importance, or intensity of a given source to the target—usually this would be determined by such things as the source's status, age, socioeconomic status, and prior relationship with, or future power over, the target. By immediacy, *I* mean closeness in space or time and absence of intervening barriers or filters. By number, *I* mean how many people there are.

(p. 344)

The second principle describes the increase in impact on an individual as the number of social sources increase. Latané points out there are diminishing returns. The impact from 0 to 1 source is far greater than the impact from 99 to 100 sources. The third principle describes the decrease of impact on a target as more targets are impacted.

It is important to consider additional players to the Crisis game as seen from Latané's (1981) explanation of the first principle. One more player has a multiplicative impact on behaviour. This effect is not additive as seen in the Vitz and Kite model.

Social impact theory is a way in which to describe some of the components of the model. Parallels can be made from the first principle. Strength can be considered perception of power, immediacy can be the mode of communication used in the negotiation and number can be the number of players in the negotiation conversation (whole alliance, sub-alliance, or individual).

The second principle accounts for the effect sub-alliances can have on behaviour. Sub-alliances increase the social impact on a target through increasing various social forces, e.g., power and number of people. The third principle also accounts for sub-

alliance affects on behaviour. Players who create sub-alliances can increase the targets receiving the social force and therefore decrease the social impact. During game play less powerful players can form a sub-alliance to pool resources and increase their power collectively. This decreases the influence or social force from the other player.

**Assumption 6: Sub-alliance Formation**

Players will create sub-alliances to increase their influence in a negotiation.

Players increase their influence as a collective through the combining of resources when forming sub-alliances. As a result, an individual loses their individual power to gain the power of the collective (Coleman, 1973, p. 9). A player also gives up their individual self-interest for that of the new sub-alliance. Therefore, a player is more likely to form a sub-alliance with players of similar self-interest. For example, players with scarce resources may form a sub-alliance to influence a decrease in the defense fund for the purpose of lessening their individual contributions. Players may also form a sub-alliance based on their shared level of risk aversion regardless of the resources each player holds (to an extent). Some players may be very risk averse and want to create a large defense fund to mitigate the most amount of threat. Others may want to go with a smaller fund to mitigate only the most probably threat. In this situation it is possible that players may create a sub-alliance of similarly risk averse players. The above assumption and arguments lead to the following prediction:

8. Players will form a sub-alliance based on shared scarcity of resources or level of risk aversion in order to increase their influence in determining the size of the defense fund.

Including the impact of additional players in developing a new model for understanding behaviour is essential. A change in players influences the level of social

impact on targets (other players) affecting their behaviour. Negotiations often occur among groups of more than two. When examining decision-making processes, it is essential to consider the influence additional people can have on other's behaviours in the negotiation. Social impact theory recognized the multiplicative and multifaceted effect an increase in the number of people has on others. This theory counters the simple additive function that Vitz and Kite (1970) proposed for the increase in number of players. Incorporating elements of social impact theory increases the model's range of application beyond Vitz and Kite's. The new model captures the complexities of a larger variety of negotiation situations and provides compelling psychological reasoning for negotiation behaviours in decision-making alliances.

### **Structure of the Model**

The three components described above create the theoretical framework for developing a model to understand negotiation and decision-making behaviour among members in an alliance. Each of the components is built on strong psychological reasoning that mimics real-world negotiations situations. The following paragraphs describe how these components interact to produce a predictive model of behaviour.

Perceptions of power, which can be considered as the level of influence one perceives they have within a negotiation, are based on relative resource units. Discrepancies between resources and levels of influence, determine the amount of relative power one player has over another. Power is not infinite and is affected by diminishing returns. This means there is a limiting force on the amount of power or influence a player has. Power is an asymptotic curvilinear function. While power is connected to players' relative resources, the fairness component is connected to players' resource contribution through the idea of distributive fairness. Power is an expression of what a player has

(amount of resources) and fairness is an expression of what a player prefers to give (contribution to the defense fund).

Included in the psychological undertones of fairness is the element of history. The negotiation relationship, which develops from having previous negotiation encounters, can influence a person's perception of fairness. Cooperation can suffer if the previous experience was negative. A negative, positive or neutral perception of a previous negotiation or decision-making process can affect the level of cooperation by creating a push back force (e.g., a player could be stubborn or hold a grudge during discussions) decreasing cooperation. It can also create an agreeable force (e.g., a positive past experience can encourage players to work harder to find mutually acceptable solutions) increasing cooperation.

A player's fairness strategy determines the player's optimal position. This is the amount of resources the player believes is fair to contribute to the defense fund. This optimal position can be placed on the player's fairness continuum. Discrepancies between players' optimal positions create a counter-force to the level of influence or power one player has over another.

The number of players has a key role in the model. The presence of additional players affects perceptions of power and history. More players increase the number of social sources. This can increase or decrease the impact on a target depending on how many players are transmitting or receiving the social force. Players can form sub-alliances to pool resources and change the amount of influence or power the players in the sub-alliance have over other players. In the context of negotiation history, more players mean more people with whom to negotiate. Some of the relationships can be positive while

others may be negative. Therefore, a matrix of relationships and behaviour occurs influencing the negotiation and decision-making process.

This combination of components and forces has led to a well-conceived model. The proposed model captures essential fundamental elements of negotiation and decision-making behaviour. With the establishment of the proposed model several predictions have been made about negotiation behaviour of members in an alliance. To reiterate, these predictions are:

1. Regardless of the existence of conflict or disagreement, players will attempt to cooperate due to the shared-interest nature of alliances.
2. Each player will prioritize survival over economic gain in order to create potential for economic gain.
3. Each player will have different levels of risk aversion and therefore each player will subjectively weight the importance of survival and economic gain.
4. As the scarcity of a player's resources increases, the value the player places on each individual resource unit will increase.
5. As the discrepancy between players' optimum positions increases, conflict will also increase due to the difference in the level of scarce resources between players.
6. A negative perception of a previous negotiation process, if not resolved, will increase conflict in the current negotiation.
7. As the discrepancy between players' perceptions of power increase, the more powerful player will pull the less powerful away from their optimal position with diminishing influence.

8. Players will form a sub-alliance based on shared scarcity of resources or level of risk aversion in order to increase their influence in determining the size of the defense fund.

### **Conclusion**

This chapter argues that the theoretical framework presented is essential for creating a general model for exploring negotiation and decision-making behaviour within alliances. The elements included are necessary to strongly mimic real-world negotiation situations. Decision-making processes and negotiations are complex, dynamic, encounters generally among groups of more than two persons. Due to the complexity of these types of situations, it is imperative to develop a model that incorporates the dynamic fundamental variables. These variables are the perception of power, perception of fairness, and number of players. Supporting these variables are elements of social impact theory, the negotiation relationship, and risk aversion.

The theoretical framework presented in this chapter captures the interrelated characteristic of negotiation behaviours and provides compelling psychological reasoning for the inclusion of each element. The framework provides the basis for further research and the development of a mathematical model. The next chapter discusses implications of the research, the approach used, and suggests areas for further research.

## **Discussion**

This thesis proposes a new theoretical model for understanding negotiation and decision-making behaviours of members within an alliance. The model provides a framework for understanding perceptions underlying decision-making processes of alliance members. The model is also able to explore a specific aspect of decision-making such as the existence of conflict. The purpose for developing the theoretical model was to gain better understanding of why behaviours of conflict occur among groups with common goals and shared interests. A common experience among members of an alliance is that agreeing to work together toward a goal does not necessarily decrease the amount of conflict or its intensity. This research has attempted to highlight essential factors that influence negotiation and decision-making behaviour. A theoretical model based on these factors has been developed to provide explanations for decision-making and negotiation behaviours of members in an alliance. Arguments for the theoretical framework and the psychological rationale of the theory's components are described in the previous chapter.

This chapter presents a general discussion of the model and approach. Advantages and disadvantages of the proposed model are also expressed. This leads to a final discussion on areas for future research.

### **Approach**

A three-stage approach was used to construct the theoretical framework for use in development of the new model: (1) revision of the Crisis game, (2) modelling of the revised Crisis game, and (3) expanding the model to include various decision-making behaviours.

The Crisis game by Vitz and Kite (1970) was chosen as the cornerstone for constructing the proposed model. The NATO-type situation of the Crisis game forces the



player to balance the importance of survival and economic gain, thus capturing the important mixed-motive element often present in many alliance negotiations.

In developing the theory it was necessary to revise the Crisis game. This thesis has argued that the structure of the Crisis game is part of the reason for the lack of real-world replication because the game fails to include fundamental features of negotiation. While Vitz and Kite's game theory approach to explore negotiation behaviour is appropriate, the structure of their Crisis game and subsequent model is too simplistic. The changes made to the Crisis game improve its ability to mimic a broader range of negotiation situations, and ultimately reflect more common structures of negotiations. The three changes recommended to increase the game's application are: (1) to increase the number of negotiators by at least one additional player (representing another member country of the alliance), (2) to include face-to-face as a mode of communication for negotiations, and (3) to provide players with varying amounts of additional resource units at the end of each of the first four trials (none on the fifth as it is the end of the game). Changing the structure of the game captures more of the realistic behaviour of alliance negotiations. All of the revisions made to the Crisis game increase the game's generalizability and simulation of real-world negotiation situations.

The second stage of the approach was the development of a new theoretical framework based on the revised Crisis game. The theoretical framework provides strong psychological reasoning and better predictability for the intensity of conflict and other decision-making behaviours among members of an alliance. The proposed model, based on the revised Crisis game, incorporates enough complexity to mimic a larger variety of negotiation situations without being cumbersome.

Components of the model are reflective of the changes made to the original game. The three components are: (1) a player's perception of power, (2) a player's fairness strategy, and (3) the number of players in the negotiation. Vitz and Kite mention that their model could expand to incorporate more players. The drawback is their model has a weak mechanism for doing so. Other models of negotiation behaviour also failed to present a mechanism for adequately measuring the impact of additional players. The new model accounts for the presence of additional players and recognizes the multiplicative function of their impact on behaviour of others. This multiplicative factor is supported by social impact theory.

The proposed model considers various psychological factors and the interrelatedness of these factors. Perceptions of power and fairness are both connected to resources and can change with an influx of new resources at the end of a trial. In the model there are also interrelated forces that affect behaviour and perceptions. There is a limiting force that diminishes the return of power and a boundary force, which is caused by the discrepancy between fairness positions on the fairness continuum. The boundary force related to the fairness continuum creates tension in perceptions of power as this force acts as a resistance to influence. For example, a player is being influenced to contribute more resource units by a more powerful player. There comes a point where the influence will diminish due to the increasing value placed on scarce resources (see Fairness Continuum on page 36, for an explanation of the value of scarce resources).

There is another force that is not directly linked to resources. This third force is based on perceptions of previous negotiation processes and connected to the negotiators history with one another. A positive or negative perception of previous negotiation processes can create a cooperative or non-cooperative force respectively. This force is

directly related to previous negotiation behaviours and is a behavioural response to the perception of the negotiation relationship. Through the combination of theoretical components, backed by convincing psychological rationale, the proposed model has a broad range of application and generalizability.

The final approach was to expand the theory beyond negotiation and conflict, as was the original focus of the Vitz and Kite study, to include decision-making processes of members in alliances. The framework is able to capture essential elements in decision-making processes, such as how members determine optimal positions based on their perceptions of power and fairness. Other decision-making processes include how power and fairness is perceived and the forces limiting or influencing these perceptions. The inclusion of the negotiation relationship is a critical factor for understanding decision-making behaviour. Perceptions of previous negotiation processes can have profound effects on decision-making behaviour. Exploring the history of negotiation among members can potentially explain what appears to be irrational decision-making behaviour (a member not accepting what is a very reasonable offer, see History of Negotiation Relationship on page 40 for a detailed explanation).

The following section discusses the strengths of the research approach used in the development of the theoretical framework.

### **Advantages of the Three-Stage Approach**

A major advantage of the three-stage approach is the increase in generalizability that was achieved over the previous research. The new model simulates many negotiation situations and provides strong predictability for the occurrence and intensity of conflict and other decision-making behaviours. The model has a strong foundation built on social impact theory, which supports the inclusion of the theoretical components giving

convincing psychological reasoning for behaviour of members in alliances. The following paragraphs describe the advantages of each stage of the approach.

The major advantage of the first stage is the improved range of application of the Crisis game. All revisions made to the Crisis game improve the game's ability to simulate real-world negotiation situations more accurately than the original. Improving simulation creates a more realistic negotiation and decision-making environment in which to observe and study behaviour. The more accurate a simulation reflects actual environments the more applicable predictions will be. For example, the addition of face-to-face negotiations dramatically improves the generalizability of the game by reflecting the communication mode of numerous negotiation situations. Change in the mode of communication, along with the other changes made to the game, greatly increase its generalizability and range of application.

Generalizability and improvement in range of application is also a major advantage of the second stage. An additional advantage is that the theoretical framework presented is built upon a stronger psychological foundation. The application of social impact theory, as psychological rationale for the model's components, provides a stronger explanation for factors influencing behaviour than Vitz and Kite's application of social comparison theory. Social impact theory allows for the expression of characteristically ambiguous variable such as perceptions of fairness and power. Social impact theory and other psychological elements presented in the theoretical framework create the necessary relationships for future mathematical modeling of the presented theory.

The model, in addition to coping with ambiguous variables, is dynamic in its approach. Components of the model are described as pieces of a whole. The model treats the observation of behaviour from a holistic lens noting that all the components are

interrelated and dynamic. As one component changes the effects on other components are observed. For example, an increase in a player's resource units correlates with the player's power.

Another advantage of the theoretical model is its scalability. The model is able to handle negotiations between two players. It can also handle situations where there are multiple negotiators. This means the model can adapt to changes in any of the components. Unlike previous models of negotiations and conflict the new model accounts for the multifaceted impact an increase in components has on player's behaviour. For example, the model easily handles an increase in players and an increase in resources.

The theoretical model is also able to incorporate the passing of time in terms of previous negotiation encounters. This is particularly advantageous when considering the negotiation history between players. Incorporating the impact of negotiation relationships has several advantages: (1) perceptions of previous processes can dramatically influence negotiators behaviour accounting for potentially unusual behaviour responses to otherwise reasonable terms, (2) negotiators learn from past experiences of how to strategize with a particular negotiator, and (3) alliance members negotiate often with one another and on a variety of topics (thus the members have well established history with one another). These three advantages support the inclusion of negotiation history in the model. This also increases the theory's generalizability and range of application through improved simulation of real-world situations.

The theoretical model continues the broadening of its range of application through the ability to incorporate any type of resource. Since the proposed model is not strictly based on economic resources like Schmidt's (1988), the definition or description of resources is adaptable. For example, resource units could represent soldiers in a security

negotiation or books in a negotiation over shared library resources. As long as the resource can be counted or given some numeric value, they can be incorporated into the model.

Advantages of the third stage of the approach again lead to improved generalizability. The Crisis game in its original form was designed to explore factors affecting conflict in negotiating alliances. Conflict was the main focus of the study. Other researchers also focused on reasons for the existence and intensity of conflict in their study of the Crisis game. This paper has taken the approach of broadening the theoretical scope to include aspects of decision-making behaviour beyond just conflict in negotiation. The framework presented is capable of exploring perception and factors that influence decision-making behaviour including those behaviours leading to conflict. Opening up the scope and developing a theoretical framework that captures more than just factors that influence conflict allows the model to make predictions about a larger variety of situations and behaviours than models proposed by earlier theorists.

### **Limitations of Approach**

The three-stage approach attempts to increase the generalizability and range of application of the original Crisis game and model. There are some limitations such as cost of additional players, lack of a complete mathematical model, definitions of power, and issues of scope. These limitations will be discussed in detail in the following paragraphs.

Revisions made to the Crisis game have increased the game's complexity in execution. Increasing the number of players requires a researcher to recruit more volunteers for the study. Ensuring adequate participation can be challenging and costly. The cost associated with more players for the Crisis game can be problematic given often-scarce research funding. Since the model is scalable, a researcher could increase the

number of players in a negotiation to three (one more than the original study) and then apply the predictions to larger groups of negotiators. Using a triad of negotiators allows for observation of the multifaceted affect additional players can have on behaviour (which is significantly different than using only dyads for negotiations). The return on the knowledge gained would be greater than the cost of engaging another participant.

The theoretical model is limited as it lacks a complete mathematical representation. Using the model to make precise predictions regarding behaviour is difficult without an expressed formula. A detailed framework has been presented with conceptual links between components of the theoretical model. The framework includes description of how the components are interrelated along with consideration of forces that impact, limit, or diminish particular aspects of the model. These explanations create a solid base for developing the mathematical expression of the theory.

Another limitation is that the model does not incorporate any mechanism for considering cultural value differences among players. Examples described by Hofstede (2001) are power distance and uncertainty avoidance. Incorporating such variables may be possible through manipulation of social impact theory with the current components of the framework presented. For example, it was noted earlier in chapter 6 that even when players prioritize goals the same way, each weights these goals subjectively. When goals have an element of risk like the goal of surviving in the Crisis game or a high-stakes acquisition in the corporate world, how a player or negotiator weights a goal is an expression of their level of risk aversion. Risk aversion is similar to Hofstede's consideration of uncertainty avoidance. This is an example of how research on cultural value differences could be conducted through the theoretical framework presented.

The model is also limiting in the way in which it defines power. Power is connected to the amount of resources a player possesses. There may be instances where defining power by other means is more applicable. For instance, defining power based on status or role (e.g., leadership ranking or government authority position) may better reflect a particular negotiation situation. The model presented does not incorporate a mechanism for defining power by social constructs beyond measurable resources. It may be possible to include certain aspects of status in the model through elements of social impact theory. In the model presented this is not a predominant feature.

In the final stage of the approach the framework is widened beyond the scope of previous studies of negotiation behaviour. It is possible to consider the broader range of the theory to be somewhat of a limitation. Using one model to explore a number of decision-making behaviours may obscure the nuances of a specific behaviour. This limitation can be mitigated through focusing the model on the particular behaviour to be studied. For example, this paper has presented the theoretical model from the perspective of observing reasons for conflict. To study a more finite element of negotiation or decision-making behaviour one can focus the model on this particular aspect to determine causes and factors of influence.

Directions for further research can be drawn from the limitations discussed above. These research areas are explored in the following section.

### **Areas for Further Research**

The theoretical model presented in this paper is complex and has a number of dynamic interrelated variables. Empirical testing of the revised Crisis game and subsequent model should be conducted to observe the relationship among these variables, on behaviour of players, and the factors influencing such behaviours. Development of a



complete mathematical model of the theoretical framework, in conjunction with studies of the revised Crisis game, is necessary to understand factors influencing behaviour and to make predictions.

Research on specific aspects of negotiation and decision-making behaviour can be performed with a mathematical model of the framework. A key area for further research is on the impact of negotiation relationships. History of negotiation experiences has great potential for affecting behaviour. Perception of a previous negotiation process is a somewhat ambiguous variable. Using perceptions of past negotiations and current level of cooperation of players, the new model provides a mechanism for further research on the affects of previous decision-making processes have on behaviour.

For any future research conducted on decision-making and negotiation, the three components outlined in this paper are essential for development of a new model. The components: perception of power, perception of fairness, and number of players (or negotiators) are critical concepts for understanding factors influencing behaviour. Incorporation of forces describe in the framework are also essential. The forces dictate the intensity with which a component influences behaviour: perception of past negotiation processes (history) influence cooperative or non-cooperative behaviour, level of influence a player possesses (power) is limited by diminishing returns, and fairness perceptions are intensified by increasingly scarce resources translating into a counter-force toward another player's level of influence. These forces in combination with the three components, supported by solid psychological reasoning and social impact theory, create a necessary framework for the future development of a math model and other theories for understanding decision-making behaviour.

## **Conclusion**

This thesis has explored the development of a new theoretical framework, which explores behaviours among members in an alliance. The framework combines perceptions, forces and components. This complete framework is essential in developing a model on decision-making and negotiation behaviour. Incorporation of history and elements of social impact theory provide a stronger psychological foundation for the rationale of the theoretical framework's construction.

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