THE INDIRECT DIMENSIONS OF CONFLICT AND COOPERATION

by

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ABSTRACT

This dissertation project broadly addresses the question of how state behavior is conditioned by the structural configuration of the network in which they are embedded. It attempts to reconcile some of the discrepancies between the systemic and dyadic approaches to international relations, by arguing that the international system is a multidimensional network that results as an emergent property of the dyadic ties that exist between states.

This dissertation consists of three stand alone analyses, connected by their focus on systemic configuration and the impact of various elements of international structures on the behavior of states. In contrast to most studies of international relations, dimensions of the international order are observed, rather than assumed. The first chapter focuses specifically on observing and describing the structure and tendencies of the behavioral dimension of the international system. It assesses patterns of consistency in international relations, searching for both simple, dyadic consistency as well as more complex, triadic consistency. The second chapter relies on these positive and negative relations to create a model of policy reinforcement, with a focus on the onset of militarized conflict. Structural balance theory is used to identify shared, external relations that either reinforce or dampen the impact of dyadic hostility on militarized conflict. The final empirical chapter shifts to a more localized focus, investigating the impact of alliance portfolio size on the likelihood of alliance obligation fulfillment. Here, the size and capabilities of a disputant's local alliance portfolio do not directly modify the behavior of the disputant, but instead that of the disputant's other allies.

Together, these chapters demonstrate the importance of accounting for systemic factors in explaining and analyzing dyadic behavior. The characteristics of local networks, such as alliance portfolios, have significant implications for state security.

The configuration of foreign policy relations provides feedback to states, influencing their willingness to take aggressive actions. Bipolarity and multipolarity can be empirically observed through the clustering of states, rather than by merely counting the number of major powers. However, perhaps most significant is the contribution these analyses make to a small but growing literature attempting to move beyond the dyad.

CHAPTER 1

The Indirect Dimensions of Conflict and Cooperation

Overview and Objectives

Ideas of emergent structure shaping the international system have given way to major paradigms of international relations. Such approaches, focusing on the distribution of some resource, whether wealth (Wallerstein 1976, Wallerstein 1974) or capability (Waltz 1979), have led to important and insightful theories of alliance formation, economic development, and conflict. Contrastingly, they generally emphasize one dimension of the international system, whether the economic, the military, or otherwise, creating a hierarchy or rank ordering of states (i.e., major powers, minor powers; core, semi-periphery, periphery), where states' positions seem relatively static.

A second structural approach to international relations focuses not on the characteristics of the states, but on the *relations* between them. While there are nearly infinite types of relations that might emerge between states, generally speaking, behavioral interactions can be classified relative to their overall intensity, whether cooperative or conflictual. As such, the most basic typology for classifying the relations of states is simply as friendship (positive), enmity (negative), or neutral. These relations represent one dimension of international relations, and become the focus of a portion of this dissertation project. Institutional ties between states represent a second dimension of international politics, adding additional structure to the international system. While it is sometimes difficult to discern the influence that various intergovernmental organizations have on the behavior of states, formal alliance ties represent one specific type of institutional arrangement which often has direct implications on the behavior of states.

This dissertation project broadly addresses the question of how state behavior

is conditioned by the structural configuration of the network in which they are embedded. It attempts to reconcile some of the discrepancies between the systemic and dyadic approaches to international relations, by arguing that the international system is a multidimensional network that forms as an emergent property of the relational ties that exist between states. The dyad, the most common focus of contemporary literature on interstate conflict, is therefore a substructure of this network, suggesting that dyadic relations cannot be truly isolated–neither theoretically nor statistically–from the surrounding network in which they are embedded. The focus on direct, dyadic interactions assumes the structure of the international system, instead of using it as an explanatory factor. Moreover, general statistical assumptions associated with the standard models assume the independence of each international dyad. That is, the 1990 conflicts where the United States, Canada, the United Kingdom, France, Belgium, Argentina, and 14 others countries fought against Iraq are treated as 20 separate and independent instances of dyadic conflict. Realistically, this assumption does not seem to hold—countries comprising various dyads are almost always indirectly connected through a variety of external relational ties, such as trade, alliances, hostility, or voluntary memberships in IGOs. The effect of any one of these relational ties might be amplified by similar ties connecting the two states of the dyad indirectly, through third parties.

This dissertation consists of three stand alone analyses, connected by their focus on systemic configuration and the impact of various elements of international structure on the direct behavior of states. In contrast to most studies of international relations, dimensions of the international order are observed, rather than assumed. The first chapter focuses specifically on observing and describing the structure and tendencies of one dimension of the international system: positive and negative behavioral tendencies. While primarily descriptive in nature, this chapter assesses patterns of consistency in international relations, searching for both simple, dyadic consistency as well as more complex, triadic consistency. The second chapter relies on these positive and negative relations to create a model of policy reinforcement, with a focus on the onset of militarized conflict. Here, structural balance theory

(Heider 1946, Cartwright & Harary 1956) is used to identify shared, external relations that either reinforce or dampen the impact of dyadic hostility on militarized conflict. The final empirical chapter shifts to a more localized focus, looking at the impact of alliance portfolio size on the likelihood of alliance obligation fulfillment. The relevant structure is no longer the entirety of the system, but instead the disputant's alliance portfolio. Here, the size and capabilities of the alliance portfolio does not directly modify the behavior of the disputant, but instead the behavior of the disputant's other allies.

Together, these chapters demonstrate the importance of accounting for systemic factors external to the dyad explaining and analyzing dyadic behavior. The characteristics of local networks, such as alliance portfolios, have significant implications for state security. The configuration and nature of foreign policy relations provides feedback to states, influencing their willingness to take aggressive actions. Bipolarity and multipolarity can be empirically observed through the clustering of states, rather than by merely counting the number of major powers. However, perhaps most significant is the contribution these analyses make to a small but growing literature attempting to move beyond the dyad.

Chapter Outline

This project unfolds into several interrelated chapters addressing the formation of relational ties, the consistency of those ties, the configuration of the system and the type of triadic relations, as well as the impact that those relations have relative to international cooperation and conflict. These chapters serve as a basis for the study of balance in international relations, though by no means exhaust the potential in this approach. These chapters are addressed below.

The first empirical chapter, entitled *Relational Consistency in International Politics* assesses simple and complex relational consistency in one dimension of the international system: the network of behavioral tendencies. In this chapter, I show that reciprocated relations (simple consistency), long portrayed as a enduring norm

of international relations (Axelrod & Keohane 1985, Keohane 1986), is a necessary condition for higher-order (triadic) consistency. In the event that dyadic relations are not reciprocated, triadic structures become ambiguous, where depending on the order of the nodes, the triad might appear either balanced or imbalanced. In explaining the origins of reciprocated relations, I draw from Peter Blau's theory of social structure (Blau 1960, Blau 1974, Blau 1977), which argues that actors cluster together in a multidimensional social space, forming positive ties with those most similar to themselves in the most ways (McPherson & Smith-Lovin 1987, McPherson, Popielarz & Drobnic 1992). Because the behavioral ties between states may either be positive or negative, I modify the homophily argument, casting some dimensions of the international system as positive, while those most likely to evoke security concerns are casted as negative dimensions. This homophily based argument is then tested relative to the formation of positively consistent, negatively consistent, and inconsistent dyadic relations.

This descriptive analysis continues by defining a series of annual networks consisting of the positive and negative ties present between countries. These networks are then broken down into their simplest microstructures still incorporating complexity: the triad. Whereas homophily might explain the origins of these individual network ties, structural balance can be used to explain their evolution (Heider 1946, Cartwright & Harary 1956). A triad is balanced when "the friend of a friend is a friend" or "the enemy of an enemy is a friend", creating an internally reinforcing structure. Levels of balance and imbalance are first investigated descriptively, demonstrating high levels of triadic consistency during the cold war era, while post-cold war networks appear characterized by increasing levels of imbalance and less rigid clustering. Finally, this chapter concludes by modeling each dyadic relation relative to the triadic structures it is embedded within, using a valued p* exponential random graph model. Despite heightened levels of imbalance in the post-cold war era, the ERGM suggests that the formation of positive ties is most heavily influenced by friend-friend-friend triads.

The second empirical chapter, *Peace Through Imbalance: A Policy Reinforce-*

ment Model, focuses on the impact of balanced and imbalanced relations on the behavior of states. Recognizing that balance is a situation where direct (dyadic) and indirect (triadic) relations are consistent, balanced and imbalanced structures offer positive and negative feedback to the direct relations between states. In this chapter, I develop a theory of policy reinforcement where increasingly balanced external relations amplify the level of hostility existing between states, modifying their behavior towards one another. Likewise, increasingly imbalanced extra-dyadic relations serve to mitigate dyadic hostility, reducing or even eliminating the impact of these underlying dyadic hostilities on the onset of violent conflict. Two additional variables and their product term are inserted into a standard conflict model. Using the relational tendency measure developed in the previous chapter, the underlying level of dyadic friendship or hostility is included. This hostility is then reinforced by a variable capturing the number of balanced and imbalanced third party relations reinforcing the dyad. One series of models focuses on the quantity of feedback, while a second series of models weighs each source of balance and imbalance by that third party's capabilities.

The implications of this analysis are intriguing. The term "imbalance" comes with negative connotations. In other applied research, imbalanced relations are associated with international crises (Harary 1961) and the onset of interstate dispute (Maoz, Terris, Kuperman & Talmud 2007). However, as this study suggests, the impact of balanced and imbalanced relations depends on which link of the triadic structure is being reinforced, and the positive of negative nature of the reinforcement. Imbalance, in situations of underlying dyadic hostility, can actually mitigate the effect of that hostility when stemming from sufficiently powerful states. In fact, it seems that net imbalance through countries roughly possessing the capabilities of a major power is sufficient to mitigate hostility, creating peace through imbalance.

The final empirical chapter, *Outsourcing Security*, focuses on how the size of a state's alliance portfolio influences its overall level of security. Domestic considerations limit a state's ability to convert resources and personnel into military resources. Creating military capabilities suffers from diminishing returns, where

the creation of additional military capabilities becomes more costly as quantities increase. This natural carrying capacity creates security problems for states, who often require more security capabilities than they can efficiently produce themselves. This prompts states to turn to external sources of security, procured through the creation of formal alliance ties. However, not all alliance obligations are fulfilled. This study suggests that unfulfilled alliance obligations result from concerns over payment. Weaker states face a paradox, where they are most in need of external security guarantees, but also least able to compensate other states for them. They offer little security benefit to stronger states, and while reputational considerations could offer payment, reputational payoffs are most likely proportionate to the strength of the state in need.

Concerns over alliance fulfillment prompt states to increase the size of their alliance portfolio, in an effort to ensure that they will receive assistance in the event that it is needed. But intervention is a function of each alliance partners' expected payment for their assistance. As each third party decides whether or not to intervene, they anticipate the joining of other alliance partners—the more extensive the alliance portfolio, the less likely any individual member is to intervene. The analysis confirms this expectation, but also provides insight into the maintenance of alliance portfolios. Specifically, states appear able to reliable procure external security guarantees from states up to about 1.5 times their own capabilities before the likelihood of allied joining diminishes. To maximize security, a state must simultaneously augment its domestic security resources while carefully managing its alliance portfolio.

CHAPTER 2

Relational Consistency in International Politics

Introduction

What is the nature and composition of the international system? To some, the international system is best characterized as an anarchic void—the absence of any overarching (Waltz 1979) authority forbids the formation of structures common in domestic politics, allowing only for a rudimentary ordering to occur relative to the systemic distribution of power (Waltz 1979). Others perceive the system as a series of hierarchical tiers, stratified by levels of power (Modelski & Thompson 1989, Organski & Kugler 1980, Thompson 1986), or by levels of economic development (Wallerstein 1974, Wallerstein 1976). Still others view the international system relative to the diffusion and adherence to global norms of behavior (Finnemore & Sikkink 2001). The commonality between these conceptualizations, drawn from the dominant, yet often opposing paradigms of international relations, is that systemic structure is defined exogenously, by the distribution of states' attributes, rather than by the relations that form between them.

From a (sociological) structuralist point of view, structural theories of international relations would seldom be considered "structuralist" (Mayhew 1980, Mayhew 1981).[1] From a sociological perspective, social structure is not defined by the characteristics of the individuals (states), but rather by the voluntary social relations that form between them. In this view, structure is an emergent property of the interactions of the actors rather than a statement about their individual characteristics, although the similarity of their attributes or characteristics most certainly have an influence on the formation of those social relations (Blau 1960, Blau 1974, Blau 1977).

[1] Constructivism might be an exception. Alexander Wendt (1995, 73) points out that constructivists view structure not solely comprised of tangibles, such as material capabilities, but also of social relationships.

This paper envisions systemic structure as emerging from the dyadic interactions of states. Each state in the system can focus its foreign policy towards nearly 200 other states. States must decide both whether they will interact with another, and then what nature those relations will take. Moreover, each of the 200 other states must then make a similar decision, choosing both with whom to interact, and the nature of those relations. Foreign policy relations may fall within a large continuum of possible relations, from very hostile to very friendly. A state's foreign policy relations towards other states in the system can be viewed as a layer, placed on top of the foreign policy relations of other states. Each additional layer adds the potential for 200 more relational ties linking states, and adds elements of complexity and structure to the system. It does not take long for such a structure to become incredibly complex, connecting states both directly, and indirectly, through their shared relations with others.

Structure is far greater than a mere description of the actors embedded within it; it is the the pathways facilitating communication, and the gaps restricting it. This study defines systemic structure endogenously, as the voluntary relations that form between states, rather than as the distribution of resources among them. Moreover, social structures have a tendency to cluster into self-reinforcing segments (Heider 1946, Cartwright & Harary 1956, Blau 1960, Blau 1974, Blau 1977), which augment stability provided that simple (dyadic) and more complex relations (triadic) are internally consistent. At the simplest level, this consistency is often assumed a fundamental norm in international relations: reciprocity (Axelrod 1980, Axelrod 1984, Axelrod & Keohane 1985); its more complex form—structural balance (Heider 1946, Cartwright & Harary 1956)—is almost universally overlooked as a potential "organizing principle" of the international system.

This study assesses consistency in the foreign policy tendencies of states, first by focusing on reciprocity, and then by assessing the systemic tenancy towards (structural) balance in foreign policy behavior. Because states are constantly modifying their foreign policies vis-à-vis one another, it is not practical to focus on the reciprocity of specific actions or policies—the aspect of reciprocity high-

lighted in much game theoretic literature through the well known tit-for-tat strategy (Axelrod 1980, Axelrod 1984). Instead, this study emphasizes long term consistencies in foreign policy behavior, focusing on annual aggregations of state interactions, both verbal and physical, and the role of these linkages in structuring this aspect of the international system. If expectations hold, increased levels of reciprocity and balance should dominate the system, as such relations are both stable and internally reinforcing.

A common image of international structure

Neorealism, sometimes called structural realism, begins with the basic assumption that the international system is characterized by anarchy (Waltz 1979, 88). This assumption about the structure of the international system, coupled with the logical assumption that states seek self preservation is sufficient to create a self-help environment, where balancing behavior is primal. While Waltz acknowledges the paradox of defining the structure of the system as the absence of structure, the system is not completely devoid of order. The distribution of power among states provides a means of differentiating the otherwise like units, offering some rudimentary ordering to an otherwise anarchical system.

Waltz is aware that his conceptualization of international structure might appear to contradict his notion of structure (97). He warns that unit attributes must be left out of structural definitions as to allow for differentiation between node (state) level and system level variables (79-80). Nevertheless, he focuses on the distribution of (relational) power as the defining structural element of the international system, given the constant presence of international anarchy. Though focusing on relational power rather than absolute power may seems to dodge this problem, the fact remains that the relational power is completely definable by individual states' absolute levels of power.[2] Under this conceptualization, the structure of the international system

[2]World Systems theory (Wallerstein 1974, Wallerstein 1976) falls to the same criticism. Rather than ordering the system in terms of material capabilities, World Systems theory describes the system as being ordered in terms of wealth, where hierarchical tiers exist, defining the roles of states.

is such that every state is connected to every other state, and where states have no ability to reposition themselves or influence the structure of the system short of augmenting their individual capabilities.

A "hard" structuralist would dismiss this conceptualization of international structure as inherently individualist, as it is fully defined by characteristics of the individual states. Even anarchy can be defined relative to an attribute of the state (or node) as sovereignty directly implies the absence of an overarching governing structure. As Karl Marx (1867, 176) described: "Society does not consist of individuals, but expresses the sum of interrelations in which individuals stand with respect to one another" (quoted in Mayhew 1980, 338). In Marx' view, structure (society) is defined not by the nodes that compose it, but rather is an emergent property of the relational ties that form *between* the nodes. Though the characteristics of the nodes certainly influence the relational ties that form between nodes (Blau 1960, Blau 1974, Blau 1977), it is the communication network that forms rather than relation of individual attributes that defines a system's structure (Mayhew 1980, Mayhew 1981).

In his criticism of the orientation of sociology, Bruce Mayhew argues:

> If one assumes the structure of society in order to examine its impact on the immediate acts, thoughts, and feelings of individuals, one has assumed most of what has to be explained (indeed, about 95 percent of the variation in human society) in order to study a small part of human activity and experience (about 5 percent—and as such, difficult to distinguish from random noise). ... [T]he primary task of sociology is not to assume the empirical conditions of social structure, but *to explain its existence in the first place* (Mayhew 1980, 339-349, emphasis added).

Though his criticism was centered around the direction of sociology as a field at that time, it is equally applicable to structural theories of international relations, where the origins, configuration, and even impact of international structure are defined relative to attributes of the states rather then through the observed relations that form, linking states.

In keeping with the example of neorealism, anarchy is assumed to be the defining

characteristic of the international system. As states seek survival, and material capabilities provide a means to that end, the distribution of power is assumed to offer some order to the anarchic system. A result of this system is that states should pursue balancing behaviors, offsetting the most powerful, and providing some security to states. On the surface, neorealism might seem to offer a decent explanation of the configuration of the international system—19th century alliance systems seems to conform to these expectations, as do the division of the world into two cohesive blocs during the Cold War. Upon closer analysis, however, nothing innate to neorealism suggests where and when alliances will form, as an incalculable number of "balanced" balance of power systems theoretically exist. Rather than defining structure as the differentiation of certain attributes of the units, this paper seeks to conceptualize the international system as communication network, composed of friendships and hostilities which reinforce and shape each states' relations with other states within the international system.

Defining international structure

Rather than defining international structure through the distribution of some resource throughout the system, this study observes the emergence and impact of affective relations that exist between states. Affect is a psychological sentiment towards a target manifest in their verbal and physical behavior towards that target (Hermann, Hermann & Hutchins 1982). Much like assuming that states are rational actors, the term affect implies that states—inherently bureaucratic entities—function with a singular collective mind. This assumption, like rationality, appears a gross understatement of the actual foreign policy generation process yet provides an useful metaphor for viewing state behavior. Rather than use the term "affect" and the psychological implications that it brings, I instead use the logic of interstate affect to form what might more accurately be called "relational tendencies". While there might be substantial variation in the intensity of the day-to-day interactions of states, I assume that there exists some underlying tendency motivating state

actions towards one another.[3] As we cannot discern the latent underlying "sentiment" motivating international behavior, we can approximate its central tendency through observing and interpreting the behavior of states (Hermann, Hermann & Hutchins 1982, Dixon 1983). These underlying tendencies can then be used to form a network, providing structure to the this element of the international system.

The origins of international structure

When observing any population of individuals, it does not take long to notice a non-random clustering of individuals into distinct social groups. These groups are marked by varying levels of cohesion; some are tight-woven cliques while others take the form of more loose and open affiliations. The overall cohesion of these social groupings, Blau (1974, 1977) argues, is a function of the levels of attraction between group members, the most cohesive of which being those where all members are highly similar to each other. Attraction, however, is not unidimensional. Instead, in the social realm, attraction is influenced by a variety of pertinent social attributes—age, gender, levels of education, wealth, etc...—which potentially transform into military strength, regime type, level of development, etc... at the international level.

One version of social structure is defined as the distribution of social positions across a multidimensional social space (Blau 1974, Blau 1977). The number of potential dimensions is infinite, though given a specific settings, certain dimensions can clearly be seen to operate in the forefront (McPherson & Smith-Lovin 1987). Positions in this multidimensional space provide opportunities and constraints for social interaction. For example, two individuals located at opposite ends of the education spectrum are less likely to interact often than two individuals who have very high levels of education, just as individuals (or states) who are neighbors are much more likely to experience conflict than two who live on opposite sides of town (or the world).

[3] In many ways, this is similar to the latent variable approach to logistic regression, where researchers assume that there is some underlying, unobservable probability of an event occurring, although the event itself can only be observed through its presence of absence (Long 1997).

Homophily is the mechanism through which social actors cluster into groups in multidimensional social space. In short, homophily is the theorem that "birds of a feather flock together," or that cohesive social groupings are most likely to form between actors who are most similar in the most ways (McPherson & Smith-Lovin 1987, McPherson, Popielarz & Drobnic 1992). Delineations of social structure thus emerge as a function of the differentiation of parameters representing the locations of individuals in single dimensions of social space--those most similar in their location are the most likely to interact, while those most dissimilar most likely will remain segregated (Blau 1974). It is important to note that the locations of the various social parameters are inconsequential—only the social distance between nodes is of relevance.

Because the international arena is one where concerns of security are rampant, especially when calculations of power are indeterminate (Blainey 1973, Jervis 1978, Fearon 1995), a direct translation of the homophily principle does not seem appropriate—states that cluster together on "dangerous" dimensions such as military capacity may be in competition for security, prestige (Gilpin 1988), and status (Wohlforth 2009, Volgy, Corbetta, Grant & Baird 2010). As such, dimensions that promote competition may repel states from one another. Yet this possibility is easy to correct for within the framework of homophily by adding a sign—positive of negative—to the dimensions. Attractive dimensions—regime type for example—would be signed positive, suggesting that homophily should function in its standard manner. Those dimensions that could promote competition, such as similarity in military capabilities, would be negatively signed, suggesting homophily should function in the opposite manner: opposites may be more likely to form positive ties than those more similar.

The homophily principle provides a plausible explanation for the development of consistent relations between pairs of states. Those who find themselves similarly situated across multiple positive dimensions of this social space should have an increasingly likelihood of developing positive, reciprocated relations. Contrastingly, those who are similarly situated across multiple negative dimensions of this social

space should be increasingly likely to develop consistent, negative relations. Finally, it this modification to the homophily principle is correct, we should find very few inconsistent, or non-reciprocated, relations. These expectations for simple consistency are explored in the next section of this paper.

Dyadic Consistency in International Politics

Assessing dyadic consistency in international politics is inherently an exploratory process. The homophily principle suggests that positive ties should form between those most similar on positive dimensions of social space, while negative ties should emerge between those most similar on negative dimensions of social space, and more distant on the positive dimensions. Naturally, the first step in assessing the formation of homophilous ties between state actors is to derive an indicator of foreign policy tendencies and assess its consistency. Generally, international relations scholars have defined the presence of negative linkages between states through the presence of interstate conflict, while positive ties (in the growing network international relations literature) appear most commonly identified through alliances.[4] However, for my purposes, reliance on these measures may be problematic. First, reliance on conflict alone to define negative relations between states assumes an arbitrarily high threshold, where latent hostility must exceed an observable threshold before being recorded. Moreover, hostility may be present without manifesting itself in physical conflict, or extra-dyadic factors may mitigate the willingness of states to act on underlying hostilities. Although it should be generally safe to assume the presence of a militarized dispute between two states corresponds with latent hostility, one cannot assume that the absence of conflict translates to either positive or neutral relations.

Furthermore, using alliance ties as an indicator of net positive relations may be problematic for at least three reasons. First, despite the neorealist suggestion that alliances often form as temporary reactions to the balance of power, alliance agreements appear to be generally stable and long-lived (Leeds, Long &

[4]See, for example, Maoz et al (2007).

Mitchell 2000, Leeds, Ritter, Mitchell & Long 2002). Using alliances as an indicator of generally positive relations appears insufficient, as they would translate into long periods of positive ties that ignore much relevant variation in the short term interactions of states. Second, alliances represent an institutional tie between states, rather than a behavioral one. Membership to an organization does not always translate into adherence with that organization's principles (Downs, Rocke & Barsoom 1996). Finally, reliance on alliances for positive ties and conflict for negative ties creates the possibility of ambivalent relations, where allied states may also find themselves in conflict with one another. Ambivalent relations are inconsistent by definition (Heider 1946), and potentially confound our ability to make meaningful judgements about the prevalence of relational inconsistency in international relations. Instead, a suitable measure of relational tendency must remove the possibility for ambivalence so that frequency of relational consistency can be observed and then modeled.

I extract an indicator of the behavioral tendencies of state interaction from international events data, which code the daily interactions of states from public press records. Data for constructing these measures are drawn from two separate data sources: the Conflict and Peace Data Bank (COPDAB) (Azar 1980), and the Virtual Research Associates Integrated Data for Events Analysis (IDEA) (Bond, Bond, Oh, Jenkins & Taylor 2003, King & Lowe 2003). Though similar in nature, these datasets differ greatly in temporal and geographic coverage, as well as in methodologies. The COPDAB project incorporates about 70 data sources covering the 1948-1978 period, with emphasis on well known countries, including the major powers and the Middle East (Azar 1980). To provide a more contemporary analysis, the VRA IDEA data offers daily event data for all countries, during the 1990-2004 time period. The IDEA data uses automated, machine coding to add current events to the dataset in real time, drawing from Reuters news feeds (Bond et al. 2003).

Since inconsistency in dyads results from asymmetric relations, I begin with directional events data. Weights are applied to each event, rating their relative levels of conflict or cooperation (Goldstein 1991).[5] Weighting the data is more

[5]The COPDAB data contains an internal weighting scale, roughly compatible to the Goldstein

appropriate than simply using event counts, as reliance merely on the frequency of positive or negative events would treat expressions of dissatisfaction equally to armed conflict. Moreover, as lower intensity events (on either side of the scale) should be more likely to occur, weighting the scale allows for small numbers of low intensity events to be roughly equivalent to a small number of higher intensity events, at least in terms of their contribution to the overall relational tendencies of one state towards another. The weighted scores are then aggregated by year, resulting in a single directed measure of foreign policy relations for each directed dyad year (Dixon 1983).

One potential source of bias in events data is the reliance on news feeds as the primary source of the data. Certain countries (the United States, Western Europe, China and Japan, amongst others) are likely likely over reported relative to other smaller countries. Moreover, interactions between two smaller countries, less central to western media interests, are likely underreported, leading to a more precise measure of foreign policy relations for larger, more central countries. To account for this, I calculate a standard error around each measure of relational tendencies. A strict measure of relational tendencies is formed by resetting values that are not statistically distinguishable from neutrality to zero, a neutral point on the scale.

This neutral category, which following Cartwright and Harary's (1956) lead I term "vacuous", serves as an interesting theoretical category. Vacuous relations represent dyads who interact at very low frequencies, or not at all. As their label suggests, technically these dyads are consistent (as there is no asymmetry in relations), yet relative to the homophily argument they are not consistent in the same manner as dyads experiencing positive-positive or negative-negative relations. Assuming that a link is theoretically possible between all actors in the system, treating vacuous relations as missing values seems inappropriate: many values are not missing at random, but reflect a foreign policy decision not to interact. Dyadic relations where at least one side cannot be meaningfully distinguished from zero are coded as vacuous.

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scale.

Three other categories of relations emerge from these measures. Two categories represent consistent, reciprocal relations, and should conform with expectations of homophilous clustering (repelling) along positive (negative) dimensions of international social space. Positive consistency arises when both parties share predominantly cooperative relations, which should be most likely to form along non-competitive dimensions of international politics. Negative consistency, indicative of shared hostilities, should emerge relative to the competitive dimensions of internal politics, however, they should be partially mitigated by similarities on the positive dimensions. As such, the highest likelihood of negative consistency should be observed when states are most similar on competitive dimensions, with little to no similarity on positive dimensions.

Finally, relational inconsistencies although expected to be rare, provide an interesting empirical puzzle. The homophily principle provides little explanation as to the origins of relational inconsistencies. Most studies incorporating homophily are not reliant on directional relations, but instead on the mere presence of a non-directional relational tie between two actors. In this manner, the linkage between any two actors is *assumed* to be consistent, leading to a vacuum of explanation for the emergence of relational inconsistencies. It seems, however, that inconsistencies in international policies are most likely to emerge across groupings, rather than within groupings. In such cases, where lower status states attempt to align with the the "in-group", it seems likely that strongly positive relations from the weaker state may be met with an inconsistent response from the stronger.

The Dimensions of International Politics

As Blau (1960, 1974, 1977) suggests, states should cluster relative to their positions in multidimensional social space, in this case, the international system. The more similar they are on positive dimensions, the more likely they are to form cohesive in-groups, representing a state of positive consistency. Likewise, the more dissimilar they are on these dimensions, the more likely they are to repel one another, forming negatively consistent relations. This section defines various dimensions of

international politics, including the military dimension, domestic and international economic dimensions, political regime and institutional dimensions, as well as a cultural dimension. The homophily principle suggests that it is not the dimensional positions themselves that matter, but rather the social distance between positions that influence the likelihood of a positive tie forming. Accordingly, all measures (unless otherwise specified) measure the absolute distance between the location of dyadic members on that dimension of international space.

Military Dimension

The military dimension of the international system is coded using two indicators, both drawn from the Correlates of War National Materials Capabilities dataset (v3.01) (Singer, Bremer & Stuckey 1972). First, the Composite Index of National Capabilities (CINC) score provides an indication of the military potential, factoring in both decisions of the states relating to military development, and the natural characteristics of the state (such as resources and population) which condition its potential level of strength. The degree to which these scores are similar provides insight to the similarity in the potential strength states could feasibly mobilize.

States, however, do not always choose to convert all available resources into military might. To account for this policy decision, I also include a measure of difference in military spending. While a factor of the capabilities index, military expenditures more accurately represent the intended militarization of a state, or the amount of potential military capabilities actually being converted into usable strength.

Domestic Political Institutions

It is widely known that democracies do go to war with one another (Doyle 1986, Ray 1993). It has been argued that the democracy represents the acceptance of certain norms, including the norm of non-violent conflict resolution (Dixon 1993, Dixon 1994). Democracies, therefore, should be more likely to develop positive

relations towards each other on the basis of these shared norms. To account for the possibility that clustering occurs relative to similarity of political regime, I include a term measuring the institutional similarity of each country's regime, as measured by the Polity IV data project (Marshall & Jaggers 2002), as well as the minimum level of democracy for each non-directed dyad.

Additionally, I take into account significant shifts in the structure of domestic political institutions. When a significant regime transition occurs, whether towards democracy or towards autocracy, relations with other states are most likely affected. I code two such transitions. Transitions towards democracy (autocracy) are present when one dyadic member experienced a shift of three or more points in the positive (negative) direction on the polity scale during the previous 5 years.

International Political Institutions

Intergovernmental organizations provide a forum for discussion, cooperation, and conflict management (Russett, Oneal & Davis 1998). They also represent voluntary (and costly) organizations which states choose to join. Therefore, membership in international organizations generally suggest some degree of adherence to the norms and principles of that organization, or an affinity towards the organization and members thereof. States who are members of many of the same organizations likely have greater similarity of policy preferences, as they are voluntarily joining a similar profile of organizations. To test this assumption, I include a count of dual membership in intergovernmental organizations, as measured by the Correlates of War Intergovernmental Organization dataset (v2.1) (Pevehouse, Nordstrom & Warnke 2003).

Intergovernmental organizations might also represent a position of centrality of power within the international system (Hafner-Burton & Montgomery 2006). Individual countries membership portfolios could represent the degree to which they are integrated into the international system, or their ability to influence other states policies. With this in mind, I include the difference in the number of organizations to which each country is member, to gauge the extent to which similarities in levels

of integration influence the likelihood of balanced relations forming.

Levels of Domestic Economic Development

Individuals have been shown to cluster in terms of socioeconomic indicators, including levels of education and, more frequently, wealth (McPherson & Smith-Lovin 1987). Indeed, theories of international relations have often spoken of the stratification of the world into the core, periphery and semi-periphery relative to levels of economic development (Wallerstein 1974, Wallerstein 1976). Measures of the economic dimension are derived from Gleditsch's Expanded Trade and GDP data (Gleditsch 2002)[6]. Similarity in the size of the economy is measured as the difference between yearly GDP measured in (1996) real dollars. While this potentially allows for powerful economies to cluster, overall size of the economy is likely related to the population and size of the country, as well as that countries access to resources. Therefore, I also include the difference in the relative level of development of the countries, measured in per capita GDP.

International Economic Exchange

International economic interdependence has been shown to reduce the likelihood of violent interstate conflict, which should generally result from situations of negative dyadic consistency. Moreover, as Oneal and Russett (1997, 1999) argue, trade interdependence is best understood as the importance of international trade with a given trade partner as a proportion of overall economic performance. Following Oneal and Russett's lead, I measure economic dependence as the sum of exports to B and imports from B, divided by A's economic size. I differ from Oneal and Russett's measure by using the absolute distance between levels of economic dependence, rather than the score of the least dependent dyadic member.

[6]For computational reasons, I measure GDP in units of millions of 1996 US dollars.

The Cultural Dimension

While cultural similarity likely influences the manner in which states position themselves relative to others in the international system, objectively measuring culture proves quite difficult. The Clash of Civilizations hypothesis suggests that most major conflicts develop on cultural lines, as differing cultures seem incompatible and thus conflict prone (Huntington 1993). Despite the controversy of this theory, "civilization" and culture remain abstract. In this study, I rely on a relatively crude proxy for culture, being the colonial history of the dyad. A former colonial relationship is coded as being present if one member of the dyad was ever part of the colonial empire of the other. Data for this indicator are drawn from the Issue Correlates of War project's (ICOW) Colonial History dataset (v0.4).[7]

Other Structural Considerations

In addition to the parameters of differentiation discussed above, there are a variety of structural considerations which may influence the likelihood of relational consistency and inconsistency emerging within a dyad. These parameters are not acquired traits, but rather ascribed by the nature of the international system. First, the sheer frequency of interaction might influence the onset of relational consistency. By definition, dyads must interact with some minimal frequency for non-vacuous balance to emerge. Therefore, I include the raw number of events between dyadic members as a control for the frequency of interaction between states. I expect that consistent relations are more likely to emerge between states that interact more often. Additionally, physical proximity might hinder such interactions, especially among less powerful states. Distance is coded as the natural log of intercapital distance separating dyad members, controlled for contiguity, as generated by EUgene (Bennett & Stam 2000, Bennett & Stam 2003).

[7]At the time of writing, this data can be attained from Paul Hensel's website, at http://garnet.acns.fsu.edu/ phensel/Data/colhist.zip.

Method of Analysis

While the version of homophily discussed above provides a plausible explanation of the underlying data generation process, it is not adequately developed in its application to international relations to lead to concrete hypotheses relative to specific covariates. Moreover, despite the widespread reference to dyadic consistency (reciprocity) as a fundamental norm of international politics (Axelrod 1980, Axelrod 1984, Axelrod & Keohane 1985), to my knowledge, scholars of international relations have yet to analyze the empirical conditions driving the emergence of reciprocated relations, instead focusing on its role as a strategy. For these reasons, I engage in an exploratory analysis, guided by the logic of homophily. Moreover, because my goal is to suggest the plausibility of the homophily argument in international politics, I will engage in some model-fitting exercises, in the hopes of producing future hypotheses that may help refine the homophily argument in its applications to international politics.

The category of vacuous relations appears to be a natural baseline category. This category represents those dyads that either do not interact, or do not do so in any meaningful way. However, using vacuous dyads as a baseline leads to the possible inflation of the sample size with dyads that simply do not interact, most likely for structural reasons (extreme geographical distance, lack of capabilities to project foreign policies, or just general irrelevance). I remove all those dyads who do not have at least one reciprocated annual event from the analysis. In many ways, this is similar to the removal of politically irrelevant dyads (Lemke & Reed 2001), however, it allows endogenous aspects of the data to define those countries who have the possibility to interact rather than relying on exogenous factors such as major power status and geographic propinquity.

I assess the feasibility of the homophily argument by implementing a multinomial (baseline categories) logit model, which simultaneously estimates the likelihood of a dyad experiencing positive consistency, negative consistency, or inconsistency relative to the baseline of vacuous relations. Because this is a primarily exploratory

analysis, and the homophily principle does not directly indicate which covariates should matter more than others, I allow the data to specify the functional form of each covariate. To do this, I first run a "kitchen sink" model, including all the covariates. I then add a squared terms for each measure if linear results appear counterintuitive, leaving it in the model if it has some significant bearing on on the likelihood of at least one outcome.[8]

Analysis of Dyadic Consistency

The data portray extremely high levels of consistency at the dyadic level. When relying on the COPDAB data (1948–1978), nearly 93% of all non-vacuous relations are reciprocated, while the IDEA data (1990–2004) displays about 83% reciprocity (see table 2.1). As should be expected, both values increase when ensuring that recorded levels of interactions are statistically distinguishable from zero: the COPDAB data presents 98% consistency, while IDEA approaches 95%. Transitioning from loose to strict operationalizations has an immense impact on inconsistent relations. Inconsistent relations are reduced by a factor of 3 when statistically distinguishing interactions from neutral. The differences between the loose and strict measures suggest an important caveat about dyadic inconsistency: inconsistent relations appear to primarily arise in low intensity dyads, where at least one state fails to interact with the other in any meaningful way. To illustrate this, I identify those inconsistent dyads that become vacuous when switching from the loose measure to the strict measure, and compare the average magnitude of their more neutral link to the average magnitude for both loose and strict inconsistency. On average,

[8] I am aware that this method of modeling may be counter to some scholars' notion of proper scientific conduct, and borders on "data mining". I believe this method appropriate for my tasks here for several reasons. First, the purpose of this analysis is not to test hypotheses, but instead to generate hypotheses for future research, especially relative to the source of inconsistent relations. Second, I indulge in model fitting only relative to the functional form of the covariates, and include only measures that potentially represent a theoretically relevant dimension of the international system. Moreover, linearity is a very strict assumption that is often used in statistical modeling by default, rather than for theoretical reasons (Beck & Jackson 1998). Because it is possible that there may be non-linear effects, it is not unreasonable to relax the linearity assumption when results are counterintuitive, despite its appearance as "model fitting".

Table 2.1: Dyadic Consistency in International Politics

	COPDAB, 1948–1978		IDEA, 1990–2004	
	Loose	Strict	Loose	Strict
Inconsistent	6.92%	2.02%	17.55%	5.36%
	(2,414)	(573)	(3,741)	(553)
Negative Consistent	5.77%	3.63%	8.10%	6.20%
	(2,013)	(1,028)	(1,726)	(639)
Positive Consistent	87.31%	94.35%	74.36%	88.44%
	(30,457)	(26,734)	(15,854)	(9,118)

links that drop out when moving from loose to strict operationalizations are only about 7% the magnitude of those remaining in the strict measure for the COPDAB source, while about 20% the magnitude when using IDEA. Due to this large dropoff in inconsistent relations when switching operationalizations, models investigating homophily are only reported for relative to the strict measure.

Table 2.2 provides results from the exploratory analysis of homophily as a process explaining the emergence of consistent and inconsistent relations between states. Because the analysis is exploratory in nature, I am wary to overinterpret results. For this reason, I focus only on interpreting the direction and significance of terms, rather than point estimates or precise inflection points (for the curvilinear terms). Noting their provisional nature, the analyses can be used to portrait dyads likely to develop positive consistent, negative consistent, and inconsistent relations. Moreover, since I am dealing with two distinct sources of data representing two different time periods, I also focus on similarity in homophilous tendencies between those two data sources. Overall, the models appear to offer support for the homophily principle, as factors leading to the formation of positive and negative relations relatively similar across data sources, while often opposite of one another. The results for inconsistent relations, however, are inconsistent, often with opposite signs and varying levels of significance when moving from the COPDAB generated data to those derived from IDEA. This result alone is of great theoretical importance, and merits future attention. While the homophily principle, almost universally accepted in sociological and network oriented work, does appear capable of modeling the

formation of consistent relations, it offers little insight into the factors promoting inconsistent relations among states.

The emergence of positive reciprocity in international politics appears most consistently related to political institutions. A curvilinear[9] ($\bigcup$-shaped) relationship between the minimum level of dyadic democracy and positively consistent relations is present for the 1990–2000 analysis, suggesting that positive consistent relations are most likely at the extremes: joint democracies are more likely to develop positive ties than dyads containing at least one heavily autocratic state. This portrait is further reinforced by distance between regime type. As the distance between regime types increases, positive ties appear less likely for both the COPDAB and IDEA sources. Additionally, co-membership in IGOs appears consistently related to the formation of positive ties, while similarity in levels of embeddedness in IGOs only appears to form positive ties during the 1950–1978 period.[10]

Negative relations appear to emerge relative to differences in regime type and inequalities in standard of living. In both models, increasing dissimilarity in regime type is found to correlate with an increased likelihood of negative relations. This, of course, should not be surprising in light of the democratic peace literature. Indeed, contrast this finding to the impact of regime similarity on the emergence of positive ties. Unsurprisingly, similarity in regime type is associated with positive relations, while dissimilarity is associated with negative relations. Divergence in levels of economic development also appear to have repelling effects. Increasing disparity between levels of development (per capita GDP) are associated with a heightened likelihood of negative relations, possible suggesting tensions between core and peripheral locations. Finally, consistent with much literature on international conflict, geographic proximity appears to influence the emergence of negative relations. As states become more distant from one another, their likelihood of developing negative

[9]I added the quadratic term in response to counterintuitive results. When including only the linear term, minimum democracy was negative and significant in both samples.

[10]Note, however, that similarity in IGO embeddedness and co-membership is positive and significant for all outcomes in the 1990–2000 time period. Most likely, this results from a massive increase in the number of organizations states may join, and the near-universal qualities of many of these organizations.

Table 2.2: Homophily and Relational Consistency

	COPDAB, 1950–1978			IDEA, 1990–2000		
	Inconsistency	Negative Consistency	Positive Consistency	Inconsistency	Negative Consistency	Positive Consistency
Capabilities	-0.720	1.965	-2.896***	17.255**	12.533*	21.851***
	(1.113)	(1.570)	(0.634)	(6.503)	(5.369)	(2.061)
Military Expenditures	7.05×10^{-9}	2.63×10^{-9}	-2.60×10^{-10}	-1.30×10^{-10}	-7.82×10^{-9}*	-3.44×10^{-9}**
	(3.80×10^{-9})	(4.86×10^{-9})	(1.89×10^{-9})	(3.63×10^{-9})	(3.74×10^{-9})	(1.30×10^{-9})
Minimum Democracy	0.003	0.019	-0.027***	0.045	0.011	-0.064***
	(0.017)	(0.024)	(0.005)	(0.024)	(0.019)	(0.007)
Minimum Democracy^2	-0.005*	-0.005*	0.003***	0.008**	0.001	0.003**
	(0.002)	(0.003)	(0.001)	(0.003)	(0.003)	(0.001)
Regime Type	0.010	0.058**	-0.042***	0.061*	0.042*	-0.032***
	(0.013)	(0.019)	(0.004)	(0.026)	(0.019)	(0.006)
Democratic Transition	0.067	-0.673***	-0.024	0.030	-0.067	0.247***
	(0.164)	(0.161)	(0.047)	(0.189)	(0.160)	(0.046)
Autocratic Transition	0.137	-0.187	0.031	0.326	0.325	-0.855***
	(0.171)	(0.149)	(0.048)	(0.322)	(0.303)	(0.110)
Economic Dependence	-0.222	-51.229	2.811	-8.267*	-11.802	-3.224*
	(3.184)	(31.599)	(2.352)	(3.879)	(6.202)	(1.629)
GDP per Capita	2.22×10^{-5}	3.29×10^{-5}*	-2.41×10^{-5}***	4.64×10^{-5}***	7.07×10^{-5}***	3.66×10^{-5}***
	(1.32×10^{-5})	(1.56×10^{-5})	(5.04×10^{-6})	(1.21×10^{-5})	(1.10×10^{-5})	(4.27×10^{-6})
GDP	-1.67×10^{-5}	-0.0003*	-0.0003***	-1.15×10^{-7}	2.39×10^{-7}	1.34×10^{-8}
	(0.0001)	(0.0001)	(0.0001)	(2.15×10^{-7})	(1.73×10^{-7})	(6.96×10^{-8})
Colonial Ties	-31.129***	-0.079	0.425	1.558**	1.037	0.387
	(0.374)	(0.417)	(0.435)	(0.546)	(0.606)	(0.456)
IGOs	0.004	-0.007	-0.022***	0.019***	0.011**	0.018***
	(0.005)	(0.006)	(0.002)	(0.004)	(0.004)	(0.002)
IGO Co-Membership	-0.030***	-0.050***	0.009***	0.043***	0.040***	0.059***
	(0.007)	(0.010)	(0.002)	(0.006)	(0.007)	(0.003)
ln(Distance)	0.043	-0.166***	0.113***	-0.217***	-0.372***	-0.181***
	(0.030)	(0.032)	(0.011)	(0.037)	(0.032)	(0.015)
Constant	-3.123***	-0.321	0.469***	-7.707***	-5.724***	-4.378***
	(0.348)	(0.401)	(0.130)	(0.467)	(0.467)	(0.176)
N	24346			74894		

Clustered Standard errors in parentheses

Vacuous Relations as Baseline Category

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

ties also diminishes.

Factors promoting inconsistent relations are, at best, inconsistent. Colonial ties appear to lead to inconsistent relations in the 1990–2000 period, most likely representing efforts to cooperate from the former colonial power that are met with resistance from formerly colonized states. The massive negative and significant result for the 1950–1978 period can most likely be dismissed, as these data are describing the period of decolonialization. Otherwise, due to discrepancies across the two models, very little can be said relative to the sources of relational inconsistencies, most likely due to the non-directional nature of this analysis.

The homophily principle appears able to identify both positive and negative ties with some consistency, identifying regime type, co-membership in international "clubs", and (somewhat) wealth as "positive" dimensions of the international system. Surprisingly, military dimensions, most commonly thought to evoke security concerns, display no consistent trend in leading to either positive or negative relations. Homophily fails to offer any real insight into the formation of inconsistent relations. This, however, is not overly surprising. Homophily offers an explanation of clustering in social space based on positional similarities: its purpose is to explain the formation of (positive) relations, and those relations are almost always considered unidimensional. While homophily appears adequate to explain some positive and negative relations, relational inconsistencies appear outside of the theory's purview, calling for future refinement and development.

Finally, these findings suggest one potential revision to the manner in which inconsistent relations are treated. Tests for the independence of the response categories produce inconsistent results. A Hausman test for the Independence of Irrelevant Alternatives assumption (Long 1997) suggests that the three non-vacuous categories are not independent, while a Small-Hsiao test indicates that the categories are independent, though barely. Given this, I reconsider which category is most likely to absorb inconsistent relations in the event that that category is removed. Because inconsistent relations indicate the simultaneous presence of a positive and negative link, the question becomes which of those best represents the dominant characteris-

tic of the dyad. Incorporating inconsistent relations into the positive category does not seem appropriate—cooperative relations seem to mandate reciprocity, where relations would not appear to be cooperative if only one side was acting cooperatively towards the other. Instead, it seems much more likely that inconsistent relations would fall into the negative relations category—it seems much easier for states to ignore cooperative actions than negative ones, especially once a certain threshold is passed. Indeed, inconsistent relations may be an empirical problem stemming from arbitrary time periods (years, for example), and most likely diminish if either a larger, muiltiyear aggregation period is used, or if a smaller temporal period is used (allowing for focus on the reciprocation of specific events). While I leave these considerations for future research, for the following section on complex consistency, I reassign all inconsistent values to be indicative of negative ties.

The Organization of International Structure

While Blau's theory of social structure provides some insight into the manner in which states may self organize within the international system, it presupposes that some substantial contact exists between nodes, allowing them to develop relations, whether negative or positive. Maintaining relations with other states is costly, requiring large investments of both human and material resources. As such, the vast majority of states maintain only vacuous relations, where there are insufficient interactions between states to discern whether the underlying affect is negative or positive. In these cases, two immediate questions emerge. First, how should these relations be treated? Should vacuous relations be treated as neutral, absent, or something else? Second, given that no relation is discernable, were a relation to form, what form would it take? Fortunately, structural balance theory (Heider 1946, Cartwright & Harary 1956) suggests answers to both of these questions.

Balance theory formalized the old proverb: "the enemy of an enemy is a friend".[11]

[11]It is important to note that the terms "friend" and "enemy" are not to be equated to ally or disputant, but rather to denote positive or negative relations. Use of friendship and enmity is

Originally formulated as a theory of cognitive psychology, Fritz Heider (1946) posited that the sentiments that exist between individuals are conditioned by their mutual feelings toward the situation in which they interact, the person who introduced them, their opinion of an object of an event, or any number of other external influences. If an individual attends a well organized and entertaining social event, their positive experience at that event likely leads to a positive perception of the host. Likewise, a guest who is not enjoying themselves probably associates the host with their negative view of the social event, leading to a unfavorable perception of both the event and the person holding it. Formally, Heider argues:

> A balanced state exists if all parts of a unit have the same dynamic character (i.e., are all positive, or all negative), and if entities with different dynamic characters are segregated from each other. If no balanced state exists, then forces towards this state will arise. Either the dynamic characters will change, or the unit relations will be changed through actions or through cognitive reorganization. If a change is not possible, the state of imbalance will produce tension (Heider 1946, 107-108).

Given the notion of balance, it seems likely that in the event that vacuous relations become complete, notions of a friend's friends and a friend's enemies should help define an otherwise undefined relation. First, vacuous relations, absent relations, and neutral relations are treated equivalent—since issues of balance and imbalance are defined in terms of positive and negative relations, neutral or vacuous relations have no bearing on the estimates of the actors.[12] An individual should be more likely to form a friendship with its friend's friend rather than with its friend's enemy, and relations should be even more likely to form when many friends share a positive perception of the third party. Likewise, when a state has no preconceived sentiment towards an enemy's friend, balance would suggest that negative relations

metaphoric to the direction of the relation, not the intensity.

[12]This proposition has been tested and confirmed through experimental research. Morrissette and Jahnke (1967)have shown that structures containing neutral linkages are perceived in the same manner as structures with vacuous links, allowing for a neutral link to be treated as if it were not present. Scholars should we wary, however, in widely applying this logic outside of this specific setting.

should emerge, as the known friendship between an enemy and a third party should classify the third party as a likely hostile (Crescenzi 2007). Thus, beginning with Blau's (1974, 1977) theory of social structure as the origins of relational ties, adding the balance framework as a means of perpetuating and updating that structure, we emerge with expectations as to the likely configuration of that structure. The configuration of the network of states, self organized through their relations with one another, should conform to the expectations of structural balance, where the enemy of an enemy is a friend and the friend of a friend is a friend. This network is created, and analyzed below.

Observing International Structure

The indicators of relational tendencies developed above are used to construct a network of international friendship and hostility. In its simplest form, balance theory classifies relations as positive or negative (Cartwright & Harary 1956), seeking consistency among triadic relations. To assess balance in the international system, a network is defined using only positive and negative links. Originally, this produces networks of directed relational tendencies linking states. The direction of tendency (A$\rightarrow$ B or B $\rightarrow$ A), however, is not of the utmost importance. In fact, at the dyadic level, balance theory suggests that relations must be reciprocated; a non-reciprocated dyadic relation creates an ambiguous triadic structure (Cartwright & Harary 1956). Figure 2.1 demonstrates this problem. Triad 1 depicts a triadic structure where the relations between B and C are not reciprocated. Triads 2 and 3 are nested within triad 1, and demonstrate the two distinct cycles of transitivity embedded within triad 1. Notice that the structure in triad 2 is balanced: the enemy of an enemy is a friend. Now, note the effect of reversing the path when one relation is non-reciprocated. Triad 3, drawn from the same structure as triad 2, illustrates an imbalanced situation: the friend of a friend is an enemy. Without reciprocated relations, the system cannot attain a state of balance, as a single non-reciprocated relations makes the triad ambiguous.

Given the high levels of dyadic consistency (reciprocity) reported in table 2.1,

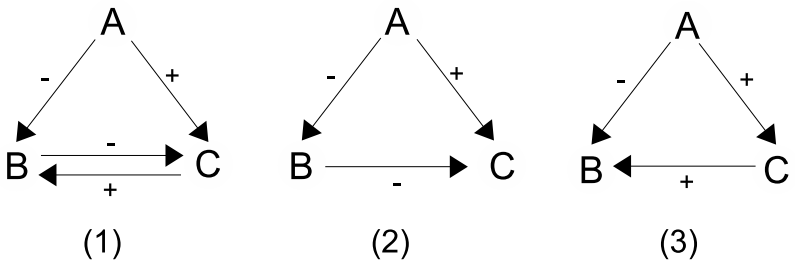


Figure 2.1: Reciprocity and Balanced Triads

and the above discussion, it seems safe to eliminate the directionality of the dyadic relational tendencies measures. The problem of inconsistency is minimized by focusing on the strict measure, where most of the inconsistent relations have been eliminated as random noise. To remove the directionality of the measure, I apply the weakest link principle (Dixon 1993, Dixon 1994), following the logic that positive relations are best identified by the lowest level of reciprocated relations, while negative relations are most properly characterized by most hostile perception. Finally, the dyadic relational tendency scores are transformed into a symmetric, valued network for each year, where relations are defined as either positive, neutral/vacuous, and negative.

The resulting networks are rich and complex. Visual inspection of the networks can be useful in making structural features apparent, as it can illuminate patterns of relations hidden by descriptive inspection of the data. I present the network of relational tendencies for 2001, derived from the IDEA events dataset, in figure 2.2. Negative relations are presented as red lines, while positive relations are colored blue. Thicker lines represent a higher magnitude of relations, whether positive or negative. The size of each node represents its centrality in the network. Centrality indicates the nodes "importance" in the network, as indicated through the number of ties it has with other actors (Wasserman & Faust 1994). Finally, although the layout of the network is somewhat arbitrary, an algorithm was used to attempt to situate similar nodes together, with those most connected towards the center. Despite its complexity, this network is relatively sparse. However, while the network could be

much more dense, it is already approaching an unintelligible state when using visual inspection. One apparent feature of the network is that a relatively small number of states appear to account for a large amount of hostility (most notably, Iraq, Iran, and Afghanistan). Moreover, one can begin to see balanced relations, both as "the friend of a friend is a friend" (US-UK-Germany), as well as through the "enemy of a friend is an enemy" (US-UK-Afghanistan). However, given nearly 200 nodes, and the possibility of nearly 20,000 links, it becomes necessary to deconstruct the network into simpler "subnetworks" to assess the patterns within it.

Frequencies of Balance and Imbalance in International Politics

I begin analyzing complex consistency looking at frequencies of balanced and imbalanced triads, again using the relational tendency data constructed above. I form a triadic dataset containing the relations between all triangles of countries, before categorizing each triad by the consistency of its links. Two triadic configurations represent situations of balance—"the friend of a friend is a friend" and "the enemy of an enemy is a friend"—where consistent relations internally reinforce each link of the triad. Imbalance is present when "the friend of a friend is an enemy". Finally, I include the ambiguous "enemy of an enemy is an enemy" triad, as the final complete triadic configuration. I assess the prevalence of balance and imbalance in two manners. First, I aggregate to the dataset level, presenting the proportion of complete triads[13] that exhibit different types of balance or imbalance. While these results do portray overall tendencies, they are impervious to fluctuations that may be caused by exogenous shocks to the system. For this reason, I also present trends in frequencies of balanced and imbalanced relations longitudinally.

Table 2.3 presents the aggregate figures for balanced and imbalanced relations. Somewhat surprisingly, patterns during the 1948–1978 period look strikingly different from those of the 1990–2004 period. When looking at the COPDAB data source, about 90% of complete triads are balanced, with the vast majority taking the form of "the friend of a friend is a friend". While balance is still prevalent in

[13]Here, complete triads refers to triads where all three links take on non-zero values.

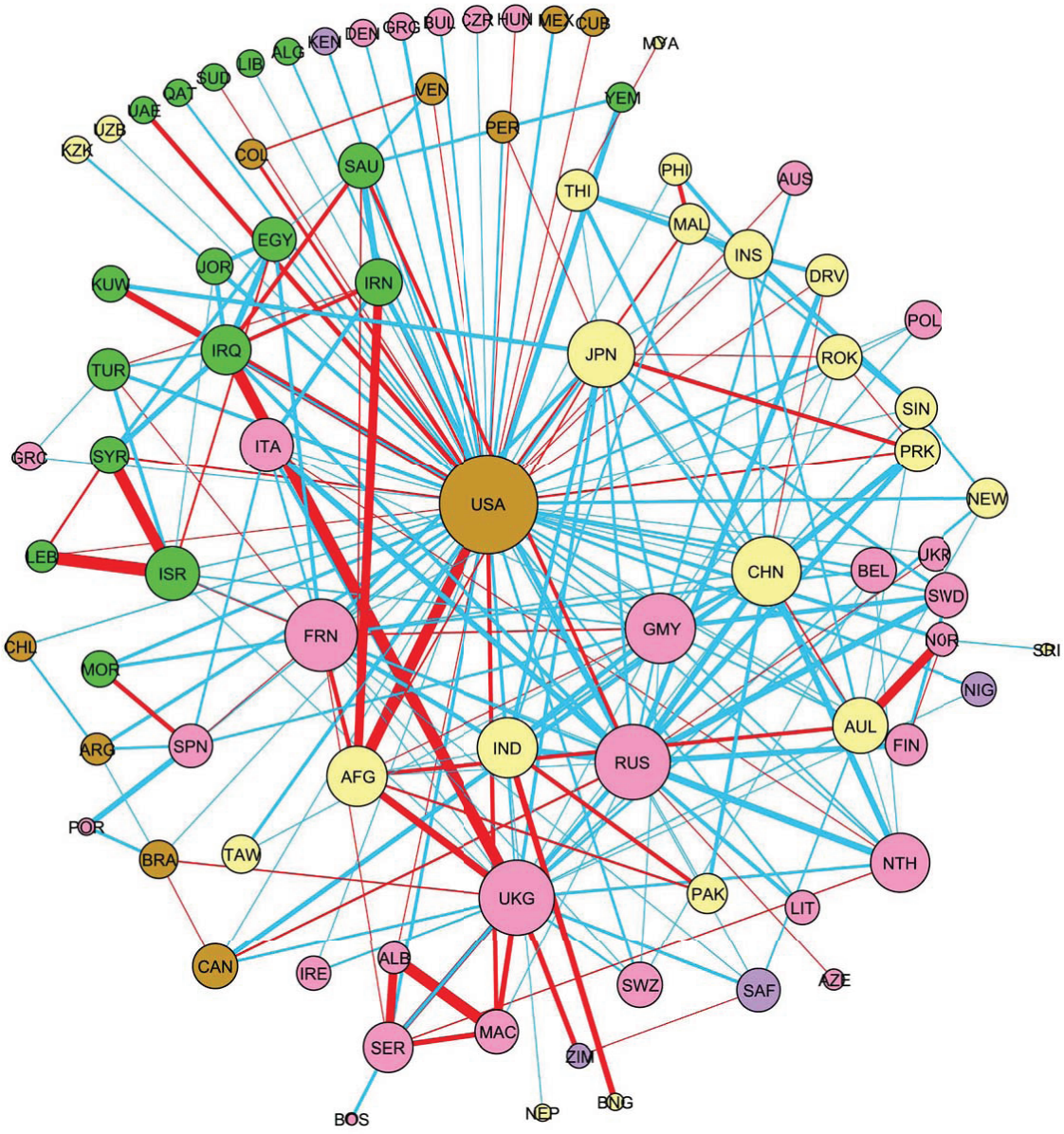


Figure 2.2: International Friendship and Hostility, 2001

Table 2.3: Frequencies of Balance and Imbalance in the International System

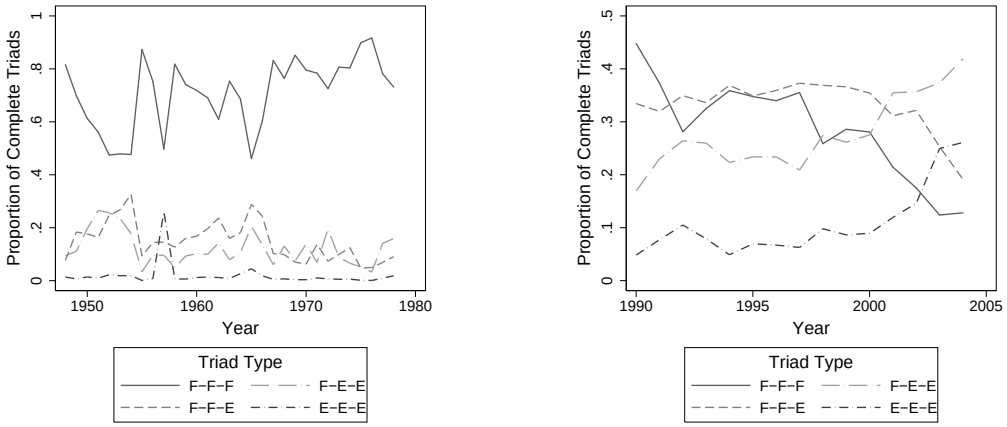
	COPDAB, 1948–1978	IDEA, 1990-2004
Friend of a Friend is a Friend	81.0%	31.3%
	(244,292)	(8,320)
Enemy of an Enemy is a Friend	9.0%	25.6%
	(27,088)	(6,815)
Friend of a Friend is an Enemy	9.1%	34.4%
	(27,307)	(9,150)
Enemy of an Enemy is an Enemy	1.0%	8.7%
	(2,964)	(2,325)
Total	100.1%	100%
	(301,651)	(26,610)

the post-cold war era (56.9% of complete triads), it is not nearly as prevalent as during the early years of the cold war, nor does it display the same pattern. The frequency of consistently friendly triads is greatly diminished (31% vs. 81%), while enemy-enemy-friend triads increase from 9% of complete triads to over 25%. More surprising is the large increase in imbalanced relations: imbalance increases from only 9.1% during the 1948–1978 period to over 34% in the post-cold war period, and is the most frequent triadic configuration present in these data.

The two time periods represent fundamentally different configurations of the international system. The COPDAB data picks up the bipolar order endemic to the cold war, while the IDEA data represents a more fluid, multipolar order. During the cold war, the system was bifurcated into two primary blocs, which should be characterized by strong (positive) in-group ties and negative ties between out-group states. Moreover, the low frequency of enemy-enemy-enemy triads suggests that the system was primarily characterized by these two blocks: the presence of a third cluster positively tied within and negatively connected to other groups would require a much greater frequency of these triads, more akin to what is observed in the post-cold war order. In many ways, the configuration of the 1948–1978 system corresponds perfectly with what would be expected by a functioning balance of power bloc system.

The 1990–2004 period appears much more ambiguous. While there still appear

Figure 2.3: Frequencies of Balance and Imbalance



(a) COPDAB (b) IDEA

to be strong in-group clustering (friend-friend-friend), removed from other groups by negative relations (enemy-enemy-friend), there are observable increases in both imbalanced and ambiguous triads. The increase in enemy-enemy-enemy triads suggests the possibility of more clusters, as states are free to position themselves without the imposition of cold war bipolarity. Moreover, the increase in the frequency of imbalanced relations may suggest either a reshuffling of relational ties, or the presence of greater uncertainty in this system.

Figure 2.3 provides an longitudinal view of these patterns, illuminating how fluctuations in levels of balance and imbalance move together. There appear to be an almost cyclic pattern during the 1948–1978 period, where friend-friend-friend balance decreases for a short period, then rebounds for a short period. Interestingly, many of these dips appear at moments of international crisis. The dip in the early 1950s appears to correspond with the Korean War, and the decrease in the mid 1960s coincides with the onset of the Vietnam War and decolonization. Additionally, enemy-enemy-friend balance as well as imbalance appear to partially respond to changes in friend-friend-friend balance, with the exception of in the late 1960s, where the decline in friend-friend-friend balance most visibly corresponds with an increase in enemy-enemy-enemy relations.

The patterns visible in the 1990–2004 era are quite different. First, although the era begins with the predominance of friend-friend-friend balance, imbalance quickly becomes (slightly) more common. Over time, friend-friend-friend balance becomes more marginal, while triads become more characterized by either friend-enemy-enemy balanced relations or enemy-enemy-enemy relations. This pattern is significant, and offers insight to the reshuffling of the international order following the fall of the Soviet Union. The reduction in friend-friend-friend triads suggest that formerly cohesive blocks are being disbanded, while the subsequent increase in enemy-enemy-enemy relations represents an increasing number of coalitions forming. In many ways, this corresponds with the transition from a bipolar order to a multipolar order. Moreover, the increase in imbalanced (friend-enemy-enemy) relations suggests that there is substantial reshuffling of relations, as the formation of new ties inevitably creates temporary imbalances.

This descriptive analysis of balanced relations in the international system corresponds well with conventional theories of systemic structure, and illuminates certain structural features of bipolarity and multipolarity. Furthermore, it appears that differences in the patterns may be accounted for by the systemic transformation following the end of bipolarity. These conclusions, however, must not be over-interpreted, due to the 12 year gap between the coverage of COPDAB and IDEA. Further research is needed to attempt to fill in this gap, as to more accurately observe this systemic transformation.[14]

Modeling the Emergence of Relational Ties through Balance and Imbalance

The final phase of this analysis focuses on the influence of balanced and imbalanced relations in the formation of relations between state actors. Heider (1946) suggested that the positive relations were most likely to form among social actors who shared similar opinions of some externality. Contrastingly, dissimilar opinions of that same

[14]The World Events Interaction Survey does span this gap (McClelland & Hoggard 1969). These data are not used here, however, due to over-coverage of major powers and the Middle East, and under-coverage of the remainder of the world.

externality created tensions, making the formation of a positive relational tie less likely. Translating this "tendency towards balance" into testable hypotheses is relatively straightforward: relational ties should be most likely to form when their presence would create structurally balanced triads, and less likely to form when their presence would create structurally imbalanced triads.

While the formation of these expectations is relatively straightforward, implementing models to test them is much more daunting. At its most basic level, a model assessing the likelihood of any network tie forming must use the presence of other network ties to predict them. On some level, this is problematic, as the dependent variable for one observation is used to calculate independent variables for other observations. In such a model, all independent variables are endogenous, and completely dependent on the presence of absence of the dependent variable, violating the assumptions of most families of statistical methodology. One solution to these problems lies in the exponential random graph family of models. Exponential random graph models (ERGMs) were developed to model higher order dependencies in relational data, allowing for the use of endogenous aspects of networks to be used as predictors of the links that make up those networks (Robbins, Pattison & Wasserman 1999, Robbins, Pattison, Kalish & Lusher 2005, Wasserman & Pattison 1996). In the most basic sense, these models define covariates by assuming that a relational tie is absent, and asking how many structures of a certain type would be created by the inclusion of that link. These "change statistics" are then used to endogenously predict the likelihood of a tie forming, based on the surrounding structural features of the network.

These models are not without their limitations, however. Because the covariates are calculated from the observed values of the dependent variable, merely generating the parameters for the model is incredibly computationally intense. Moreover, increasing the sample by one actor has an exponential impact on the complexity of the model, increasing both the computational time, but also the likelihood that the model will fail to converge. Finally, and most significantly, is the problem of degeneracy (Handcock 2003). Degeneracy occurs when the ERGM model identifies

parameters that are unable to replicate the original network through simulation. Most frequently, this occurs from the lack of negative feedback when fitting parameters. For example, if looking at an undirected, binary network, a researcher might be interested in the prevalence of triangles (complete triads). To model this, the number of triangles that each additional link would create are calculated as covariates, as well as the number of 2-chains that would be produced: by definition, adding $\overline{ab}$ to create triangle abc would create 2 chains of 2 links ($a \rightarrow b \rightarrow c$ and $c \rightarrow a \rightarrow b$). Much like interaction terms, we must control for these lower-order structures to accurately calculate the higher order relationship. If the model returned positive values for both triangles and chains, as well as a positive constant, there would be no negative feedback in the model, most likely resulting in a full graph/network.

The most common solution to the issue of degeneracy is to use a pseudolikelihood algorithm to initially parameterize the model, and then to use Markov Chain Monte Carlo simulations to modify those parameters until the network is adequately simulated and degeneracy is removed. Unfortunately, this is computationally intense, and currently only implemented for single value, binary networks. Because the network of relational tendencies is inherently signed (positive and negative), it is not yet possible to implement the MCMC simulations to account for the possibility of degeneracy. Noting this limitation, and the possibility of degeneracy, I implement a valued p* ERGM using the techniques set forth by Robbins, Pattison, and Wasserman (1999). I begin with 2 dichotomous matrices, one containing all the positive ties, and the other, all the negative ties. Assuming each dyadic link $\overline{ab}$ absent, I calculate the number of chains and triangles that would be created by its presence. I calculate three types of chains (friend-friend, friend-enemy, and enemy-enemy) and four types of triangles (friend-friend-friend, friend-friend-enemy, friend-enemy-enemy, and enemy-enemy-enemy) indicative of structural balance. These values are calculated by matrix multiplication and addition, using the positive relation matrix, the negative relation matrix, and the link matrix.[15] Because the values of these co-

[15]The link matrix is formed by taking a full, binary matrix and subtracting the Identity matrix.

Table 2.4: Balance, Imbalance, and the Formation of Relational Ties

	COPDAB, 1948–1978	IDEA, 1990–2004
Friend-Friend-Friend	0.247***	0.514***
	(0.028)	(0.025)
Friend-Enemy-Enemy	0.135***	0.081***
	(0.020)	(0.014)
Friend-Friend-Enemy	0.040***	0.119***
	(0.008)	(0.009)
Enemy-Enemy-Enemy	0.255***	0.108***
	(0.064)	(0.026)
Friend-Friend	-0.025***	0.004*
	(0.003)	(0.002)
Friend-Enemy	0.006**	0.026***
	(0.002)	(0.001)
Enemy-Enemy	0.046***	0.079***
	(0.005)	(0.003)
Enemy Constant	-4.774***	-5.273***
	(0.120)	(0.028)
Friend Constant	-2.334***	-4.426***
	(0.181)	(0.065)
N	62,5230	776,427
χ^2	655.677	9121.007

Clustered standard errors in parentheses

No relation is the baseline

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

variates vary relative to the outcome rather than the dyad, each dyad contains three sets of covariates (positive, negative, and neutral). The "choice" of the type of network tie a dyad will form is then modeled using a conditional logit model (Robbins, Pattison & Wasserman 1999, Long 1997). Results of these analyses are presented in table 2.4.

Immediately, it appears that degeneracy might be a problem. While the two constant terms do provide some negative feedback, only the friend-friend chain in the 1948–1978 period adds to that feedback, diminishing the possibility of a full graph. Acknowledging this possibility, one should not put too much weight on the implications of these results. While they do provide much insight into the structural

Conceptually, it becomes identical to the "constant" vector included in linear regressions.

factors driving the formation of relational ties, it would be premature to describe these results as conclusive until tests for degeneracy in valued network data are developed and implemented in statistical software.

The results suggest that both era display enormous clustering. The positive impact of the friend-friend-friend triads suggests that the formation of positive relations are most likely to form when completing a positively consistent, balanced triad, and corresponds with in-group clustering. Moreover, the prevalence of the enemy-enemy-enemy triad, especially in the 1948–1978 era, suggests a separation among clusters in addition to the likely emergence of multiple clusters. While unsurprising for the 1990–2004 multipolar era, this suggests that at least one additional coherent bloc existed outside of bipolarity during the cold war. Of course, this finding may be driven by the non-aligned states, especially during the time of decolonialization. The balanced triad friend-enemy-enemy also appears more than would be expected at random, suggesting that positive ties are more likely to form relative to shared enemies, and that states are more likely to develop negative relations with their friends' enemies. The prevalence of the imbalanced friend-friend-enemy triad in the 1990–2004 era is surprising, yet corresponds to the heightened levels of imbalance observed in the descriptive analysis. Still, comparing the magnitude of this triad to the balanced friend-friend-friend triad demonstrates that positively consistent triadic relations have a far greater impact on the likelihood of relational tie formation than this more ambiguous triad. Most likely, the presence and significance of this tie signifies the increased partitioning of the international system caused by the more fluid multipolar system.

Conclusions

This study explores the configuration of the international system through a sociological structuralist perspective, where systemic structure is seen as an emergent property of the relational ties that exist between states. To my knowledge, this is the first study to focus on observed international structure, independent of theo-

retical assumptions as to its nature. The initial focus was on relational consistency within this network of international relational tendencies. Relational consistency was assessed in two ways. First, a simple dyadic approach demonstrated exceptionally high levels of consistency and reciprocity in the international system. In the two time periods analyzed, on average, more than 80% of all relations were reciprocated. When looking at complex, triadic consistency, the analysis reveals at least 50% triadic consistency, with levels up to 90% at certain periods of time.

However, this analysis provides far more insight than a mere description of the behavioral dimension of the international system. The findings appear to conform to expectations of prevalent IR theories, but without reliance on the same restrictive assumption. For example, the homophilous clustering of states across multiple dimensions of international politics appears to explain the emergence of reciprocated ties. Neoliberals contend that reciprocity functions as a norm of international relations (Axelrod & Keohane 1985, Keohane 1984), however, they rely on restrictive and somewhat questionable assumptions of rationality in explaining its prevalence. This study demonstrates the same patterns of reciprocity expected by neoliberalism, however, the analysis of dyadic consistency demonstrates that these links may emerge relative to homophilous clustering rather than through rational, tit-for-tat strategies. The homophily argument does not rely on assumptions of rational decision making. Quite opposite, homophilous clustering occurs almost automatically, relative to the proximity of actors in social space.

More interestingly, however, is that the triadic analysis appears to demonstrate the polarization and clustering of the international system, much as described by the neorealist paradigm. Positively balanced triads form in-groups, while enemy-enemy-enemy triads suggest for formation of at least 3 distinct clusters. It appears as if the configuration of this foreign policy behavior dimensions of the international system mirrors the cold war distribution of power, while diverging greatly in the post cold war era, where the foreign policy behavior dimension appears to have multiple cores, while the post cold war power system is generally agreed to be unipolar. Of course, the similarity between the two dimensions during the cold war era should

not be surprising. If balance of power theory is correct, the emergence of clusters in the behavioral dimension is directly related to levels of power. Here, multiple dimensions of international structure appear to reinforce one another, adding to the rigidity of the cold war order.

The close similarity between power-based and behavior-based dimensions of international structure during the cold war era may suggest a missing element of that periods heightened stability. While data limitations leave a non-trivial gap in the foreign policy behavior data during the 1980s, the analysis covering the 1990–2004 period demonstrates a less rigid, more open configuration than at the peak of the cold war. While the gap in the data makes it impossible to test this assumption, it could be that the loosening of the behavioral dimension weakened the overall cold war structure, contributing to the end of the central feature of the system: the East-West divide. As such, with additional historical events data, it is possible that this type of analysis would pick up alterations in the system telegraphing the end of the cold war, a case that neorealism—with its focus primarily on the structure of systemic power—has thus far failed to explain.

These foreign policy networks may also be used to quantitatively assess balance of power/balance of threat (Walt 1985) theories, which to this point have most effectively been evaluated anecdotally. Indeed, structural balance appears a quantifiable and underlying process to international balancing behavior, where the perfectly balanced, bipolar, system (in the balance of power sense) must also be perfectly balanced in the structural balance sense. Following balancing (of power/threat) logic alliance formation and conflict joining should be driven by legitimate threats to a state's security. Crescenzi (2007) points out that threats are most naturally identifiable as those hostile to one's friends, or other similar states. If balance of threat behavior is occurring, we would expect to see the prevalence of friend-enemy-enemy structures. Moreover, this framework could account for both the formation of alliance ties (the friend link) as well as conflict ties (the second enemy link), depending on whether the original incomplete triadic structure was enemy-friend or enemy-enemy.

Finally, while this study set out to offer a descriptive analysis of the behavioral dimension of the international system and with plausible explanations of the origins of that structure, it almost definitively focused too much on the latter and not enough on the descriptive elements. Additional analyses, including distributional graphs of the measures, scatter plots of the dyadic relations, and a more detailed analysis of the networks, including longitudinal analyses of changes in density, centrality, etc... would almost certainly have been more insightful than the homophily based analyses and the ERGM models presented. Indeed, this chapter most likely tried to accomplish too much, at the expense of more detailed insight into the patterns and evolution of these networks. Future iterations of the research begun here should first establish the patterns within the data, before attempting to explain the emergence of those patterns. While the homophily-based argument does appear to offer some explanation of dyadic consistency, it most likely needs to incorporate other structural dimensions (network density, for example) to more concisely explain the origins of those relationships in a non-trivial way. Moreover, the idea of international inconsistency—both dyadic and triadic—merits and requires further research. Reciprocity is currently best understood as a strategy rather than as a natural, self-reinforcing state, while little attention is paid to origins and effects of non-reciprocated relations. Because these inconsistencies can be thought of in a network setting, they do not represent isolated disturbances, but rather disseminate through the system via shared connections, destabilizing surrounding segments of the network.

CHAPTER 3

Peace Through Imbalance: A Policy Reinforcement Model

Introduction

In recent years, the United States has engaged in two major military operations against Iraq. In 1991, the United States led a coalition of 34 states to respond to Iraqi aggression against Kuwait. Though the military forces of the United States alone would have been more than sufficient to remove the Iraqi presence from Kuwait, the US went to great lengths to form a broad, multilateral coalition. Again, in 2003, the United States sought to form a large coalition prior initiating hostilities in Iraq, finding support from 48 additional countries, though only 4 of them provided troops for the initial operation. Why are such lengths taken to form coalitions, especially in situations where, militarily, they add very little?

Coalitions provide more than military assistance. They provide reassurance to other coalition members that their policy is correct. Before invoking potentially controversial foreign policies, states gauge the environment to determine the likely repercussions of their policy decisions. Coalitions provide informational feedback to states, creating positive feedback that reaffirms policy positions, potentially prompting states to act when they otherwise would not. Another seldom recognized property of coalitions is their heightened stability and balance. Consider the 1991 Desert Storm coalition from the perspective of the United States. An individual coalition member—France, for example—can be thought of as the apex of a triad opposite the hostile US–Iraq dyad. Such a triad is balanced in the sense posited by structural balance theory—the triad is formed by one positive or friendly link (US–France) and two negative or hostile links (US–Iraq and France–Iraq). The same reinforcing and balanced structure emerges in the case of each additional coalition member. A coalition formed against a common enemy thus consists of a set of mutually reinforcing,

balanced triads.

From a more abstract, social science perspective, we cannot fully understand these relations through the prevalent, dyadic approach, as it can only represent either the relations between the coalition members or between one coalition member and one non-member. To capture the positive feedback provided through the coalition, the dyad must be observed in the context of third parties, suggesting the interplay of direct (dyadic) and indirect (triadic) factors. From the perspective of any coalition member, another coalition member would form the apex of a triad, and relate positively with other coalition members, while negatively towards coalition's target. In fact, this denotes a special type of triad—a balanced triad—known for its increased stability and its internal reinforcement.

In the following pages, I develop a theory of foreign policy reinforcement positing that states receive external validation of their dyadic preferences through other states in the system. External information can provide either positive or negative feedback, which either increases or decreases confidence in dyadic preferences. This triadic theory is informed by balance theory (Heider 1946, Cartwright & Harary 1956), a theory based on the well known proverb: "the enemy of an enemy is a friend". Once the reinforcing linkage between direct and indirect relations is developed, I develop measures of dyadic hostility and external reinforcement. These measures are added to a standard conflict model, modified to represent the interaction between dyadic relations and third party dependencies. Finally, results are presented offering support to the triadic reinforcement theory— states are more likely to act boldly when third party relations reinforce dyadic hostility; when such relations are inconsistent, uncertainty appears to cloud that hostility, making states reluctant to act.

Two Visions of Interstate Conflict

Interstate conflict has traditionally been understood in two lights. First, structural theories, mainly neorealism, attributed the propensity for conflict to configuration of

the international system. Defined by the distribution of power, systems with varying numbers of poles or power centers placed different constraints on the actions of states, making the propensity for conflict more likely to emerge in systems portraying certain structural features.

International conflict theorists have long recognized the importance of understanding how states stand in relation to one another within the international system. Indeed, realist and related approaches have long drawn attention to the structural configuration of the international system based on the distribution of power. The key insight here is that the number, structure, and cohesion of poles or power centers in the system can exert a certain constraining effect on states, which in turn affects the propensity for conflict. Of course there are disagreements on precisely how this mechanism works. Waltz (1964), for example, suggests a series of factors that promote stability in a bipolar system, revolving around the constant fear of violence breaking out between the two opposing camps. Due to this configuration, and the predominance of the two major bloc leaders, Waltz argues, major conflict is less likely to occur. Deutsch and Singer (1964) question how the most stable system can be one on the brink of global war, arguing instead that a multipolar system should lead to a reduced frequency of war. Given a greater number of relevant actors, states should be more able to participate in balancing behavior to maintain a state of equilibrium within the system. However, as there are more relevant actors in the system, the attention a state can devote to each is diminished. As such, states should tend to prioritize their interactions, focusing on strategically important states rather than on the full array of states in the system.

More recently researchers have abandoned systemic level theories in favor of strategic interaction models that focus on the attributes of and relations within dyads (for example, see Bremer 1992), leading to a growing thread of theoretical and empirical work highlighting the links along which conflict is most likely to emerge. However, methodological concerns often seem to limit not only our ability to test new theories, but also moderates the manner in which we think about international problems. Language of multilateralism is common in discussions of

conflict and cooperation, but multilateral treaties are often viewed, for methodological reasons, as a series of individual and independent agreements formed between two states. Conflict, a phenomenon that has become increasingly coalition based in recent years, is also thought of almost exclusively as a function of the relations between an initiator and a target. For methodological reasons, the 1991 coalition responding to Iraq's annexation of Kuwait is traditionally modeled as 34 independent conflicts, without regard to interdependencies existing between coalition members. Many of our theories of conflict seem to mirror this methodological tendency.

The disparity between the two approaches, and the current preference for the dyadic design stems from the increased specificity innate to it. Rather than focusing on the configuration of the system as a whole, at the expense of any specific information relative to the countries that comprise it, the dyadic approach forgoes the insight potentially drawn from those interdependencies and instead focuses on isolating patterns that exist along the avenues where conflict unfolds. Though highlighting the political situations leading to and exacerbating conflict, a purely dyadic approach ignores the relation between the pair of countries and the remainder of the system, a potentially dangerous omission given that most structural approaches to international relations focus on how the system induces or constrains certain behaviors of states.[1] The approach adopted in this study, emphasizing structurally balanced triads as reinforcing (or constraining) systemic ties, retains the analytic advantages of the dyadic design while incorporating elements of the greater systemic structure.

Beyond the Dyad

Proponents of social network methodology have long noted that there exist, within general relational data, a series of higher level dependencies that remain untapped

[1]For example, neorealists (Waltz 1979) and world systems theorists (Wallerstein 1974, Wallerstein 1976) alike suggest that a state's role is defined by their position within the system, which, in turn, defines how states will act in response to a certain stimuli. Social constructivists (Wendt 1999) argue that global norms dictate permissible and forbidden behaviors, given certain stimuli, narrowing potential responses of states.

through more traditional dyadic research designs (Wasserman & Faust 1994). These higher order dependencies not only provide information about the individual actors and the dyads, but highlight the patterns of interactions within the system, and dominant features of the system which may enable or constrain the behavior of states. Each dyad is nested within the network, which can be interpreted as an emergent property of dyadic interactions. Though dyadic interactions define the form of the network, those dyadic interactions are also influenced by their position within the network. Some dyads might be relatively isolated, only capable of interacting with a few third parties, while others dyads, likely involving major powers, might be linked to nearly all other states in the system. Despite a recent growth in network oriented studies in international relations, at present, relatively few studies have spanned units of analysis to incorporate dyadic idiosyncracies in the context of the overarching structural (network) features of the system in which they are embedded.

By far, the dominant means of incorporating network concepts into studies of international relations has been to measure some characteristic of a network[2], and to include those measurements as components in a statistical model.[3] This sort of design has been implemented both at the system level and the dyadic level. At the system level, various types of network polarization have been shown to influence the systemic propensity for conflict (Maoz 2006).[4] At a dyadic level, node-level network attributes, including structural equivalence (Maoz, Kuperman, Terris & Talmud 2006, Hafner-Burton & Montgomery 2006), centrality (Hafner-Burton & Montgomery 2006), and structural (im)balance (Maoz et al. 2007) have been intro-

[2]A network can be defined as a series nodes, and a set of relational ties (edges) that connect them (Wasserman & Faust 1994).

[3]A second approach, only considered here in passing, is to control for for the higher order network structure, generally treating them as nuisance parameters (Ward, Siverson & Cao 2007). Similar to the cubic spline correction for temporal dependence (Beck, Katz & Tucker 1998), this approach is ideal for when network structure should be an influence, but with no preconceived hypotheses as to its effect.

[4]Of course, there is a large literature on system polarization and conflict stemming from the realist tradition (Waltz 1964, Deutsch & Singer 1964). This literature, however, does not invoke network terminology or methodology, and therefore is not discussed here.

duced to standard models of interstate conflict, highlighting how these and other systemic factors influence the manner in which states behave.

The obvious advantage of these approaches stems from their departure from a purely dyadic vantage point, instead recognizing the importance of higher order dependencies, both theoretically and empirically. Additionally, these studies begin to bridge the gap between dyadic and monadic theories of international relations and the systemic theories that often influenced them. Maoz (2006) points out that many long-standing conclusions of systemic theories have received little to no support in dyad-based, statistical analyses, for the obvious reason that the theory and the test exist on different levels of analysis. Accordingly, while broad well developed research areas such as the liberal peace, often speak of networks of intergovernmental organizations or complex systems of trade, such systems, to this point, have necessarily been reduced to a dyadic indicator, often the strength of the edge (relational tie), stripping away the complexities and dependencies upon which these theories revolve. Network theory and methodology provide a framework through which scholars can expand upon this dyadic view of international relations, analyzing not only the specific dyadic relations between two states, but also the influence the international political environment might have on those interactions.

Though there are a growing number of studies which incorporate elements of network structure into their analyses, very few focus on how states may be connected indirectly, and the impact that has on foreign policy decision making, or international relations in general. Crescenzi's (2007) reputational information model investigates how states process and learn from observing the interactions of others. As one state gains a reputation for behaving in a certain way relative to states of a certain profile, other states can evaluate the extent to which they fit that profile, and anticipate the likely interactions with that state. As one state displays hostility towards another, states similar to the target take note, potentially modifying their actions as to not be associated with the target. Through this sort of learning, states can broadly discern with whom they are likely to have friendly relations, and which statesare most likely to become their enemies. Though not directly, this rep-

utational model loosely generalizes to Heider's (1946) original conceptualization of balance theory. Given observed hostility towards one state, and a similarity between the observing state and the target, one could assume that the initiator and target were enemies, while the observer and the target (given their similar profile), would be friends. The reputational information accessed by the observer, in this situation, that the initiator would likely act in a similar manner towards the observer, is the same conclusion suggested by Heider's balance: "the enemy of a friend is an enemy".

However, the original conceptualization of cognitive balance focused how two actors individual relations towards an externality would influence their affinity towards one another (Heider 1946). Though the externality could be another person, it was assumed that the externality was an object, not an actor. This theory was generalized into what became known as structural balance theory (Cartwright & Harary 1956). This generalization has several advantages over the original, psychological conceptualization. Though the pattern of relations remains the same, structural balance can be applied to systems of any size, relying on notions of feedback and heightened stability rather than on latent psychological tension as the main explanation for why "the enemy of an enemy is a friend".[5] This structural rendition of balance has previously been shown to hold in small crisis situations. Harary (1961) traces the evolution of the Suez Canal Crisis. Prior to and during the nationalization of the Suez Canal, the situation was in a state of balance. The United States' denunciation of the attack on Egypt prompted a situation of imbalance, where the differing perspectives on the status of the canal placed allies on differing sides (the United States denouncing France and the United Kingdom), and also grouped strategic allies of the US (for example, Israel), with the Soviet Union. As the crisis evolved and relations were updated, an eventual state of balance was reattained, concluding the crisis.

This tendency for instability to be associated with situations of imbalance, where inconsistencies between direct and indirect relations produce tension, is confirmed

[5]It is important to note that the terms "friend" and "enemy" are not to be equated to ally or disputant in this study, but rather to denote generally positive or negative relations. Use of friendship and enmity is metaphoric of the direction of the relation, not the intensity.

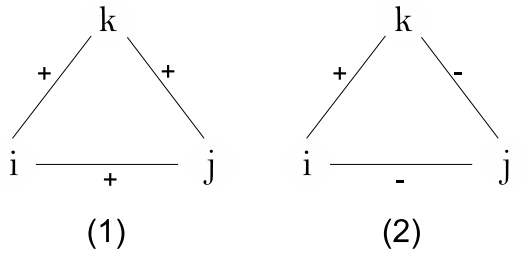


Figure 3.1: Two Types of Balance

by Maoz and colleagues (2007). Situations of imbalance are found to result form generally from opportunistic or exploitative actions, as states seek to increase their security at the expense of others. Not surprisingly, these situations of imbalance are associated with militarized conflict, most likely due to the uncertainty and instability arising from previous inconsistent (imbalanced) relations.

Direct Relations and Indirect Reinforcement

It is difficult to assert that only situations of imbalance should promote conflictive behavior between states. While "the friend of a friend is a friend" is a balanced triadic configuration, so is "the enemy of an enemy is a friend". Indeed, a balanced triad can either have no hostile link, or two, while an imbalanced triad, by definition, must have one relational tie characterized by hostility.[6] Both balanced and imbalanced relations should be associated with both conflict and peace, dependent on which leg of the triad one is observing. Figure 3.1 clarifies this point.

In figure 3.1.1, peaceful relations would be expected along all edges: not only are the relations between i and j positive, but they are reinforced by shared positive relations with k. Clearly, when the "friend of a friend is a friend", friendly relations should not only endure, but, over time, they should become increasingly positive as a

[6]In this study, the enemy of an enemy is an enemy is considered neither balanced nor imbalanced. Despite it having a negative (multiplicative) sign, akin to imbalance in Cartwright & Harary's (1956) structural balance, Heider (1958) points out that there is no a priori reason to expect this configuration to lead to situations of uncertainty—why should a state care if two enemy states disliked one another. Indeed, this situation might be preferable, as enemies weaken one another, leaving the original state better off relative to its two enemies, without having to expend any resources itself.

result of the externally consistent relations. However, the representation of balance in figure 3.1.2 is much more ambiguous. In fact, the expectation for affinity or enmity depends on which edge one focuses on. Focusing on $\overline{ij}$ or $\overline{jk}$, one would expect the perpetuation of negative relations. For example, the negative relations observed in $\overline{ij}$ are reinforced by i's positive relationship with k, and the fact that k relates negatively with j. Contrastingly, focusing on $\overline{ik}$, a different picture emerges. The positive relations between i and k are reinforced by their shared hostility towards j, suggesting that $\overline{jk}$ should remain positive.

For precisely this reason, it is difficult to analyze the "direct" effect of balanced and imbalanced relations on states. Maoz et al. (2007) use the presence of a militarized interstate dispute (MID) to denote a negative linkage, while alliances represent positive ties. They argue that imbalanced relations promote situations of uncertainty, potentially exacerbating security dilemmas, leading to conflict. At the core of balance theory is the assertion that inconsistencies between direct and indirect relations generate instability and uncertainty along those ties. Given the well established link between uncertainty and conflict (Blainey 1973, Fearon 1995), Maoz and colleagues expect and find that the increased uncertainty associated with relational imbalances leads to a higher likelihood of violent conflict. However, their analysis (in table 4) shows all configurations of indirect relations to be positively associated with *both* conflict and alliances (Maoz et al. 2007, 111), suggesting that situations endemic of both balance and imbalance are associated with both alliances and conflict when these indicators are used to identify "friend" and "enemy" linkages.

Though I agree with the argument that imbalance leads to uncertainty, I disagree that relational imbalances *a priori* lead to conflict. First, that imbalances lead to conflict implies that situations of balance are should lead to peace. We already know this is not the case: the discussion of figure 3.1, as well as the initial discussion of the importance of coalition formation clearly illustrates that conflict frequently occurs in balanced triadic configurations. Second, though I accept that imbalanced relations increase uncertainty, the impact of that uncertainty depends on what a

state becomes less certain of: increased uncertainty over an alliance commitment might very well lead to conflict, but increased uncertainty over the appropriateness of a conflict will most likely prompt states towards inactivity, at least until they can secure a coalition to reaffirm their position. This, in many ways, is the difference between the two US engagements in Iraq. The first operation was relatively easy to initiate due to international unanimity, while the second operation was much slower to begin, given opposing reactions from many significant, influential states.

External balances and imbalances provide feedback that increases or decreases dyadic certainty surrounding existing dyadic relations. That level of certainty is not characteristic of the overall relations (or level of informational certainty) within the dyad, but rather, is specific to the degree of certainty relative to that singular dimension. Here, we are interested in how the existing relations between states, and how those states' position within the system influences, their propensity for militarized conflict. Preexisting dyadic hostilities should make violent conflict more likely. How do indirect relations reinforce underlying dyadic hostilities? Do external inconsistencies dampen the impact of dyadic hostility, making states behave more conservatively?

Figure 3.2 illustrates how indirect relations can either dampen of amplify dyadic hostilities. The relations between i and j are negative, suggesting underlying hostility between the two states, which could potentially lead to conflict. The thickness of $\overline{ij}$ represents the impact of external reinforcement on dyadic relations. In figure 3.2.1, the dyadic hostilities between i and j are externally reinforced through k_1. These relations are balanced, creating positive feedback, and suggesting i and k_1 both oppose j. In figure 3.2.2, the dyadic hostility is amplified through two externally consistent relations, with k_1 and k_2. Again, both relations are balanced, and both reaffirm the direct, dyadic hostilities between i and j. Figure 3.2.3 replicates the relationship portrayed in 3.2.2, adding an imbalanced external relationship passing through k_3. This triadic relationships is inconsistent with the dyadic tendencies, and provides negative feedback, confounding the impact of dyadic hostilities. In figure 3.2.4, two externally balanced relations reinforce the dyadic tendencies, while

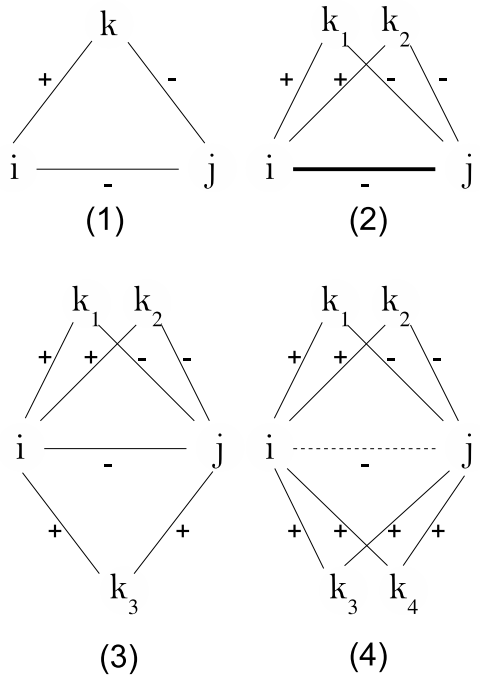


Figure 3.2: Direct Relations and Indirect Reinforcement

two imbalanced relations dampen the dyadic relation. Here, the external information available to the dyad cancels out, leaving the original dyadic hostility. This logic can be summarized in the following hypotheses:

> *H1*: As dyadic hostility increases, the likelihood of violent conflict increases.
>
> *H2a*: As dyadic hostility is reinforced by increasingly *balanced* relations, the relationship between hostility and violent conflict should be amplified.
>
> *H2b*: As dyadic hostility is reinforced by increasingly *imbalanced* relations, the relationship between hostility and violent conflict should be dampened.

While this framework should make an improvement over the standard dyadic approach by allowing for indirect modifiers on dyadic behavior, as it stands, this approach focuses on the simple quantity of indirect feedback, assuming that each

indirect link, or each third party, is of equal importance. This is probably not the case. In his analysis of the Suez Canal Crisis, Harary (1961) notes that it was the United States' denouncement of the invasion of the Suez that created negative feedback through imbalance. More importantly, Britain and France responded to that imbalance, eventually ending their aggression against Egypt. Due to the United States' unique position at this time, an interesting counterfactual emerges. Had the United States been a weaker state, would France and Britain, both major powers at the time, have backed down? While not visible in Harary's analysis, the 1956 United Kingdom–Egypt dyad experienced imbalance through 5 external countries compared to 8 third parties producing balance, while the capabilities of those 5 imbalanced countries were comparable to those possessed by the 8 balanced third parties.[7] The France–Eqypt dyad experienced less negative feedback through imbalance (3 imbalanced cycles relative to 8 balanced cycles), although the capabilities possessed by those imbalanced third parties amounting to nearly 60% of the capabilities of the balanced third parties. Still, and despite that on average each imbalanced country was individually more powerful than the balanced countries, Harary's analysis makes a strong case for the negative feedback flowing through the United States being central to the withdraw of France and the United Kingdom.

Harary's analysis appears to indicate that not only does the simple count of the triadic feedback influence the behavior of states, but that capabilities of the source of that feedback might be more relevant. Balanced or imbalanced relations through more powerful countries, such as the United States during the Suez Canal Crisis, appear to have a much greater impact on direct relations than does reinforcement through lesser powers. Therefore, the impact of the feedback through balance and imbalance may be less a function of the amounts of feedback, but rather more influenced by the importance placed on the source of the feedback. This creates two additional hypotheses relating the strength of third parties to the impact of reinforcement flowing through them:

H3a: As dyadic hostility is reinforced by *balanced* relations through

[7]These numbers are calculated using annual aggregates form the COPDAB events data set.

increasingly *powerful* third parties, the relationship between hostility and violent conflict should be amplified.

H3b: As dyadic hostility is reinforced by *imbalanced* relations through increasingly *powerful* third parties, the relationship between hostility and violent conflict should be dampened.

Data and Methodology

In testing the above hypotheses, an indicator of underlying levels of dyadic hostility must be constructed. This measure must then be converted into a network of hostility and friendship to measure frequencies of balance and imbalance. Finally, those measures can be inserted into a standard conflict model, testing how indirect relations reinforce and dampen direct relations. Because the key independent variables (dyadic hostility and indicators of balance and imbalance) are drawn from two separate datasets, employing different methodologies and coding practices, two sets of analyzes are reported below corresponding with each data source. The unit of analysis is all *interacting dyads*, where at both states in the dyad are targeted by at least one annual event from the other.[8]

The likelihood of a militarized interstate dispute (MID) (Jones, Bremer & Singer 1996, Ghosn, Palmer & Bremer 2004) is modeled as a function of dyadic hostility, the numbers of balanced and imbalanced triangular cycles containing each particular dyad, the cumulative capabilities associated with balanced and imbalanced cycles, and the product terms of dyadic hostility with those indicators of balance and imbalance, controlling for variables generally associated violent interstate conflict. A MID is a display, threat, or use of force, ranging through full scale

[8]This threshold if similar in many ways to politically relevant dyads, however, is more appropriate for this research design. Because the balance-related variables are constructed triadically, restricting the observations to politically relevant dyads would allow for dyads that would be excluded from the overall analysis to be included in the formation of the triadic balance measures. Instead, since balance assumes dyadic reciprocity, restricting the population to those dyads that interact ensures that the same population is used to create the measures as is included in the analysis. Analyses were repeated using politically relevant dyads with no substantial difference in inference. Models using the interacting dyad constraint were more consistent and therefore preferred.

war. Accordingly, the dependent variable is the initiation of a militarized interstate dispute within a given dyad-year, and is drawn from the dyadic MID dataset (Maoz 2005).

Measuring Dyadic Hostility

The first step in assessing the interaction between direct and indirect relations is to ascertain the underling nature of the relations between two states. On average, are two states generally friendly, neutral, or hostile towards one another? Though this data is inherently psychological, it is not practical to collect first hand psychological data classifying the relations between states. States are complex bureaucratic actors, with varying levels of institutional complexity and vastly different decision making processes. At any time, multiple individuals may act on behalf of the state towards a foreign actor. Moreover, the intentions of these actors might not always be parallel. The military might be engaged in strategic air strikes in response to some act, while a diplomat is engaged in secret negotiations, in an attempt to quell the situation. However, the patterns of interactions between states are not random. Despite interactions with varying degrees of hostility and affinity, the central tendency of such interactions over some period of time can be used to classify the two states as either friend or foe. Creating a hostility index requires regular information on the interactions of states. This information is extrapolated from the verbal and physical relations of states, as identified through international events data, and aggregated to the dyad-year level using the method described by Dixon (1983).

Events data are coded from international news sources, and generally take the form: initiator-action-target. Weights are applied to each event, rating their relative levels of conflict or cooperation (Goldstein 1991).[9] Since lower intensity events (on either side of the scale) are much more likely to occur, applying weights to events allows for large numbers of low intensity events to be roughly equivalent to a small number of higher intensity events, at least in terms of their contribution to the

[9]The COPDAB dataset includes its own intensity scale, roughly comparable to the Goldstein scale.

overall categorization of one state's actions towards another.

Data for constructing these measures are drawn from two separate data sources: the Conflict and Peace Data Bank (COPDAB) (Azar 1980); and the Virtual Research Associates Integrated Data for Events Analysis (VRA IDEA) (Bond et al. 2003). Though similar in nature, these datasets differ in temporal coverage, as well as methodologies. The COPDAB project incorporates about 70 data sources, while covering the 1948-1978 period, with emphasis on well known countries, including the major powers and the Middle East (Azar 1980). To provide a more contemporary analysis, the VRA IDEA data offers daily event data for all countries, during the 1990-2004 time period. The IDEA data uses automated, machine coding to add current events to the dataset in real time, drawing from Reuters news feeds (Bond et al. 2003), though the machine coding techniques are at least as accurate as human coded data (King & Lowe 2003).

One potential source of bias in events data is the reliance on news feeds and other media coverage as the data source. Certain countries (the United States, the Soviet Union / Russia, Western Europe, China and Japan, amongst others) are likely likely over reported relative to other smaller countries. Moreover, interactions between two smaller countries less central to western media interests are likely underreported, leading to a more precise categorization of the relations between certain countries. I account for this by including both a relaxed and strict measure of hostility. The relaxed measure makes no additional demands of the data: if an event is recorded, it is weighted and included in the hostility indicator. Contrastingly, the strict measure calculated a standard error for each hostility score. Scores are reset to neutral if they cannot be distinguished from zero, using $\alpha = .05$.

Because the data display high levels of reciprocity[10], the directionality of the hostility indicator is removed by applying the weakest link principle (Dixon 1993, Dixon 1994), following the logic that positive (friendly) relations are best identified

[10]When directed links are observed from i to j, as well as from j to i, the loose measure derived from COPDAB displays 93% reciprocity, while the strict measure increases that rate to nearly 98%. Reciprocity is slightly less for the IDEA measures, with about 84% reciprocity for the loose measure and 94% for the strict measure.

by the minimal level of reciprocated interaction, while negative (hostile) relations are most properly characterized by most hostile perception. While this procedure favors conflictual behavior over cooperative, in doing so it remains consistent with the dependent variable, which would characterize a MID as being present in a dyad whether that MID was reciprocated or not. Moreover, this adheres to structural balance's prerequisite that each dyadic relation be expressed as a single positive, negative, or absent linkage.[11] Finally, to improve interpretability, the resulting measures are inverted, so that positive scores represent increasingly hostile relations, while negative scores are indicative of more pacific relations.

Calculating Balance and Imbalance

Constructing measures of balance, imbalance, and the relative influence of balance and imbalance requires transforming the dyadic hostility data into a triadic structure. This is accomplished by expanding the hostility data to add a floating third party k, that country's relations to both members of the base dyad, as well as that country's relative capabilities, as indicated by the Correlates of War Cumulative Index of National Capabilities (CINC) score (Singer, Bremer & Stuckey 1972). Treating the loose and strict hostility scores separately, a triad is coded as being balanced when the product of its 3 hostility scores is positive (representing either "the friend of a friend is a friend" or "the enemy of an enemy is a friend"), while a negative product indicates an imbalanced triad. An additional set of balance and imbalance indicators weighted by the relative capability of the third party, k, are created. As a final step, these triadic data are aggregated to the dyadic level, representing the total number of balanced and imbalanced triadic structures involving both i and j, as well as the cumulative capabilities of both balanced and imbalanced third parties.

These indicators of balance and imbalance are operationalized into three measures for both the loose and strict hostility scores. First, the total amount of extra-

[11] As balance (at the triadic level) is a situation where direct and indirect relations are consistent, at the dyadic level, relations must also be consistent, implying reciprocity.

dyadic information is calculated as the total number of complete triads involving $\overline{ij}$, or the sum of balanced and imbalanced triads. Second, an indicator representing the nature of that indirect information is calculated as the number of imbalanced triads passing through $\overline{ij}$ subtracted from the number of balanced triads.[12] When this indicator is zero, external reinforcement is ambiguous, and states have only the dyadic tendencies to depend on when making foreign policy decisions. Increasingly positive values indicate that the positive feedback received from external actors outweighs the negative feedback, and vice versa. Third, the capabilities of the imbalanced third parties are subtracted from those of the balanced third parties, creating an indicator that represents the importance of imbalanced cycles relative to balanced cycles. This measure differs greatly from the measure focusing on the number of balanced and imbalanced cycles, as a single powerful country, such as the United States or the Soviet Union/Russia would be able to offset the influence of an increasing number of smaller countries.

Because balance is expected to create positive feedback, and because one form of balance, "the enemy of an enemy is a friend", contains both hostile and friendly links, the expected relationship between balance and conflict cannot be determined without knowing whether $\overline{ij}$ is hostile of friendly. To this end, the degree to which external relations are balance or imbalanced is interacted with the dyadic indicator of hostility.

[12]There are a variety of other conceptualizations that could be used to represent balance and imbalance, though these conceptualizations are preferred for its simplicity and ability to represent both balance and imbalance in a single term. In thinking about Two obvious alternative conceptualizations include separate counts of balanced and imbalanced relations and the proportion of complete triads that are balanced. When using two separate counts, results are quite similar to the above implementation, however, the use of both balanced and imbalanced counts requires the inclusion of 4 additional variables, two of which are interacted with the same dyadic hostility score. Given the similarity of results, the simpler indicator is preferred over the more complex one. This measure is also preferred over the proportion as it more accurately represents the degree of positive or negative reinforcement. The proportion would provide identical scores for two very different dyads, when one dyad is part of only one complete triad, which is balanced, and another dyad is part of 10 complete triads, 9 of which are balanced. Though the latter dyad would be receiving far more positive reinforcement, it would receive a score of .9, while the isolated dyad, experiencing only one reinforcing link, would attain a score of 1. For this reason, in addition to the problem of how to code dyads involved in no complete triads (causing division by zero), the difference based measure is preferred.

Control Variables

I control for a variety of factors theoretically and empirically related to the onset of violent interstate conflict. The dyadic distribution of power is represented as the natural log of the ratio of the stronger power to the weaker, using the common Composite Index of National Capability (CINC) score drawn from the Correlates of War National Material Capabilities data project (Singer, Bremer & Stuckey 1972). Distance is included as the natural log of the distance between capitals, where contiguous states are assigned a distance of zero.[13] Data for distance were generated using EUgene (Bennett & Stam 2003, Bennett & Stam 2000). Democracy is measured as the minimum level of democracy in the dyad (Dixon 1993, Dixon 1994), using the Polity IV dataset (Marshall & Jaggers 2002). A binary variable represents the presence of a formal alliance tie, using the Alliance Treaty Obligations and Provisions (ATOP) dataset (Leeds et al. 2002). Finally, economic interdependence is measured as the proportion total dyadic trade relative to economic size (GDP) (Oneal & Russett 1997, Oneal & Russett 1999), using Gleditsch's (2002) Expanded Trade and GDP data.

To correct for any temporal dependence, common to cross-sectional time-series data, I calculate the number of years since the last dyadic MID. This variable, along with its square and its cube, are included to estimate the underlying risk of conflict for each dyad.[14] Standard errors are adjusted to account for autocorrelation among the covariates. Finally, all independent variables are lagged one year, to avoid issues of endogeneity. Descriptive statistics for all variables from both datasets are included in appendix A.

[13] A value of one is added to all values before taking the natural log since the natural log of zero is undefined. This transformation maintains a natural zero point in the data, as the natural log of 1 is zero. See Dixon, Muller & Seligson (1993).

[14] This approach is equivalent to the cubic splines approach advocated by Beck, Katz, & Tucker (1998).

Results

Empirical analysis provides support for the triadic theory of policy reinforcement, though only when weighting triadic relations by the capabilities of the third party. Contrastingly, when focusing only on the quantity of extra-dyadic reinforcement (table 3.1), despite that the interaction terms are always positive, standard levels of statistical significance are only attained in one model. This, however, should not be surprising. Instead, it suggests that the theoretical model suggested in hypotheses 3, where emphasis is placed on policy reinforcement from more influential third parties is preferred over that suggested in hypotheses 2, which focused more the quantity of feedback rather than its source. As such, the bulk of this discussion will focus on the the weighted measures presented in table 3.2.

Not surprisingly, the likelihood of a militarized dispute increases as previous relations between two states become more hostile. In every model, using both the strict and loose versions of the hostility term, underlying hostility is found to increase the likelihood of a militarized dispute. Given the absence of any external feedback (balance = 0), the onset of a MID is roughly 60% percent more likely (model 10) given each one standard deviation increase of the COPDAB hostility score, which, at the lower end of the scale, roughly equates to the distinction between a "Mild verbal expressions displaying discord in interaction" and a "Strong verbal expressions displaying hostility in interaction". For the IDEA data source, a one unit increase in hostility (roughly the difference between a criticism and a denouncement), in the absence of indirect reinforcement, increases the likelihood of militarized conflict by approximately 15 percent (on model 14). These findings lend strong support to hypothesis 1.

The degree of balance does not appear to have any consistent effect on the onset of violent conflict (holding hostility at 0), though the amount of information returned to the dyad is generally found to increase the likelihood of conflict. When using the unweighted balance term derived from the COPDAB data, the degree of balanced relations are found to have an independent effect on the propensity for

Table 3.1: MID Onset and the Count of Balanced Indirect Reinforcement

	COPDAB, 1948–1978				IDEA, 1990–2004			
	Loose		Strict		Loose		Strict	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Hostility	0.042***	0.0356***	0.0401***	0.0347***	0.192***	0.141***	0.161***	0.118***
	(0.0038)	(.0039)	(0.00405)	(0.00433)	(0.0223)	(0.0248)	(0.0236)	(0.0262)
Degree of Balance	-0.025**	-0.0250**	-0.0502*	-0.0512*	-0.00778	-0.0135	0.0378	0.0334
	(0.0088)	(.0094)	(0.0218)	(0.0257)	(0.0152)	(0.0169)	(0.0382)	(0.0431)
Hostility × Balance	0.001	0.00235	0.00114	0.00195	0.0138	0.0202	0.0118	0.0264
	(0.0011)	(.0013)	(0.00167)	(0.00217)	(0.00780)	(0.0108)	(0.0131)	(0.0162)
Complete Triadic Cycles	0.037***	0.0397**	0.0400	0.0408	0.0216***	0.0539***	0.0165	0.0656
	(0.0089)	(.0122)	(0.0277)	(0.0358)	(0.00587)	(0.00929)	(0.0323)	(0.0389)
ln(Capabilities Ratio)		0.0734*		0.0833*		-0.0402		-0.0185
		(.0340)		(0.0329)		(0.0428)		(0.0417)
Minimum Democracy		-0.0401***		-0.0433***		-0.0754***		-0.0692***
		(.0117)		(0.0112)		(0.0126)		(0.0113)
ln(Distance)		-0.192***		-0.187***		-0.239***		-0.233***
		(.0194)		(0.0207)		(0.0185)		(0.0186)
Economic Interdependence		16.81		23.21		-49.04*		-22.27
		(23.581)		(22.23)		(23.90)		(14.60)
Alliance		-0.237*		-0.226*		-0.0330		-0.00370
		(.1128)		(0.114)		(0.130)		(0.125)
Constant	-1.376***	-0.891***	-1.158***	-0.713***	-1.922***	-1.241***	-1.747***	-0.979***
	(0.150)	(0.208)	(0.138)	(0.194)	(0.130)	(0.183)	(0.134)	(0.170)
n	34383	32890	34383	32890	20767	16801	20767	16801
χ^2	956.9	1414.5	927.2	1366.2	434.9	879.3	435.1	866.2

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Standard errors are clustered by dyad

Temporal corrections not displayed here

Table 3.2: MID Onset and the Weighted Count of Indirect Reinforcement

	COPDAB, 1948–1978				IDEA, 1990–2004			
	Loose		Strict		Loose		Strict	
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Hostility	0.0437***	0.0390***	0.0409***	0.0362***	0.192***	0.144***	0.158***	0.119***
	(0.00365)	(0.00382)	(0.00367)	(0.00392)	(0.0206)	(0.0230)	(0.0223)	(0.0244)
Weighted Balance	-0.586	-0.209	0.235	1.153	-0.255	-0.174	-1.571	-0.918
	(0.670)	(0.685)	(1.206)	(1.116)	(0.545)	(0.616)	(1.229)	(1.378)
Hostility × Weighted Balance	0.0946**	0.133***	0.127*	0.172***	0.759**	0.968**	1.140*	1.484**
	(0.0354)	(0.0373)	(0.0532)	(0.0515)	(0.291)	(0.339)	(0.524)	(0.482)
Complete Triadic Cycles	0.0216**	0.0165	-0.00624	-0.0157	0.0218***	0.0517***	0.0451	0.0876*
	(0.00681)	(0.00896)	(0.0113)	(0.0116)	(0.00554)	(0.00855)	(0.0298)	(0.0362)
ln(Capabilities Ratio)		0.0873**		0.0855**		-0.0401		-0.0209
		(0.0322)		(0.0321)		(0.0425)		(0.0413)
Minimum Democracy		-0.0391***		-0.0430***		-0.0754***		-0.0695***
		(0.0117)		(0.0115)		(0.0126)		(0.0113)
ln(Distance)		-0.185***		-0.187***		-0.239***		-0.233***
		(0.0215)		(0.0219)		(0.0184)		(0.0186)
Economic Interdependence		26.10		29.44		-48.46*		-21.83
		(21.21)		(21.79)		(23.54)		(14.41)
Alliance		-0.152		-0.191		-0.0320		-0.00287
		(0.115)		(0.116)		(0.130)		(0.125)
Constant	-1.334***	-0.886***	-1.130***	-0.696***	-1.921***	-1.224***	-1.748***	-0.978***
	(0.147)	(0.209)	(0.140)	(0.198)	(0.130)	(0.182)	(0.133)	(0.169)
n	34383	32890	34383	32890	20767	16801	20767	16801
χ^2	944.1	1460.5	989.3	1427.2	438.5	868.0	415.2	853.5

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

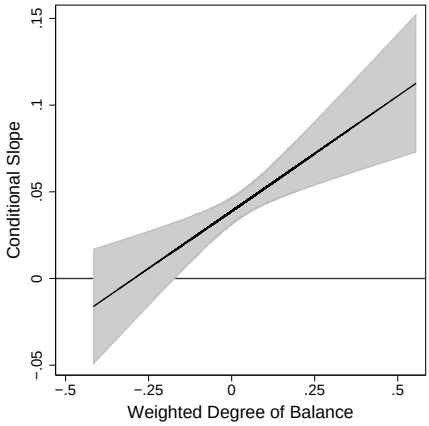
Standard errors are clustered by dyad

Temporal corrections not displayed here

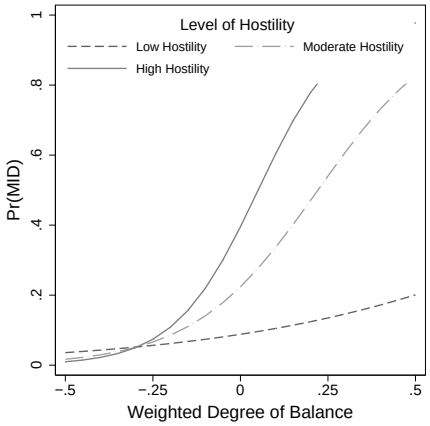
dyadic conflict, although it appears to be a pacifying impact.[15] That balance and imbalance appear to have no consistent relationship with conflict—or, in rare cases, a pacifying effect—challenges the previous findings of Maoz et al (2007), who argue that imbalanced relations create uncertainty which amplifies the security dilemma, potentially leading to conflict. Instead, the general insignificance of balance across the majority of models suggests that the degree to which relations are balanced or imbalanced alone is not sufficient to influence the likelihood of militarized disputes. As suggested above, this is expected given the implications of structural balance theory. Balanced and imbalanced triads themselves only provide feedback—the impact of that feedback depends on the nature of the existing relationship between the two actors. That the degree of balance has no impact for these data supports the theoretical model, suggesting that if balanced relations are to have any impact on militarized conflict that it must be indirect, since both balanced or imbalanced relations may be associated with either conflict or peace.

While the empirical analysis fails to demonstrate the expected relationship between the quantity of feedback through indirect relations and interstate conflict, strong support is found for the the relationships anticipated in hypothesis 3, where the indirect feedback is weighted by the importance (strength) of its originating third party. In every model using the weighted degree of balance term, the interaction term is positive and statistically significant. The relationship is robust across data sources, and does not appear to be subject to loose or strict specifications of the hostility term. The positive and statistically significant coefficient of the interaction term suggests that balanced relations through increasingly influential third parties has a amplifying effect on dyadic hostility, making militarized conflict more likely as dyadic relations become both more hostile and externally reinforced. While positive and significant interaction term alone can be interpreted as support for the positive feedback expected by hypothesis 3a, more investigation is needed in order to evaluate the dampening effects expected by hypothesis 3b. To evaluate the po-

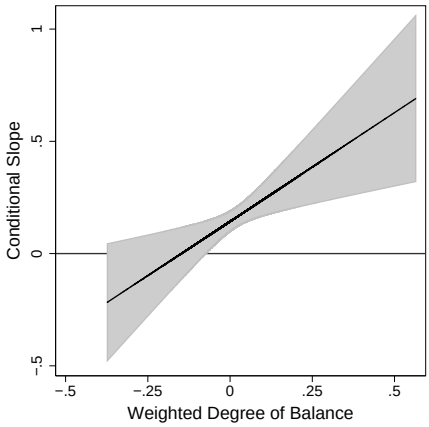
[15] A series of supplemental models, not presented here, excluding the interaction between balance and hostility mirrored these results. The balance term only attains statistical significance when using the unweighted COPDAB models, and its effect is consistently negative.



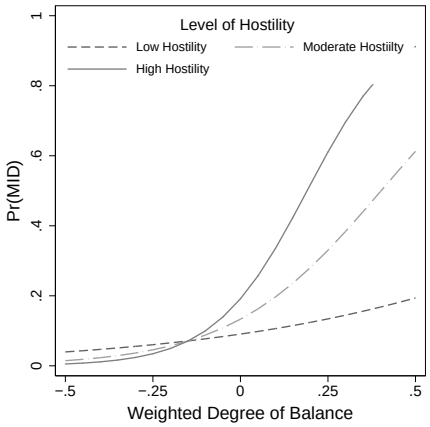
(a) COPDAB, Conditional Slope



(b) COPDAB, Predicted Probabilities



(c) IDEA, Conditional Slope



(d) IDEA, Predicted Probabilities

Figure 3.3: Reinforced Hostility and the Onset of Interstate Conflict

tential for negative feedback through powerful, imbalanced third parties, I calculate and graph the conditional slope of the loose models to investigate the range of the effect, as well as predicted probabilities of conflict for various levels of hostility over the range of the weighted balance measure. These graphs are presented in figure 3.3.

Graphical representation helps clarify the moderating effects of the weighted balance and imbalance on dyadic hostility's impact on the likelihood of interstate conflict. Based on the results of models 10 and 14 (using the loose, weighted measures), it becomes possible to assess the range of significance for the conditional

relationship modeled through the interaction terms, as well as the substantive impact of reinforced hostility on the likelihood of MID onset. Graphs 2.3a and 2.3c present strong support for hypothesis 3b, which suggests that negative extra-dyadic feedback through predominantly imbalanced relations should dampen the influence of dyadic hostility on MID initiation. In fact, these graphs demonstrate one of the most critical findings of this paper: imbalanced relations appear to provide sufficient negative feedback to mitigate the effects of dyadic hostility, as demonstrated by the insignificance of the interaction term when the weighted balance measure indicates negative feedback from influential countries. This external inconsistency with the dyadic relations cause states to become reluctant to take action, making conflict less likely. The impact of the dyadic hostility term reinforced by imbalanced relations is not distinguishable from zero over nearly its entire negative range (weighted degree of balance $< .07$) when using the IDEA data set. Once the weighted balance scale surpasses this threshold, the conditional slope cannot be distinguished from zero—dyadic hostility, negatively reinforced through increased imbalance, has no discernable effect on the likelihood of violent conflict. Substantively, this suggests that nearly any degree of hostility can be mitigated when the initiation of a conflict would cause triadic inconsistencies with a country (or set of countries) whose military capabilities are roughly on par with those of a single major power.[16]

While imbalanced relations effectively mitigate dyadic hostilities, the reinforcing effect of powerful, balanced relations have an immense impact on the probability of conflict. Figures 3.3b and 3.3d illustrate these effects for low, moderate, and high hostility based on the empirical models estimated in models 10 and 14.[17] As displayed in figure 3.3b, with no external reinforcement, the probability of conflict at the lowest level of hostility is about .11 for the COPDAB data, with each additional one unit increase in hostility being associated with a 46% increase in the

[16]The range of insignificance begins with a higher net capability of imbalanced relations, about -.17, for the COPDAB data. With balanced and imbalanced relations otherwise canceling out, this would suggest the capabilities of imbalanced countries would need to be roughly equivalent to those of the United States.

[17]Predicted probabilities are calculated for contiguous, non-allied states. All other values are held at their means

likelihood of conflict. This lowest level of hostility corresponds with a score of 10 on the COPDAB scale as the average annual tendency of relations, suggesting strong verbal statements, denouncements, or threats. Allowing this low level of hostility to be reinforced by balanced relations of countries with cumulative capabilities of about .25 (on the CINC scale) doubles the probability of conflict ($p = .228$). At the highest observed level of balance, when third party capabilities are about .5 on the CINC scale, the probability of a militarized dispute is increases to over .39. Likewise, at the highest level of hostility (a -50 on the original weighted COPDAB scale, representing small-scale military skirmishes in the previous year), the probability of a MID onset is about .22 with no extra-dyadic reinforcement. At the highest level of observed reinforcement through balanced external relations, that probability nearly quadroples to .85. Contrastingly, the negative feedback associated with imbalanced relations, at the maximum observed levels of imbalance, effectively reduce the probability of conflict to .008.

Discussion and Conclusions

Standard approaches to international conflict tend to focus on either the dynamics of the system or the idiosyncracies of the dyads. These approaches are often thought to be opposing—combining levels of analysis is difficult, and the interaction of dyadic and systemic elements have remained unclear. However, by conceptualizing the system as a network of states, defined by the interdependence of the dyadic relations existing between them, both the individual idiosyncracies of the dyad as well as its position within the system can be taken into account. While the dyadic approach to international relations has provided countless advances in international relations theory, moving beyond the dyad towards the network in which the dyads are embedded allows for the simultaneous consideration of the relations between states, and the context in which they interact, as well as notable improvements in the predictive power of empirical models.

This study sought to develop a theory of policy reinforcement where the sur-

rounding structure of the system, defined by affinity and enmity, either amplified or dampened the dyadic tendencies characterizing the relations between two states. Balance theory (Heider 1946, Cartwright & Harary 1956) provided a triadic framework, where consistent triadic relations created a positive feedback system, while inconsistent triadic relations dampened existing dyadic relations. This analysis highlights some of the hidden dependencies existing between states. Though dyadic factors, such as the preexisting level of hostility, are important, the effects of these factors can be either amplified or erased by information received through the surrounding system. That the impact of preexisting hostility is conditional on at least one dimension of the surrounding network strongly indicates that even decisions that primarily involve only two actors are not made without consideration for how such decisions might be interpreted by other actors in the network. More significantly, while this study only focused at the reinforcing dynamics of one dimension of the surrounding network—behavioral tendencies—the simplicity of the model and strength of the results all but guarantee that similar reinforcing effects exist. For example, one interpretation of the theory that IGOs may reduce conflict through socialization mechanisms emphasizes not only how connected two states are through organizations, but also the "strength" of the collective body of states that comprise each organization. Similar reinforcement mechanisms almost certainly exist in the international economic realm, through alliance structures and enduring rivalries, as well as through publicly states foreign policy preferences, such as UN general assembly voting patterns.

Decisive actions such as the initiation of violent conflict seem most likely between states with preexisting hostile tendencies, and when such tendencies are reinforced and amplified through one's friends and enemies. In fact, as this study suggests, states will act with much more certainty when their position is maximally reinforced by others in the system. The dampening impact of imbalanced relations is noteworthy, especially given previous findings that suggest that that imbalanced relations promote conflict (Maoz et al. 2007). However, as this study finds, imbalance does increase uncertainty—the uncertainty surrounding the dyadic tendencies—making

states more cautious in their actions. Through the analysis of triadic structures, it becomes possible to consider both direct and indirect relations, and their interaction, and how such relations can increase or decrease levels of certainty about underlying dyadic relations.

Even in the common vernacular, the term "imbalance" carries a negative connotation. In the social sciences and mathematics, this connotation is retained, associating imbalance with psychological tension or discomfort, international conflict and crisis, and an overall structural instability negatively reinforcing a system. This study does not challenge the imbalances create negative feedback or even "instability". The central insight added in this study is that the impact of imbalance or instability may promote positive outcomes by destabilizing structures of animosity, increasing uncertainty surrounding latent hostilities, and otherwise prompting actors to question the appropriateness of their intended actions. When external imbalances intersect negative relations, the effect seems to be drive actors towards inaction rather than action, mitigating the effects of the underlying animosity. Compare this dampening property of imbalance to the reinforcing property of balance, imbalanced relations may be in many cases safer than balanced relations, which reinforce relations towards their extremes, rather than towards zero.

CHAPTER 4

Outsourcing Security

Introduction

Although security is a fundamental need of every state, only a handful of states have the ability to fully meet their own security needs. Most states are able to produce only a fraction of the security they require due to natural limitations in human and material resources and diminishing returns in the "production" of security. Additionally, the overproduction of security potentially sends the dangerous signal of imminent hostility to rival states, increasing the chances of an arms race or an exacerbated security dilemma. For these reasons, states often find it cheaper and safer to acquire external security guarantees from other states through alliance provisions.

Yet externally purchased security provisions do not directly equate with increased security. Internal security—that which is domestically produced—is at the full disposition of the state, and may be used for either offensive or defensive purposes as the state deems fit. While a state can with some certainty know their own security provisions, they can only guess as to the quantity and chances of delivery of security provisions acquired from others. The delivery of external security is probabilistic, with levels of abandonment suggested to be at least 25%, if not higher (Leeds, Long & Mitchell 2000). Even when external security is delivered, only some portion of the "selling" state's capabilities will be transferred, else the security provider would find itself in a position of increased vulnerability. For these two reasons, states seeking external security have an obvious interest in both increasing the number of external security providers, as well maximizing the quantity of security they can acquire from their providers.

Intuitively, it would seem that as a state acquires more allies the probability that

one or more of those allies intervenes in the event of a conflict should increase. Yet this does not seem to be the case. Instead, it seems that a state's ability to reliably acquire alliance commitments from other states depends on the relative position of that state in the international system, and the status that entails. External security provisions are formed within a market-like setting, where states are able to "purchase" another's surplus security in exchange for some future expectation of *quid pro quo*. Due to well known alliance reliability problems (Siverson & King 1980, Leeds, Long & Mitchell 2000) and the possibility of buckpassing (Christensen & Snyder 1990), consumers of security have an innate interest in expanding the size and capabilities of their alliance portfolios in an effort to become more certain that they will receive the assistance they require in the event of a conflict. Yet, increasing the number of external security providers may automatically reduce the expected benefit to each provider in the event that they intervene, assuming that the security consuming state will somehow divide the reward among those who come to its aid. This reduction in expected payoff to the security providers, in turn, decreases their incentive to intervene and exacerbates the alliance reliability problem. This study asks two fundamental questions about the "security market". First, can seeking too many alliances have a negative impact on the security of a state, leading to a reduction in their overall security? Second, how much can a state safely bolster its security through external sources before experiencing such a reduction?

Though imperfect, the market metaphor is very useful in formulating a model of external security. Concepts such as diminishing returns and comparative advantage aid in understanding why states turn to external sources of security, rather than attempting to further augment their individual levels of security. The problem of alliance abandonment—the focus of this study—can be thought of as a form of market failure in which individual fears of abandonment prompt states to seek greater amounts of security from a larger pool of providers. In the following pages, I develop a model of alliance reliability in which security (through alliances) is treated as a commodity exchanged between producers and consumers. Yet with no overarching authority to enforce these contracts, the security market becomes prone

to failure, prompting consumers of security to increase the number of individual security providers from whom they contract. While this should increase the overall probability of delivery, as this study will demonstrate, it will not always have this result.

Outsourcing Security

Although states would prefer to attain independence in the realm of security, for all but a very few, this goal is impossible. The vast majority of states in the system are forced to produce what security they can efficiently produce themselves (internal security), and then contract for the rest (external security). Certain states have an advantage in producing security, enjoying larger populations, greater resource endowments, and increased technology, amongst other factors that allow them to produce security more efficiently than others. This advantage in security production roughly separates states into two groups. The first group, enjoying lower production costs, produces surplus security that can then be exchanged in what roughly approximates a market setting. The latter group, upon reaching some natural limitation in their ability to further generate their own security, can acquire this surplus security from the security providers.

Initially, states attempt to produce their own security. Nearly every state in the system has a standing military.[1] Possessing some base level of military capabilities greatly augments the security of the state. Unlike external security resources which are contracted through alliances, states are free to make use of their own security resources in any means they see fit. The stronger one's own capability, the more one avoids the risk of heightened interdependence in the security realm (Waltz 1979). Moreover, these states will be able to act with more certainty, not fearing the possibility of alliance abandonment or uncertainty over how much assistance would be delivered in the event of a conflict.

There are at least two limitations to the extent to which states can pursue in-

[1]Costa Rica and Mauritius are the only non-micro states that do not maintain standing militaries.

ternal security. The first inhibitor results from the fear of invoking an arms race through over-militarization and the security dilemma (Jervis 1978). However, full-fledged arms races are rare. States appear to reach a natural carrying capacity for security resources, up to which they may safely increase their internal security without invoking a security dilemma. This "equilibrium" level inherently varies by state, proportionate to population and wealth, among other factors. Most states never seem to reach this internal security ceiling, but rather stop pursuing internal security at some lesser level because the second limiter—diminishing marginal returns—renders it too expensive to further pursue domestic security capabilities. While larger states initially benefit from economies of scale when producing security domestically, states with smaller economic bases, limited natural resources, or smaller populations will eventually experience increased costs and diminishing returns when producing internal security capabilities.

These two factors limit a state's ability to produce internal security capabilities before increased pursuit of internal security either becomes counterproductive through the security dilemma, or inefficient due to diminishing returns. Regardless of which threshold is reached first, the uncertainty associated with an anarchic, self-help system should prompt most states to seek supplemental sources of security from those who can produce it more efficiently than they. Larger, wealthier states almost certainly have an advantage in producing security resources relative to their smaller, weaker counterparts. Given this advantage, these states can become security producers, creating surplus security which they then exchange in a market-like setting to those who require a supplemental source of security. Such agreements do not mandate the physical transfer of troops, but rather form alliances where external assistance is promised in the event that one's security is threatened. The security provider's incentive to fulfill their alliance commitments is derived from at least two factors. When the alliance partners are roughly equal in capability, expectations of reciprocity should function as a basis for collective security (Axelrod 1980, Keohane 1986). Yet the expectation of quid pro quo is all but meaningless in highly asymmetric alliance structures, where the stronger state

is quite literally providing the security of a weaker state. In these cases, Morrow (1991) argues that the weaker state provides a reputational payoff which augments the authority or legitimacy of the stronger state in exchange for security guarantees. However, the ability of a state to exchange reputational incentives for security benefits does not appear constant among states. Smaller states may have more difficulty acquiring external security provisions if they are unable to provide adequate reputational incentives to potential alliance partners (Morrow 1991, 916). Paradoxically, those most in need of external security provisions appear to have the greatest difficulty in procuring them.

In an ideal market-like setting, the value of quid pro quo or reputational incentives would be adequate to guarantee the delivery of contracted security commodities. However, the delivery of security provisions is probabilistic rather than guaranteed. Siverson and King (1980) report the wartime intervention rate of allies to be about 25%, demonstrating a large disparity between contracted and delivered security provisions. Although this finding suggests a troubling situation for states dependent on external security, concluding that alliances are altogether unreliable would be premature. By focusing only on disputes that attain war status, the role of alliances in avoiding escalation to war may be overlooked, causing a misrepresentation in the actual level of alliance fulfillment. To this end, a more recent study conducted by Leeds, Long, and Mitchell (2000) investigates the fulfillment of alliance obligations relative to the precise stipulations of the alliance treaty. Their findings suggest alliances commitments to be much more reliable, with a wartime intervention rate of around 75%. Yet even when 3 of 4 alliances are reliable, and all else being equal, a state would require more than 10 alliances to be 95% certain that at least one ally intervenes.[2]

In addition to concerns over the number of alliance commitments one must have to maximize changes of intervention, states must recognize that not all allies are equal in their ability to successfully intervene, and that the security contribution

[2]The probability function used to calculate this number is $Pr(Joiners \geq 1) = 1 - .75^n$, where n is the number of alliances.

of any given state is only some proportion of that state's total capability. In most situations, an ally will not commit the entirety or even the majority of its military capabilities to another's conflict—to do so would leave that ally in a situation of heightened vulnerability, jeopardizing its ability to defend itself for the benefit of another. Allies will at best contribute some fraction of their capabilities towards the defense of another, prioritizing first their own need to providing for their own security. Security consumers therefore face the additional problem: even when allies do intervene, their contributions might not be adequate to maintain the security of that state.

The obvious reaction to these two problems is for states to pursue more external security by expanding its number of security providers. In a strict probabilistic sense, increasing the number of security providers should help with the reliability problem, assuming that all allies are equally reliable. Moreover, security consumers may seek security provisions from more powerful states who are able to provide more security resources without jeopardizing their own security. Recognizing that both issues may be solved through increasing the size of one's alliance portfolio, states appear to have an innate security interest in expanding the breadth of their security guarantees. Yet this interest is confounded by the security providers' interest in repayment. Regardless of whether the expected form of repayment is reputational or through quid pro quo, the value of that repayment to the security provider should diminish relative to the number of other security providers who intervene, while being proportionate to the relative contribution of each. Being the sole debt holder is advantageous over sharing the credit, since it should generally lead to a more expedite and direct repayment. In contrast, when the intervention of multiple countries is anticipated, the value of the expected repayment is reduced, diminishing the incentive of individual security providers to intervene, and diffusing the responsibility for the security obligation between them. Paradoxically, as the security consumer expands its alliance portfolio to ensure that someone intervenes in the event of conflict, the expected benefit to each individual security provider is reduced, as is their incentive to intervene.

I assume that security providers estimate their benefit for intervening to be some proportion of the security consumer's capabilities. When expecting quid pro quo, the logic should be obvious. Although slightly less direct when a security provider seeks intangible or reputational benefits, neorealism suggests a state's share of systemic capabilities as the ordering principle of the anarchic international system, allowing for a rough ranking of states akin to their position within that system (e.g. Waltz 1979). Consistent with neorealism, power transition, and facets of institutionalism, a state's capabilities can be used to suggest their approximate influence within the system, indicating the impact a reputational payoff might have on the intervening state's authority and legitimacy.

For security providers, the expected benefit of any security arrangement should be proportional to the consumer's capabilities, considering the number of other security providers who deliver on their obligations, and the relative contribution of them. The expected payoff to each security provider diminishes quickly as the number of security providers increases: a second security provider reduces the expected payoff by half; by the fifth provider, only 20% of the original compensation is available. Moreover, the contribution of the various security providers is not likely to be equal. Stronger security providers can commit more resources that their weaker counterparts, entitling them to a larger portion of any repayment, which may serve to dissuade weaker countries from intervening. Assuming that the expected payoff to security providers is proportional to both the strength of the security provider relative to the cumulative alliance portfolio as well as the relative standing of the security consumer, states with higher relative capabilities should be able to afford to acquire security provisions from a larger number of providers, with the more powerful of those security providers most likely to intervene in the event of a conflict. This is almost certainly a major oversimplification of the actual transaction—a greater diversity in sources almost necessitates an additional decrease in efficiency which further reduces compensation to the provider. Although as presented, the theory almost certainly overestimates the consumer's ability to pay for external security, fully accounting for these inefficiencies is well beyond the scope of the current

project.[3]

The competing interests of the security consumers and providers create this undesirable market condition, where consumers over-contract external security due to the probabilistic nature of the good driving the producers' compensation down, making them more likely to renege on the agreement. The two factors discussed above, the number of security providers and the ability of the state to pay, should influence the likelihood that a security provider fulfills the terms of the agreement. All else being equal, a larger pool of security providers should increase the prospects that at least one delivers on the security agreement, assuming that all security providers are equally reliable and able to do so. But because the ability to compensate security providers is finite, and related to the capability level of the consumer, expanding one's alliance portfolio not only divides the payment among multiple actors, but introduces additional inefficiencies into the exchange that lessen compensation to security providers. Before security producers are called upon to deliver on their agreements, the well being of the security consumer must first be challenged. Generally speaking, this would suggest the minimal threshold of the threat of violence against them before security providers would be called upon to make delivery on their obligations. In such situations, evidence in support of this theory should manifest in at least two different manners. First, overcontracting external security should have a negative impact on the overall security of the state or disputants if their current status level is not sufficient to provide compensation for it: as a state's status decreases, it should be less likely to receive external security assistance from its security providers. Not only can the number of security providers drive down individual payment, but the distribution of capabilities among security providers as well as the total strength of the alliance portfolio should also influence compensation. In addition to whether too many security providers can be dangerous, states must also seek an appropriate amount of reliance on their alliance portfolio, before their

[3]If omitting further consideration of these inefficiencies is to have any impact on statistical intuition, it will bias models against rejecting null hypotheses. By overestimating the ability to pay, alliance fulfillment should be statistically more likely, especially relative to the initial increases in the number of external security providers.

ability to make equitable payment disappears. As such, security consumers should seek an appropriate complement to their individual capabilities that maximizes their security. Because some alliances are able to increase security, but overextension of the alliance portfolio is thought to diminish overall security, a curvilinear relationship between the level of dependence on one's allies and overall security should be present.

In addition to the expected consequences of states, the theory suggests that factors exogenous to the direct relations between the security producer and consumer should influence the likelihood that the provider delivers on its promises. If the above theoretical argument is correct, the increasing size of an alliance portfolio should reduce the likelihood that any individual alliance member intervenes. Moreover, because security providers are primarily motivated by their compensation, as an individual state provides an increasing portion of the total capabilities of the alliance portfolio, that country should become more likely to intervene in anticipation of a higher payoff.

Research Design

The theoretical argument specified above has implications at two distinct levels of analysis. First, the proposed causal mechanism suggests that individual security providers become less likely to intervene in an ally's conflict as their expected payment for doing so decreases. Upon providing support for this causal linkage, the theory suggests that the overall security of the security consumer should also be diminished when the expected benefit to each individual member of the alliance portfolio lessens due to alliance portfolio overextension. In testing support for the proposed theory, I rely on two distinct but interrelated sets of data, one focusing on the relationship between the allies and the disputants, and another focusing more directly on the disputants relative to their entire alliance portfolio.

Although many disputes involve only two feuding states, quite a few represent a coalition of two or more states fighting against an opposing state or coalition. As

such, a state-centric or dyad-centric analysis is inappropriate; allied states, when deciding whether to intervene, join a dispute side rather than an individual disputant. Even if they are only allied with one state from a dispute-side, their participation is a common good whose benefit cannot be excluded from the other disputants. I develop two datasets which focus on the relationship between the *dispute-side* and their alliance portfolios. The dispute-side represents the group of countries who were active on the initial day of a militarized dispute, as coded by the Correlates of War Militarized Interstate Dispute dataset (Jones, Bremer & Singer 1996, Ghosn, Palmer & Bremer 2004). One dataset, aimed at determining the security implications of overextending one's alliance portfolio, remains at this level. The second, which focuses more explicitly on testing the incentives of individual members of the dispute-side's alliance portfolio, shifts the unit of analysis to the *ally–dispute-side*. Certain elements of these datasets are quite similar. As such, I will first describe the construction of the dispute-side data, before shifting attention to the ally–dispute-side.

Dispute-side level data

The key variables to this analysis, including the dependent variables, are based on the relationship between the dispute originators and their collective alliance portfolio. I use the Alliance Treaty Obligations and Provisions (ATOP) dataset (Leeds et al. 2002) to determine the members of the alliance portfolios for each disputing side. Because neutrality and nonaggression pacts do not call for intervention, I include only alliances with offensive or defensive provisions. Starting with all original countries of the dispute-side, I identify the alliance portfolio of each country, as well as each ally's relative capabilities and whether or not it enters the dispute. In the event that there is redundancy in alliance portfolio membership due to multiple originators holding alliance commitments from the same state, duplicates are removed. These data are then aggregated to the dispute-side level, creating the dependent variables as well as several of the independent variables. Finally, because the presence of alliances are a precursor for allied joining, those dispute-sides with

no alliances are removed.

Two dependent variables are coded from these data. First, for each dispute-side, I code whether any member of their alliance portfolio joins the dispute, using the "originator" variable of the Correlates of War MID dataset (Jones, Bremer & Singer 1996, Ghosn, Palmer & Bremer 2004). Of 2,606 dispute-sides having at least one ally, 128 experienced allied intervention. A second dependent variable is formed from the same data, however, recognizes that multiple allies may intervene in the same dispute. This variable is again coded using the "originator" variable of the MID data, and represents the total number of allies that join the dispute. When intervention does occur, nearly 33% of the cases have multiple allies join, ranging up to 11 intervening allies. This second dependent variable takes advantage of this additional variance, and allows for a robustness check to ensure that evidence in support of the argument does not result from modeling decisions.

The first variable of interest is the cumulative capabilities of the dispute-side, which can be thought of as both the disputant's ability to contribute to its own defense, as well as an indicator of the dispute-sides overall standing in within the international system. Because status was posited to represent the ability to pay for external security provisions, and intervention represents a collective good for all members of the dispute side, a cumulative measure of capabilities seems most appropriate to indicate the value of reputational incentives to external joiners than the status of the strongest.[4] I derive data on the disputant capabilities using the Composite Index of National Capabilities (CINC) score from the COW National Material Capabilities dataset (Singer, Bremer & Stuckey 1972). This index approximates the share of systemic capabilities possessed by each state, and fits very well with the concept of systemic standing described above.

Two key independent variables correspond to the dispute-side's alliance portfolio. The first is simply the total number of allies the dispute-side has during the first year of the dispute. While I recognize that new alliances may be formed over the course

[4]I tested the impact of using the capabilities of the strongest member of the dispute-side; this coding decision has no bearing on the statistical inference of the models.

of an extended dispute, such alliances most likely mandate that third party joins that dispute, and will not be included in the other allies' calculations of expected compensation. For this reason, only those allied with dispute-side at the initiation of the dispute are treated as potential joiners. This variable ranges from 1 alliance to 69, and is heavily right skewed—over half the observations have 10 or fewer alliances. Because the incentive of alliance portfolio members to intervene was posited to be conditioned by the disputant's ability to provide equitable compensation, I interact the size of the alliance portfolio with the cumulative capabilities of the dispute-side.

The second variable, alliance dependence, is created to assess the ability of disputants with varying capabilities to increase their "total capabilities" through external security provisions. This variable assumes that expected payment is proportional to the capabilities of the intervening ally and suggests the extent to which security consumers can increase their security using their own capabilities as a scale. I calculate the cumulative capabilities of the alliance portfolio by summing their material capabilities, as indicated by the COW CINC score (Singer, Bremer & Stuckey 1972). This value is then used as the numerator, to be divided by the total capabilities of the dispute side (the cumulative capabilities of the dispute-side plus the cumulative capabilities of the alliance portfolio). This proportion ranges from .032 to .999, with higher values representing an increasing reliance on the alliance portfolio. This variable is heavily left skewed, with a mean of .74, and over half the data falling above .86. Because I expect that security consumers can acquire a certain amount of external security provisions before their inability to provide equitable compensation is expended, the relationship between this alliance dependence term and conflict joining behavior should be curvilinear. To account for this, I square the alliance dependence term.

I include the ratio of the cumulative capabilities of the dispute-side relative to the cumulative capabilities of the opposing side, again relying on the CINC score as the indicator of capability. This indicator accounts for the possibility of more traditional balancing behavior, where intervening states join only if the dispute-side is at a disadvantage relative to their opponent. Moreover, this also accounts for

the possibility that states should generally not enter a conflict if the prospects of victory are diminished, due a severe imbalance in the distribution of power. Finally, because joining can occur on both sides, entering third parties must also anticipate the likely joining of the opponent's allies and the capabilities they bring to the conflict. As such, I include one additional deterrent: the cumulative capabilities of the opponent's alliance portfolio, again coded using the allies' CINC scores.

As a final control, I account for dispute severity with the expectation that third parties will be more willing to intervene in more significant or severe disputes. I rely on the Diehl & Goertz (2000) dispute severity measure, which factors in the highest action taken in the dispute, the reciprocation of that action, and the level of battle-related deaths.[5] The resulting dataset identifies 2,606 disputes having at least one ally, and 128 instances of allied joining, representing about 5% of disputes. Descriptive statistics for all variables in this dataset are provided in appendix B.

Ally–Dispute-side level data

While the dispute-level data can demonstrate the potential negative impact on overall security, it is not suitable to directly test the hypothesized causal linkage between a security consumer's inability to pay and alliance abandonment. This second dataset focuses on the impact that the disputant's full alliance portfolio has on the incentives of individual alliance partners to either fulfill or abandon their commitments. This supplemental dataset begins with the dispute-side data, but alters the unit of analysis to the *ally–dispute-side level*. The majority of the dispute level variables—alliance portfolio size, the distribution of power, and dispute severity—require no modification; the primary differences occur in the dependent variable, the disaggregation of the alliance dependence measure, and the inclusion of relational indicators for the ally–disputant "dyad".

In these data, the dependent variable is once again allied conflict joining. However, due to the change in the unit of analysis, here it is coded relative to each individual ally rather than relative to the dispute. This variable is constructed in the

[5]This indicator is taken from the Rivalry 5.10 dataset (Klein, Goertz & Diehl 2006).

same manner as above, by coding all those actors who were allied with the disputant, and who participated in the dispute as a "joiner" rather than as an "originator", as identified by the COW MID dataset (Jones, Bremer & Singer 1996, Ghosn, Palmer & Bremer 2004). This change in setup expands the data from the 2,606 dispute-sides having at least one ally to 34,211 pairings of allies with dispute-sides. The number of occurrences of the dependent variable, allied conflict joining, is also increased: the dispute-level data suggests that 128 dispute-sides experienced the joining of at least one ally, while the ally–dispute-side data indicates that this joining resulted from 238 individual instances of joining.

Two key variables, disputant capabilities and alliance portfolio size are carried over from the previous dataset. Because the ability of the security consumer to compensate for any intervention is still approximated by the cumulative capabilities of the dispute-side, no additional modifications are needed. The alliance portfolio variable is slightly modified. Rather than representing the entirety of the disputant's alliance portfolio, here it is meant to represent the number of other allies that may intervene. As such, I subtract one from the previous alliance portfolio measure. While this is a linear transformation, and will not change any statistical intuition, subtracting one allows for a more natural interpretation of the variable in the context of evaluating the factors which lead to each individual ally deciding to join or abandon. Because the causal mechanism proposed above is conditional, these two variables are once again interacted.

The alliance dependence measure is disaggregated to represent the disputant's reliance on both the individual ally as well as on the remainder of the alliance portfolio. Dependence on the individual ally is coded as the proportion of the disputant's "total security" that is provided by that individual ally. I then calculate the dependence on the remainder of the alliance portfolio by subtracting the ally's capabilities from the aggregate capabilities of the alliance portfolio, divided by the cumulative capabilities of the dispute-side and the alliance portfolio. Together, the sum of these two measures is equal to the alliance dependence measure in the dispute-level dataset. However, the substantive meaning of these separate indica-

tors differs greatly from the original measure from which they are derived. If allies' anticipated payoff is proportional to the share of total external provisions available to the disputant, their incentive to join should increase as their share of the total security provision increases. Contrastingly, because increases in an individual ally's contribution equates to a decrease in the security contribution of the other allies, states should be less likely to join as external security providers contribute an increasing amount to the dispute-side's overall level of security.

Additionally, I control for one additional relationship between the ally and the disputing parties. Allies that are proximate are not only more likely to have a stake in an ongoing dispute, but are also most likely to experience negative consequences associated with a nearby dispute. I control for the natural log of the inter-capital distances between the ally and both disputants.[6]

Results

A series of analyses to support the proposed linkage between a security consumer's ability to provide compensation for externally acquired security, the delivery of that security, and the disputant's overall security are reported below. The analysis is broken into two parts. First, I look at the relationship between capabilities, alliance portfolio size, and dependence on potentially intervening allies by modeling the decision of third party security providers to deliver on their commitments. Once supporting that proposed causal linkage, the impact of overcontracting security provisions on the security consumer's security can be determined relative to the ability of each disputant to pay.

The Delivery of External Security

The first step is to determine whether or not the size and level of dependence on additional allies influences each individual ally's decisions to fulfill their security commitments in the time of a dispute. Relative to the size of a disputant's alliance

[6]I add one before taking the natural log to maintain a natural zero point (Dixon, Muller & Seligson 1993).

Table 4.1: Allied Joining by Disputant Capabilities and Alliance Portfolio Size

	Disputant's Capability			
Alliance Portfolio	Very Low ($\leq .0018$)	Low ($.0018 - .10$)	High ($.10 - .14$)	Very High ($\geq .14$)
Small (≤ 18)	40	28	83	23
	(4723)	(5943)	(4822)	(1849)
Large (≥ 19)	2	2	10	50
	(3837)	(2617)	(3765)	(6655)

Note: Entries are Observed Joinings

Total observations in cell in parentheses

portfolio, initial support for the proposed causal mechanism would be indicated by a diminishing incentive to intervene as the number of additional allies increases. While this would indicate the the intervening ally may be concerned about the number of additional states among who payment will be diffused, the third party should then recalculate its potential payment relative to the ability of the security consumer to pay. When the disputant has heightened capabilities, third parties will be able to overlook sharing benefits with more allies, since the baseline level of compensation is higher. Joining should be limited when a weaker disputant has high numbers of allies, yet increase as the disputant becomes more powerful. Provisional evidence presented in table 4.1 clearly demonstrates this trend. I divide alliance portfolio size by its median, and compare it to 4 four quantiles of disputant capability.

The trend is striking. For smaller alliance portfolios, the capabilities of the disputant seem to have little regular influence on the patterns of third party joining. While joining does appear more likely when disputants are stronger, the pattern is not nearly as strong as when disputants have larger alliance portfolios. When the size of the alliance portfolio is above the median, third parties almost never join "weak" disputants. Instead, the instances of conflict joining only appear to jump once the disputant's capabilities are at least above the median. Moreover, when alliance portfolios are large, 50 of 64 instances of conflict joining occur only once the 75th percentile has been passed.

To further investigate this relationship, I turn to a series of logistic regression models that focus on the likelihood of each individual ally joining a conflict relative to the relationship between that disputant and the remainder of its alliance

Table 4.2: Allied Intervention in Ongoing Disputes

	Model 1	Model 2	Model 3	Model 4
Capabilities	4.44***	–1.81	–1.90	3.28*
	(0.626)	(1.387)	(2.019)	(1.481)
Alliance Portfolio Size	–0.04***	–0.09***	–0.04**	–0.03
	(0.009)	(0.014)	(0.016)	(0.019)
Capabilities × Alliance Portfolio size	—	0.30***	0.20***	0.14**
		(0.041)	(0.043)	(0.052)
Dependence on Ally	—	—	1.68**	3.30***
			(0.546)	(0.674)
External Alliance Portfolio Dependence	—		–1.29	–0.11
			(0.672)	(0.669)
Capabilities of Opponents Allies	—	—	—	–1.61
				(1.121)
ln(Distance to Disputant)	—	—	—	–0.03
				(0.030)
ln(Distance to Opponent)	—	—	—	–0.22***
				(0.032)
Distribution of Power	—	—	—	0.00***
				(0.000)
Dispute Severity	—	—	—	0.02***
				(0.001)
Constant	–4.49***	–3.71***	–3.69***	–4.95***
	(0.244)	(0.265)	(0.459)	(0.553)
n	34211	34211	34211	33284
χ^2	108.502	301.824	383.756	430.570

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

portfolio. These models assess the incentive of third parties to join relative to the disputant's capability, the size of the alliance portfolio, and the distribution of capabilities among the disputant and the various external security providers. The models presented in table 4.2 provide evidence in support of the proposed theory. It appears that third party joiners are motivated by the ability of the disputant to compensate them for their intervention. Concerns over the diffusion of payment among multiple alliance members seems to dissipate as the disputant becomes more powerful and thus more able to pay, while allies who represent an increasingly significant portion of the total capabilities of the alliance portfolio appear more likely to intervene.

Models 1 and 2 assess the security providers incentive to join based solely on

the disputant's capability and the size of the external alliance portfolio. Model 1 clearly suggests that security providers are more likely to join as the disputant is increasingly strong, and thus more able to pay. In both models 1 and 2, the coefficient for alliance portfolio size is negative and significant, suggesting that large alliance portfolios may be a deterrent to allied intervention in conflict. Yet the positive and significant coefficient of the interaction term indicates that this negative effect can be overcome when the disputant is sufficiently powerful to make equitable payment to all interveners. Because the relationship is conditional, and the base term (alliance portfolio size) is of the opposite sign of the product term, it is necessary to determine both the point at which third party security providers are no longer concerned over large alliance portfolios, as well as the significance of the relationship over the range of the data.[7] To ease interpretability, I present this relationship graphically in figure 4.1.

From the vantage point of third party security providers, overcontracting external security appears to greatly diminish the incentive to intervene when the disputant is relative weak. Until passing a capability threshold of about .23 (on the CINC scale), increases in the size of a disputant's alliance portfolio appear to diminish the incentive of individual third parties to intervene. This finding fits well with the proposed causal mechanism, and is consistent with the expectation that security providers consider the level of compensation before deciding whether or not to intervene. I should note, however, that this threshold appears to be relatively high: in fact, roughly 90% of the disputants included in this study fail to surpass this threshold, even in the event that the disputant consists of multiple states. Still, the data suggest that the likelihood of any specific security provider intervening is diminished until such a threshold is passed.

The results presented in models 1 and 2 do make one important assumption, however, that might explain the high capabilities threshold required for third par-

[7]I choose to use the results of model 2 to present this relationship mainly because of high level of correlation between capabilities and the dependence on the alliance portfolio term introduced in model 3. The collinearity between these two terms greatly increases the error of the estimate, making it difficult to assess with any precision over the range of capabilities.

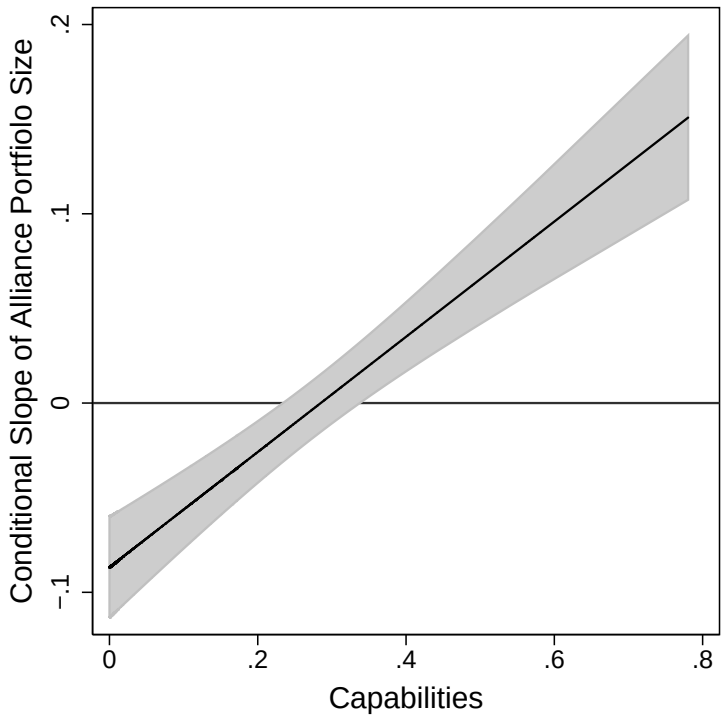


Figure 4.1: Alliance Portfolio Size, Disputant Capabilities, and Joining

ties to overlook large alliance portfolios. By relying solely on the size of alliance portfolios, the model is implicitly assuming that all alliance members are equal in their ability to intervene, and in the security resources they can provide to the conflict. Model 3 adds two terms, dependence on the individual ally, and dependence on the remaining members of the alliance portfolio, which shows how the ability of one ally relative to the others impacts their decision to fulfill their security commitments. Here, the model suggests that third parties are most likely to intervene as the disputant relies primarily on them for external security, rather than on its other alliance partners. Although the number of allies relative to the disputant's ability to pay is still a concern, that concern appears minor when stronger security providers can expect proportional payment relative the the resources they bring. Indeed, the threshold upon which alliance portfolio size no longer appears a concern drops from .23 to about .082 when allowing security providers to anticipate proportional payment rather than a flat rate. Moreover, the level of dependence on the ally appears to be the most significant predictor of third party intervention: increasing the dependence on the ally by one standard deviation (about 13 % of the disputant's total security resources) increases the likelihood of conflict joining by nearly 25%, suggesting that third parties appear to enter conflicts based on their expected benefit, rather than for the defense of their allies.

State Security and the Over-acquisition of Security

Analysis of individual security providers appears to offer support the the proposed causal mechanism, and offers a plausible explanation of why most external security providers fail to fulfill their security commitments in times of conflict. In effect, the above analysis suggests that it is not that security providers are inherently unreliable, but rather that they fear the security consumer unable to provide equitable compensation in exchange for intervention. A second series of analyses are conducted to ascertain the impact of overcontracting external security on the overall security of the consumer. As opposed to asking what influences various third party security providers to intervene, as was done above, here the focus shifts to whether

Table 4.3: Conflict Joining by Disputant Capabilities and Alliance Portfolio Size

	Disputant's Capability			
Alliance Portfolio	Very Low ($\leq .002$)	Low ($.002 - .01$)	High ($.01 - .11$)	Very High ($\geq .11$)
Small (≤ 10)	15	10	39	16
	(228)	(281)	(398)	(423)
Large (≥ 11)	16	5	6	21
	(426)	(369)	(253)	(228)

Note: Entries are Observed Joinings

Total observations in cell in parentheses

a disputant receives any assistance in times of conflict, and if so, from how many security providers? As before, I begin by looking for provisional trends in the data. Table 4.3 compares disputant capabilities with alliance portfolio size. Two trends are immediately noticed. First, it appears that disputants with smaller alliance portfolios are more likely to receive assistance in times of conflict. Yet, even anticipating this trend, it is striking that 44% (21 out of 48 instances) of conflict joining given above median alliance portfolio sizes occur in situations of "very high" disputant capabilities, indicating a reliability rate of over 9%.

Additional statistical analyses are presented to assess the impact of alliance portfolio overextension on the likelihood of states receiving needed security provisions during times of conflict. Recognizing that some disputes experience multiple interventions, I model both the likelihood that at least one security provider intervenes, as well as the number of security providers that intervene. These two sets of models are presented in table 4.4, and provide virtually identical intuition. Models 5–7 are logistic regressions, assessing the likelihood that at least one security provider joins; models 8–10 look at the number of joiners, and thus use negative binomial regression. I begin by assessing the size of the alliance portfolio relative to the disputants capabilities, and the joint effect on conflict joining.

The overall alliance portfolio size appears to have no independent impact on the probability of allied conflict joining (model 5), although it does appear to have a minor impact on the number of joiners (model 8). However, this result is not substantively meaningful: for each additional ally, the likelihood of conflict joining increases by only 2%, which, given the already low rates of allied joining, has vir-

Table 4.4: Allied Intervention in Ongoing Disputes

	At Least One Joiner			Number of Joiners		
	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
Capabilities	2.12**	–2.09	–0.86	2.74*	–2.97*	–0.06
	(0.793)	(1.676)	(1.445)	(1.178)	(1.511)	(1.526)
Alliance Portfolio Size	0.01	–0.03*	–0.02	0.02*	–0.03**	–0.02
	(0.007)	(0.013)	(0.012)	(0.007)	(0.013)	(0.013)
Capabilities × Alliance Portfolio Size		0.27***	0.24***		0.38***	0.25***
		(0.080)	(0.066)		(0.076)	(0.074)
Capabilities of Opponents Allies	—	—	0.63	—	—	–1.25
			(0.686)			(0.789)
Distribution of Power	—	—	0.00*	—	—	0.00
			(0.000)			(0.000)
Dispute Severity	—	—	0.02***	—	—	0.02***
			(0.002)			(0.002)
Constant	–3.18***	–2.71***	–4.07***	–2.86***	–2.25***	–3.62***
	(0.159)	(0.187)	(0.248)	(0.160)	(0.181)	(0.276)
$ln(\alpha)$	—	—	—	2.96***	2.87***	2.09***
				(0.150)	(0.164)	(0.217)
n	2606	2606	2544	2606	2606	2544
χ^2	7.223	19.161	151.564	15.502	34.945	131.929

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

tually no impact on the number of joiners. The lack of a relationship between the alliance portfolio size and conflict intervention is surprising; logically, it would seem that an increasing number of allies almost must increase the chances of intervention. Yet, as models 6, 7, 9, and 10 demonstrate, dismissing alliance portfolio size entirely would be premature. In all 4 models the interaction term is positive and significant, whereas the base alliance portfolio term is negative. This suggests that security consumers must have some minimal ability to compensate allies, indicated through their increasing capability, before allies become more likely to intervene. I again calculate the conditional slope and standard error of alliance portfolio size (using estimated results from model 7), conditional on disputant capabilities, to determine this threshold. Although the conditional slope does take on negative values, the slope is not statistically distinguishable from zero until a threshold of approximately .15 is crossed relative to disputant capabilities (using the CINC scale), after which the conditional slope is positive and significant. This finding is quite interesting. Only about 20% of the observations in this dataset surpass this threshold, indicating that although larger alliance portfolios do not appear to directly hurt disputants, the vast majority of security consumers receive little to no security benefit from these allies.

I extract predicted probabilities of alliance intervention in disputes from model 7.[8] In figure 4.2, I graph these predicted probability relative to the size of the disputant's alliance portfolio and their level of capability. The graph clearly demonstrates the impact that the disputant's capabilities have on allied conflict joining—there appears to be no discernable increase in the probability of conflict joining until the disputant's capabilities become about $\frac{1}{3}$ of systemic capabilities, representing either a country of major power status, or a relatively large coalition. For weaker countries, it appears that their security providers do not believe them capable of making payment, and as such, renege on the agreement.

Of course, the models presented above make the implicit assumption that all

[8]I calculate the probability that at least one ally intervenes over the range of the alliance portfolio term, while increasing the capabilities of the disputant. All other variables are held at their means.

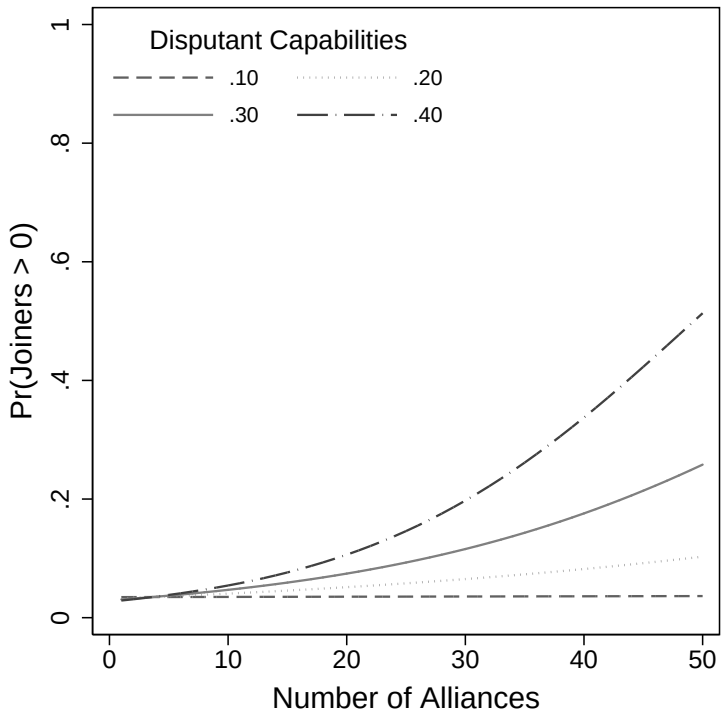


Figure 4.2: Probability of Conflict Joining by Alliance Portfolio Size

intervening security providers will be equally dividing reputational benefit among themselves. Yet as models 3 and 4 (table 4.2) suggest, the relative standing of the individual security providers vis-à-vis both the other security providers as well as the security consumer appears to play a role in their decision to join. I repeat the analyses presented in table 4.4, replacing the disputant's capabilities and alliance portfolio size with the disputants dependence on its alliance portfolio. Because this relationship was hypothesized to be curvilinear, both the linear and squared terms are included. Rather than focusing on how many alliances one has, this analysis should estimate how much a security consumer might safely increase its security capabilities through acquiring external security. This final set of findings is presented in table 4.5.

When both looking at whether anyone intervenes and the number of security providers that do intervene, a inverse-U shaped relationship between dependence on external security sources and conflict invention is apparent. The quadratic term is negative and significant in all four models where included, and the ratio between the size of the quadratic term and its base term is consistent across model specifications. Although the quadratic and base term are of opposite signs, a quick evaluation of the conditional slope demonstrates that this relationship is differentiable from zero across the full range of the variable. To test whether becoming over-dependent on external sources can have a negative impact on security consumers' overall security, I calculate the predicted probability of at least one intervener relative to levels of dependence on external sources of security. While the substantive impact of the variable seems low, recall that allied joining in MIDs is extremely rare. The predicted probabilities clearly show the inverted-U shape curve. More interesting, however, it the location of the apex of the curve. The model indicates that states can do little better than doubling their security capabilities thorough external sources before additional increase actually diminish their security from the theoretical maximum. Upon relying more than about 60% on one's allies for security, the likelihood that allies will intervene quickly drops, leaving states increasingly vulnerable in the event that they over-pursue external security guarantees.

Table 4.5: Alliance Dependence and Allied Intervention in Ongoing Disputes

	At Least One Joiner			Number of Joiners		
	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16
Alliance Dependence	–0.25	8.18***	8.08***	–0.21	13.89***	12.67***
	(0.260)	(2.106)	(2.095)	(0.372)	(2.406)	(2.328)
Alliance Dependence^2		–6.77***	–6.72***		–11.13***	–10.34***
		(1.568)	(1.576)		(1.819)	(1.761)
Capabilities of Opponents Allies			0.63			–1.15
			(0.672)			(0.756)
Distribution of Power			0.00*			0.00
			(0.000)			(0.000)
Dispute Severity			0.02***			0.02***
			(0.002)			(0.002)
Constant	–2.78***	–4.88***	–5.97***	–2.24***	–5.97***	–6.62***
	(0.208)	(0.659)	(0.669)	(0.300)	(0.731)	(0.739)
$ln(\alpha)$				3.08***	2.85***	2.12***
				(0.151)	(0.150)	(0.195)
n	2606	2606	2544	2606	2606	2544
χ^2	0.899	22.553	153.354	0.305	39.111	164.837

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

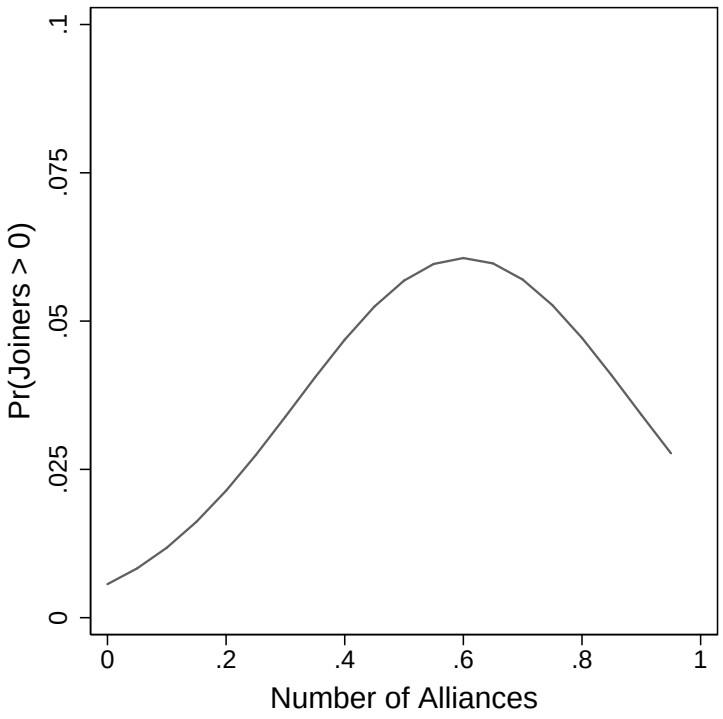


Figure 4.3: Alliance Dependence and Allied Joining

Conclusions

This paper begins by noting the two primary options suggested by realists for increasing one's security, and the possible problems associated with both. Increasing internal security, through increasing material capabilities may result in the well known security dilemma, a situation in which attempts to increase security may have the inadvertent effect of reducing it. As such, it seems that the second route towards security, befriending others who will come to one's defense and formalizing those commitments through alliances may be a "safer" option. The literature on alliance reliability (Siverson & King 1980, Leeds et al. 2002, Leeds 2003) appears to agree that alliances, in general, are relatively reliable. Though the figures vary across studies, there seems to be consensus that alliances do indeed augment the security of states.

However, this study suggests that alliance reliability—the likelihood of individual allies intervening—is determined at least in part by the configuration of the dispute-side's alliance portfolio. Interestingly, variables describing the dispute itself, such as the distribution of power, failed to substantially influence joining decisions. Rather, this study suggests that the size and capabilities of the disputant's alliance portfolio, relative to the capabilities of the disputant are primary factors in allied conflict joining.

The capabilities or status of the disputant appear to influence its ability to acquire reliable external security provisions. Disputants with lower innate capabilities seem less able to compensate others for their assistance, and as such, are less likely to receive external support in conflict, especially when holding larger alliance commitments. Interestingly, the model suggest that a state can maximize its overall security by seeking about 1.5 times its own capabilities through alliances, before its inability to pay lessens its overall security. This paints a dismal image for weaker states: even through the accumulation of alliance commitments, smaller states are not able to overcome their situational disadvantage. Although they can augment their security, they can only do so relative to those security resources they already

possess. In other words, alliances do not appear to allow states to overcome the rigidity of a system defined by the distribution of power—a state's ability to acquire reliable alliances is tied to their innate capability. As such, increases in external security must mirror increases in internal security, else placing states in a situation of heightened vulnerability.

This analysis exposes three important considerations for both students of international politics and policy makers. The first suggests a limited ability of weaker states to put much faith in external alliance provisions, largely due to cost-benefit analysis of the third party security producers. This study suggests that there might be some minimal threshold of domestic capabilities required for alliances to have any positive effect—results demonstrate that increasing the number of alliances has no apparent effect until a disputant or coalition of disputants possesses roughly 8% of systemic capabilities, which seems to preclude many states from receiving alliance assistance in times of conflict. To counter this, policy makers in smaller countries should first focus on augmenting their domestic capabilities before seeking supplemental security provisions from abroad.

A second consideration lies with alliance maintenance. Because the decision to join appears to consider both the strength and the number of other allies, the maintenance of defunct alliances such as the Soviet–French holdover from World War II, or perhaps even NATO, would seem to diminish their members' security rather than augment it. While policy makers seem aware of the need to occasionally reevaluate adherence to international arrangements, their decision to perpetuate an institution often appears to hinge more on the costs of maintenance than on the consequences of continuation. If the size and capabilities of one's alliance portfolio can diminish security, then in perpetuating alliances that may be defunct of outdated, especially lager, multilateral ones such as NATO, states may be committing resources to *decrease* their security. Alliance portfolios should not be treated as collections where "more is better", but rather as a series of investments which require maintenance and revolve around attaining maximum return for the investment. While there may be strength in diversity, often, the maximum return results from a smaller number

of carefully selected investments. If each additional alliance diminishes the security consumer's ability to compensate its allies, the only way to make the formation of new alliances beneficial is to trim an older one.

Of course, the past 20 years of international politics has demonstrated significant changes in patterns of alliance formation. The post-cold war era has seen not only a surge in alliance formation, but a predominance of bilateral alliances rather than the multilateral institutions common to the cold war. Given this dramatic change in alliance formation patterns, it appears that there may be significant differences between bilateral and multilateral alliances, while the growing preference towards bilateral alliances hints that bilateral arrangements may be preferred due to increased reliability or ease of management, implying significant longitudinal changes not apparent through the cross-sectional time-series analyses implemented in this study. Exploring how the changing nature of alliance provisions influences the security consumer–security provider relationship will be left to future research.

A third and final consideration for policy makers is the balance between internal and external sources of security. Because of the security dilemma, external sources of security may appear more desirable. Yet due to reliability concerns and the collective action problem illustrated here, internal sources of security are more guaranteed. The analyses conducted here suggest that the less dependent a state is on its alliance portfolio, the more likely those allies are to aid it when the time comes. This suggests that strong states, those with increasing levels of internal security, are the most secure. They are both most able to provide for their own security, but also most likely to receive assistance from their allies if they require it. The analysis presented here also suggests that states are able to increase their overall levels of security by about 1.5 times, suggesting a 40:60 ratio of domestic to international security resources. Upon surpassing this threshold, it becomes increasingly likely that allies will begin to abandon for fear of not receiving equitable compensation for their efforts.

The realist paradigm almost universally presents external security in a positive light, from the security standpoint of the allied states. While this study does not

directly challenge this supposition, it adds one important caveat. The security added through alliances must be viewed as a complement, rather than an alternative, to internal security. States appear only able to reliably augment their overall security through external provisions relative to their domestic capability, which represents their ability to provide current or future compensation for the assistance. Moreover, there appear to be diminishing returns in external security: the security value of each additional alliance is less than of its predecessor and brings with it a heightened risk of defection through third party incentives to abandon. Eventually, states' increasing reliance on their allies might place them in a situation of diminished security relative to theoretical level of external security they could attain through reliance on a more selective group.

CHAPTER 5

Concluding Thoughts

This dissertation project argues in favor of reintroducing structural considerations into our analyses of state behavior. Most frequently, systemic factors, such as multilateral arrangements, polarity, and indirect relational ties are omitted from scholarly analysis of international politics. Despite acknowledgement that the contexts of the international system inevitable influences the behavior of states, theorizing at the monadic and dyadic levels, especially relative to international conflict and cooperation, has been prevalent for nearly 20 years. While very fruitful, it now appears that the dyadic approach is nearing its limits. Many international phenomena, conflict initiation and joining, intervention and mediation, international negotiation and organizations, as well as international economic relations operate with complexities not captured without modification to the prevalent, dyadic framework. Moreover, more classic systemic theories often make assessments of the system's impact on international behavior, while either *assuming* the relevant feature of the international system to be anarchy, a constant, or to be some function of the hierarchical distribution of relational power throughout the system.

The first major implication of this dissertation project concerns this assumption of anarchy as the dominant characteristic of the international system. More broadly, it challenges the notion that there is one singular "international system", rather suggesting (although not directly) that the international system is actually a super-system, comprised of multiple "layers" highlighting different important aspects of international political structure. While many would agree that investigating a system of international trade should be more informative to investigations of international economics than the hierarchy of military power, it does not take much effort to demonstrate the interrelatedness and crossover influences of each of these structures on the others (for example, see Grant, Baird, Corbetta, and Volgy (2010)).

Returning to the concept of anarchy, many have pointed out that anarchy is not an overly useful concept—anarchy itself is not a key feature of the system, nor is it even a primordial defining feature. Anarchy exists tautologically as a condition of the units (states) that comprise the system—the definition of a state actor as sovereign implies anarchy, reducing anarchy to a stationary contextual factor, therefore with no explanatory power whatsoever.

As chapter 2 demonstrates, there are alternative ways of defining layers of international structure, based on empirical observations rather than theoretical assumption, which highlight features of that dimension of the international system otherwise hidden. Moreover, close linkages were apparent between the network of behavioral tendencies analyzed in chapter 2 and the theoretical perception of the international system during the cold war, based on realist theories of polarity. Especially for data derived from the COPDAB data project, covering the 1948–1978 period, the configuration of the behavioral network almost perfectly coincides with neorealist expectations of a bipolar order, despite the exclusion of the neorealists' key variable: power [1]. While not explored here, it would make sense that similar multidimensional relationships are present, most likely between the behavioral dimension investigates here, the economic, the military (more or less by definition), and even the institutional. Within these dimensions exist both simple (direct) and complex dependencies between states. Moreover, such dependencies must cross dimensions, where complexities in the configuration of the behavioral dimension can only adequately be understood through linkages to the economic dimension, for example.

Chapter 3 demonstrates that, unlike the constant structure of anarchy, the structural configuration of the behavioral network has an immense impact on the behavior of states, though through a non-conventional way. Policy reinforcement, a mechanism introduced in chapter 3, become the second major implication of this dissertation. Notions of positive and negative feedback are common in political science,

[1] This may not be completely accurate. Due to the reliance on news media in the construction of the COPDAB data, the data may be biased in favor of the more powerful. However, because efforts were taken to reduce non-significant events, this possibility should be minimized.

so the suggestion that feedback mechanisms are present in international conflict is hardly noteworthy or novel. The novelty presented in this chapter is the source of that feedback and the role that imbalanced triadic structures—almost always assumed a negative in both formal literature and common vernacular—have in promoting peace. Central to this chapter is the finding that every unique relational tie within a system has a certain amount of informational feedback associated with it. This information, to this point, has all but been ignored in the study of political systems and structures. Chapter 3 demonstrates that this feedback, both positive and negative, is not negligible, but instead has a huge impact on the behavior of state actors. Almost without question, this framework could be applied to nearly any political setting focusing on the relations between social actors. Congressional cosponsorship, patterns of agreement and discord among justices, and the emergence of international trade all seem likely candidates for this type of external reinforcement. The ease of exporting this model is one of the key advantages provided by its parsimony.

The finding that such triadic mechanisms do exist suggests the importance of what sociologists and mathematicians have often called "higher order dependencies". While political scientists and scholars of international politics especially have long been aware of such dependencies, to present they have tended to avoid them or even ignore them when conducting research. In fact, higher order dependencies are only sufficiently addressed in qualitative work, while most quantitative scholars assert that the existence of such dependencies would violate the assumptions of statistical models, create complexities in the error term, or are otherwise uncapturable through common statistical practices. While many of these assertions are technically (somewhat) correct, these excuses appear to result more from a reluctance to think about the implications of these dependencies than any belief that they are not important, the relatively poor overall level of methodological training among political scientists when compared to other fields, and most significantly, an nonconstructive and illogical attachment to classic and preexisting literature that borders with religious dedication. For example, the use of the term "bipolar" is now

fully owned by neorealism and apparently only refers to what is conceived to be a power structure, even though the actual term merely refers to a structure with two cores, and the cold war bipolar structure was based on institutional ties rather than on power, unless one only cares about who the leaders of the two poles were.

Yet chapters 3 and 4 demonstrate relatively simple manners of incorporating these higher order dependencies into common models of international politics, a third key implication, offering new insights, implications, and strategies for future research. In fact, both studies avoid all the aforementioned reasons to avoid such dependencies, relying on discipline standard models of conflict initiation and alliance reliability, with only slight and straightforward changes. The external dependencies were added through either interaction terms, a slight shift in the unit of analysis, or the inclusion of "systemic" variables in a dyadic framework. Despite the apparent methodological reasons for avoiding considerations of higher order dependencies, these chapters demonstrate that all that is needed is an innovative research design and such dependencies can be added with little to no additional trouble.

The real issue, in my opinion, goes back to the attachment to the perceived "infallibility" of previous classics. Realism and neorealism have been dominant for ever, and despite many apparent and well known shortcomings, are still defended with religious zeal (e.g., Mearsheimer and his disciples), and represents the ideology of the majority of historical and current policy makers. This attachment to the past appears the most central inhibitor to theoretical innovation. According to Most and Starr (**?**)Most1981), the trend of international politics appears to be to sub-specialize within the dominant "paradigms"or "grand theories", rather that attmept to provide a more inclusive, powerful alternative. Studies that make incremental modifications of existing work are praised for their innovation; studies that have difficulty situating themselves amongst past works, because they truly are innovative are often unpublishable, at least in political science journals [2]. Almost

[2]There appears to be a growing trend of political scientists interested in these higher order dependencies taking their work to sociological journals, where it is more appreciated. Moreover, economists and sociologists are pursuing these types of studies themselves, as the do not see political scientists investigating these relations.

without question, philosophy of science classes stress that a theory is neither true nor false, but valid provided that its assumptions are reasonable and not overly restrictive, and that no better alternative (either more effective, or as effective but more parsimonious) exists. Over the past 20+ years, mounds of evidence against the dominant theoretical paradigms have formed. While initial skepticism and resistance is completely expected, that neorealism remains dominant 20 years after failing to explain the collapse its foundational case is shocking, and speaks to sometimes lack of scientific rigor present in the field.

While the above paragraphs may appear more as the rant of a discontent, I believe them central to the future difficulties of pursuing this line of research. While the common conception appears to be that the use of networks in political science is a methodological fad, most fail to recognize that a series of well developed and articulated theories of networks exist, guiding the use of a somewhat specialized methodology. The key distinction is that the use of network methodology, whether direct or in the above chapters, indirect, revolves around an adoption of a different set of assumptions from the majority of existing scholarship on international politics, and often leads to the switching of unit-of-analysis. This latter point appears to make publication difficult. My recent experiences as both a reviewer and an author, as well as much anecdotal evidence, support this. Due to the high volume of (apparently low quality) pieces being submitted to journals, reviewers are being instructed to reject nearly all submissions for just about any reason. In one paper, a reviewer admitted to rejecting the paper having only read the first 5 or so pages, not thinking our goal was achievable or relevant. Another reviewer rejected a piece because they were not familiar with the foundational pieces (written by Jack Levy), and instead wanted us to cite ourselves. Another reviewer argued that a paper was atheoretical, despite a 5 page discussion of the 20+ different causal mechanisms associated with the literature, and our expressed focus on demonstrating how coding decisions have fostered divergent results, rather than reusing the same variable (and analysis) to argue in favor of a new causal mechanism dependent on the same underlying logic. A final example, and perhaps my favorite, rejected a paper admitting it was the-

oretically interesting and well written, on the grounds of a personal dislike of the data source used to code the key variables. The increasing difficulty associated with getting anything published is prompting scholars to submit papers in their infant stages, hoping for a lucky hit, which is overwhelming journals to the point of 90% + rejection rates.

The lesson here is one of "good enough" versus "perfection". Over the two-plus-year period I have been working on this project, the vast majority of time was spent seeking perfection on what became chapters 3 and 4. Writing and researching certainly displays diminishing returns: as a project continues, issues with the research become less consequential, but also exponentially more complex to fix. For example, difficulty with one logical step in the initial version of chapter 4 led to a create recasting and rewriting of the theoretical section. In retrospect, the impact of that small "leap of faith" a reader would have to take, that only 1 in 3 readers even caught, took the better part of a month to fix. Even then, the draft was nowhere near "perfect", but its major flaws had been sufficiently addresses (I think). In all honesty, that chapter was probably ready to be put aside with its original argument—the extra several months certainly made it better, but also detracted attention from what became chapter 2, which probably only meets the "good enough" criteria. Still, overcoming my own concerns about my work, which in retrospect far exceeded everyone else's concerns, was one of the most valuable aspects of the project.

Perhaps the most important lesson of the dissertation was not one of content, but rather of process. The original plan for the dissertation was all but thrown out 6 months after we agreed to it. From there, the project began to morph in unforeseen ways, to the point where 8 months before defending it I would have been hard pressed to coherently describe the overarching theme, or provide a description of more than two of the chapters. I had spent far too much time working on chapters 3 and 4; I started chapter 2 roughly 2 weeks before I handed in the defense draft of the dissertation. In the end, after abandoning my initial proposals for what would have been the first 2 empirical chapters, the first chapter I handed in was a melding

of the two chapters I initially proposed. More significantly, at least 40-50% of that first chapter came from other papers I had composed on this topic, but had either dismissed as not useful or as having been integrated into the other chapters. My abandoning the initial plan most likely added 6 months to the overall process. Such lessons in planning and then implementing a plan will be even more vital in the next year in light of balancing a new job and responsibilities with the inconveniences of health.

This reflection on both the academic implications and personal lessons derived from this project leave me both feeling satisfied and dissatisfied. The satisfaction comes from having finished what became a relatively self-guided process towards a goal. The final defense seemed more like a formality than anything else. My Master's exam was more difficult and hostile than the final dissertation defense. It seems like the final defense is more of a finish line than a hurdle: the dissertation itself was that hurdle. At times, I doubted I would ever finish. At other times, I nearly walked away. These periods of doubt, though perhaps necessary at the time, point to sources of additional dissatisfaction over this process. Had I worked rather than questioning why I was working, I could have finished months earlier. The same is true had I stuck to my original plan, rather than simply drop things from it and then figure out what I needed to add to replace them later. In my opinion, the project should have taken at least a year less, and the outcome (especially chapter 2) should have been a lot better, at least in my own judgment. The product of this project I believe will be useful to the international relations community, and 2 chapters are very close to being sent out for external review. The continuation of this trend of research seems fruitful, and hopefully allows for the start of a successful career. However, it is the personal lessons, those of sufficient vs. perfect, time management, planning, etc... that are most pertinent. Although the project was successful in that it ended my tenure as a graduate student and fulfilled degree requirements, it seems fair to say that it was significantly "over budget", at least in the temporal sense. Yet once I concretely knew what I needed to do for each chapter, it took only about 3 weeks to a month to complete an initial draft or transform an initial draft to a

polished one. Hopefully, the recognition of these and other self-management errors over the course of this project will allow for their avoidance in the future, and the emergence of a more confident and productive scholar.

APPENDIX A

Descriptive Statistics to Accompany *Peace Through Imbalance*

COPDAB, 1948–1978	*n*	Mean	SD	Median	Minimum	Maximum
Dependent Variable (MID)	34383	.026	.161	0	0	1
Hostility(loose)	34383	-10.575	11.975	-13	-47	102
Degree of Balance (loose)	34383	6.495	10.028	3	-51	83
Weighted Degree of Balance (loose)	34383	.037	.083	.015	-.415	.554
Complete Triadic Cycles (loose)	34383	8.886	10.380	5	0	83
Hostility (strict)	34383	-10.194	11.731	-12.667	-47	102
Degree of Balance (strict)	34383	5.554	9.093	2	-29	83
Weighted Degree of Balance (strict)	34383	.030	.059	.008	-.344	.440
Complete Triadic Cycles (strict)	34383	6.138	9.082	2	0	83
ln(Capabilities)	32890	1.161	1.666	.145	0	8.785
Minimum Democracy	32890	-5.162	5.665	-7	-10	10
Alliance	32890	.281	.449	0	0	1
Economic Interdependence	32890	.0003	.0013	.0000	0	.056
ln(Distance)	32890	6.957	2.525	7.760	0	9.421

IDEA, 1990–2004	*n*	Mean	SD	Median	Minimum	Maximum
Dependent Variable (MID)	20767	.024	.152	0	0	1
Hostility(loose)	20767	-.177	1.484	0	-7.4	10
Degree of Balance (loose)	20767	.789	2.961	0	-16	41
Weighted Degree of Balance (loose)	20767	.015	.082	0	-.373	.564
Complete Triadic Cycles (loose)	20767	5.304	8.171	2	0	96
Hostility (strict)	20767	-.139	1.320	0	-7.4	10
Degree of Balance (strict)	20767	.185	1.104	0	-9	18
Weighted Degree of Balance (strict)	20767	.004	.034	0	-.226	.382
Complete Triadic Cycles (strict)	20767	.736	1.919	0	0	29
ln(Capabilities)	16801	1.208	1.579	.441	0	8.310
Minimum Democracy	16801	.301	7.242	0	-10	10
Alliance	16801	.344	.475	0	0	1
Economic Interdependence	16801	.002	.007	.0004	0	.137
ln(Distance)	16801	6.881	2.716	7.783	0	9.421

APPENDIX B

Descriptive Statistics to Accompany *Outsourcing Security*

Dispute Level Data	n	Mean	SD	Median	Minimum	Maximum
Dependent Variable (binary)	2606	.049	.216	0	0	1
Dependent Variable (count)	2606	.091	.544	0	0	11
Capabilities	2606	.058	.083	.010	.000	.780
Alliance Dependence	2606	.738	.280	.871	.008	.999
Alliance Portfolio Size	2606	13.128	12.854	10	1	69
Capabilities of Opponent's Allies	2606	.107	.144	.028	0	.827
Distribution of Power	2606	45.533	426.433	1.441	.000	13993.17
Dispute Severity	2544	42.789	49.168	6	2	203

Ally-Dispute Level Data	n	Mean	SD	Median	Minimum	Maximum
Dependent Variable	34211	.007	.083	0	0	1
Capabilities	34211	.066	.088	.010	.000	.780
External Alliance Dependence	34211	.756	.241	.846	0	.999
Dependence on Ally	34211	.056	.135	.013	.000	.999
Alliance Portfolio Size	34211	24.709	15.421	18	0	68
Capabilities of Opponent's Allies	34211	.122	.134	.049	0	.827
ln(Distance to Disputant)	34211	6.434	2.784	7.406	0	9.385
ln(Distance to Opponent)	34211	7.280	2.151	7.727	0	9.421
Distribution of Power	34211	63.074	600.289	1.554	.002	13993.17
Dispute Severity	33284	40.182	46.004	6	2	203

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