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**Working Paper**

## From war to integration: generalizing the dynamic of power transitions

Claremont Colleges Working Papers, No. 2002-33

**Provided in Cooperation with:**

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*Suggested Citation:* Efird, Brian; Kugler, Jacek; Genna, Gaspare M. (2003) : From war to integration: generalizing the dynamic of power transitions, Claremont Colleges Working Papers, No. 2002-33, Claremont McKenna College, Department of Economics, Claremont, CA

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**FROM WAR TO INTEGRATION:  
GENERALIZING THE DYNAMIC OF POWER TRANSITIONS**

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**October 24, 2002**

## **Abstract**

Generalizing the dynamics implied by power transition theory, we characterize the structural conditions that lead nations to initiate conflict or choose to integrate. The relationship between changes in relative power, hierarchical structures, and joint satisfaction are used to identify the structural conditions for conflict and cooperation. Empirical tests for the last two centuries confirm the strength and robustness of this characterization. In addition, long term assessments of *Pax Britannica*, the *Cold War*, and China's potential challenge to the United States in this century are used to illustrate the precision of these findings. The fundamental implication is that structural conditions provide the pre-conditions for conflict and cooperation, but decision makers have leeway in advancing policies that eventually lead to either war or peace.

## INTRODUCTION

This paper characterizes the structural conditions that lead nations to either initiate conflict or choose to integrate. Starting with the generalized dynamics implied in the power transition theory as developed over the last 45 years (see Organski 1958; Kugler and Lemke 1996, 2000; Tammen et al. 2000) we extend its explanatory range from an assessment of conflict to an understanding of conflict and cooperation. The empirical assessments demonstrate that these dynamics identify the structural conditions that culminate in decisions to engage in war on one extreme and integration on the other.

First, consistent with the expectations of Organski (1958) and Organski and Kugler (1980), we formalize the power dynamics that describe the interactions between major powers. Second, congruent with the insights of Lemke (2002) and Lemke and Werner (1996), we generalize the model to account for similar dynamics in regional interactions. Our work provides a structural explanation for the propensity of a dyad of countries to either cooperate or engage in conflict.<sup>1</sup>

Empirical analysis demonstrates that the set of credible policy options available to decision makers is constrained by relative power, satisfaction with the dyadic *status quo*, and limits imposed by global and regional hierarchies. A dissatisfied, initially less powerful challenger will compete for control of the global or regional hierarchy as it approaches power parity and has the ability to do so successfully. A satisfied challenger, one comfortable with the relationships within the hierarchy, is less likely to seek a conflictual approach to reorder the dyadic relationship. As a satisfied challenger approaches power parity, parties are likely to resolve disputes peacefully, allowing integration to emerge as an option. Here these two central arguments are specified and tested.

## POWER TRANSITION DYNAMICS IN WAR AND PEACE

Early power transition theory suggests that a number of factors cause the likelihood of war to vary with the stages of development (Organski 1958; Organski and Kugler 1980). The most basic proposition is that war is most likely to occur when the relative power of two competing nations approaches parity. However, the dynamics of power do not account for the full story. A second fundamental proposition is that nations do not interact in anarchy. Rather, the dominant nation establishes the *status quo* and persuades some to join and be satisfied with the existing order. The potential challenger has two options. A dissatisfied challenger whose preferences for the ordering of the international system differ substantially from the dominant order seeks to alter the *status quo*. Conversely, a satisfied challenger whose preferences for the ordering of the international system are closely aligned with the dominant nation seeks to preserve the *status quo* or may attempt to alter the existing order by cooperative means.<sup>2</sup> The policy options presented by these two different interactions differ substantially. When parity approaches, a dissatisfied challenger is likely to challenge and may wage war against the dominant nation. Under similar conditions, a satisfied challenger may seek integration (Tammen et.al. 2000)<sup>3</sup>.

In addition to power and *status quo* dynamics, power transition theory includes the concept of hierarchal relationships among global powers. We focus on ordering within hierarchies to determine the role of hierarchies in cooperation and conflict. An unordered hierarchy emerges when most nations hold roughly equal shares of power. Unordered hierarchies represent the most likely conditions for conflict and the least likely conditions for integration, as nations in such hierarchies face few constraints beyond their power and

satisfaction. In the absence of a regionally dominant country supporting the *status quo*, competition among two or more contenders emerges as they vie for control of the region. Conflict is more likely to occur within an unordered hierarchy as each contender with different interests and incentives attempts to impose its influence upon the region. Confrontational conditions can be compounded within an unordered hierarchy; the largest regional powers are more likely to have acrimonious relationships in the absence of a well-defined *status quo* as they approach parity with each other. Smaller nations are also likely to have contentious relations because no single nation has the capability to absorb the costs of cooperation while the larger powers focus on protecting themselves from emerging regional challengers. In this context even when nations are satisfied with each other, cooperation is less likely.

Ordered hierarchies are characterized by power concentrated in the hands of a dominant global or regional power who establishes and supports the *status quo*. In structural environments where the dominant nation is at least twenty percent stronger than any contender, the hierarchy is deemed ordered (Organski and Kugler 1980). The dominant nation can spend more of its resources ensuring the best support possible for the economic and political terms established in the *status quo*. In such an environment war may be waged, but it is less likely and will result in relatively low casualties – as is the case in the ongoing “war against terrorism”. Even if the smallest nations are dissatisfied, they are unlikely to adopt policies that contradict the interests of a dominant nation that is both geographically proximate and could easily defeat them in a military conflict.

## THE ELEMENTS OF THE MODEL

Here we develop the structural dynamics governing dyadic relationships that create the preconditions for national participation in either conflict or cooperation.<sup>6</sup> We track the dyads through all stages of relative power to test the performance of this specification for all global and regional challengers and defenders for the last two centuries. This section describes in detail the variables used in this characterization and presents the model's specification.

### Conflict and Cooperation

The first piece of the puzzle relates to the *Conflict-Integration Continuum*, represented as CI. Large values of CI indicate an increase in the intensity of conflict, with a state of war emerging at the upper end of the scale. Likewise, as the values decrease, the greater the intensity of cooperation, with integration at the lowest end of the measure. Neutrality rests at the center of measure.

We construct a *noval range variable* to represent the likelihood of either war or integration. The theoretical variable ranges from 0 to 5, with extreme cooperation represented at 0 in the range and extreme conflict at 5. The measure captures the relative propensity toward each extreme, i.e. the intensity of integration and the likelihood of war or integration. This scale is constructed from two very different scales. Estimates between 2.5 and 5 are taken from the Hostility Level data provided by the COW project. This variable is a 5-point interval level scoring, with each point representing a more intense military dispute. It has been normalized so that it varies between 2.5 and 5, but retains intensity to reflect intervals—i.e. the distance between 0, 1, 2, etc are not equal distances.<sup>7</sup> We transform this data to reflect intensity more effectively. Goldstein (1992) surveyed a panel of foreign policy experts—averaging their

weighting of events—so that he could classify WEIS events on a conflict-cooperation scale ranging from –10 (extreme conflict) to 10 (extreme cooperation). The degree of hostility characterized by COW’s hostility level score can be fit into his scaling of WEIS events, so that a modified version of the hostility level will transform it into interval-level data.

[Table 1 about here]

Table 1 shows the resulting score used in our conflict-integration scaling and further transforms the 0 to –10 range defined by Goldstein into a 2.5 to 5 range so it matches the theoretical model.

The second half of the conflict-integration variable represents increasing intensities of integration. The integration data are taken from Genna (2002) and Efird and Genna (2002). The measure categorizes the degree of economic integration between dyads based on five economic and political categories. These data are a continuous aggregation of scores structured so that they vary between 0 and 5. Again the data have been transformed so that they now vary between 0 and 2.5, with smaller numbers representing intense integration.

#### **Relative Power**

*Relative Power* is the objective ability of one nation to impose its preferences on the opponent by persuasion if possible and by force if necessary. The measure of power is the COW project’s capabilities index that incorporates both economic and military components. Past work on power transition relies on GDP, but high quality data on this variable for the entire set of countries since 1816 is not available. The measure of power is the COW project’s capabilities index that incorporates both economic and military components.<sup>9</sup>

We measure relative power for each dyad-year, and examine only the interval where nations are within 20 percent of the dominant nation in the globe or region in order to model the

ability to explain nations with similar power levels.<sup>10</sup> This constraint focuses on the transition period from a dominated to preponderant challenger and captures the essence of power transition theory.

### **Status Quo**

*Status quo* represented as S, is the joint satisfaction of the challenger and defender with their dyadic relationship. The *status quo* used here reflects the set of similar policies and preferences for each dyad. The degree of satisfaction with this dyadic *status quo* measures the gains and losses attained directly from the interaction by each participant. Despite its importance, little is known about what causes changes in satisfaction. Speculation surrounding the changes in satisfaction is attributed to emerging similarities in political systems (Lemke and Reed 1996), governance structures (Bueno de Mesquita, Morrow, Siverson, and Smith 1999), or cultural factors (Tammen et al. 2000). Thus, while the *status quo* can be identified empirically, little consensus exists regarding factors determining variation in satisfaction or dissatisfaction.<sup>11</sup>

The measure used for satisfaction used reflects an assessment of the dyadic *status quo*, rather than an assessment of the degree of satisfaction with the system leader. Using the work of Bruce Bueno de Mesquita (1981) and extended in Morrow (1987), we argue that satisfaction with the *status quo* relies on the similarity of alliance portfolios. Dyads with similar portfolios are regarded as satisfied with each other's view of the international system or dyadic relationship, and those with dissimilar portfolios are regarded as less satisfied with each other. Signorino and Ritter (1998) show that the original a tau-b measure does not assess the hypothesized similarity as accurately as the S-statistic proposed. We rely on Tucker's (1999) computations of the S-statistic for all alliances since 1816, and EUGene is used to aggregate the data into dyadic format (Bennett and Stam 2000a).<sup>12</sup>

## Hierarchy

Two hierarchy terms are needed to reflect the difference between the perceptions of members of any dyad. The hierarchy for the challenger  $H_C$  and the dominant nation  $H_D$ , approximate the order imposed by the global or regional hierarchy due to the degree of power concentration. Low values indicate that the hierarchy is ordered or dominated, while high values indicate that it is un-ordered or constrained.

$$H = \frac{Power_{RegionalDominant}}{\sum Power_{RegionalContenders}}$$

Despite persuasive arguments about the importance of hierarchies (Organski and Kugler 1980), previous literature on power transitions treats hierarchy as a constant and does not explore the effects of variations in structural arrangements. Here we illustrate its importance.

Following Lemke (1995, 2002) we extend the theory beyond the set of great powers to regional hierarchies. Regional hierarchies define the set of politically relevant dyads that can credibly interact. Each of the continents and the Middle East are used as regions to reflect the standard definition used by the Correlates of War project. So that these regions are not over-aggregated, we break down the Americas region into North and South America, and break down the Asian region into Asia and Oceania/South Pacific.

Small values of the variable suggest a more constrained hierarchy dominated by a powerful dominant country. Larger values suggest a less ordered hierarchy with broader competition between regional members. The variable is computed by taking the COW capabilities of the dominant regional member with the most capabilities over the summation of the COW capabilities of the next four largest regional contenders. The most dominated regions approach zero and the least dominated regions approach one.

## STRUCTURAL DYNAMICS OF CONFLICT AND COOPERATION

To capture the dynamics of the generalized power transition theory, the following relationship is proposed based on the elements identified in the previous section:

$$CI = RP - S (RP^3) + H_c + H_D \quad (1)$$

CI  $\equiv$  degree of conflict or integration, where  $0 \leq CI \leq 5$ , such that

where 0 = full integration, moving from 0 to 2.5 reduces the intensity of cooperation

2.5 = neutrality, moving from 2.5 to 5 increases the severity of conflict

5.0 = most severe conflict

RP  $\equiv$  relative power,  $0 \leq RP \leq 2$ , such that

where 0 = preponderant defender

1 = contenders at power parity

2 = preponderant challenger

S  $\equiv$  satisfaction with the dyadic status quo, where  $0 \leq S \leq .5$ , such that

where 0 = complete dissatisfaction

.5 = complete satisfaction

H<sub>C</sub>  $\equiv$  hierarchical constraint for challenger, where  $0 \leq H_C \leq 1$ , such that

where 0 = dominated hierarchy and

1 = unordered hierarchy

H<sub>D</sub>  $\equiv$  hierarchical constraint for defender, where  $0 \leq H_D \leq 1$ , such that

where 0 = dominated hierarchy

1 = unordered hierarchy

The functional form in (1) is selected to reflect the arguments power transition theorists have been making for the last 45 years. This formulation captures the arguments presented in the theory within a single equation. When nations are not completely dissatisfied (when  $S > 0$ ), the cubed RP term shifts the highest propensity for conflict to just past the parity point, and reflects the theory's anticipated curvature for the conflict-cooperation relation with respect to relative power. A linear RP term in the interactive portion of the equation would underestimate the influence of relative power because it will treat each unit of increase in RP equally, and would not suggest the curvature of the interaction. Squaring the term would not shift the peak of the likelihood of conflict in relation to the parity point. By cubing the term, greater asymmetry improves the likelihood of cooperation assuming that the dyad is somewhat jointly satisfied, especially when dyads are highly asymmetric.

Further congruence between the theoretical and stated model can be noted. Organski (1958, 333) argued that the dissatisfied challenger is most likely to initiate conflict just prior to the transition point—based on the observation that this was the only way for Germany to be defeated twice in three decades. However, this initial claim was altered in more recent versions of the theory. Organski and Kugler (1980, 59) found that the dissatisfied challenger initiates conflict after the transition. Bueno de Mesquita (1985), Kugler and Zagare (1990), Bueno de Mesquita and Lalman (1992), Alsharabati (1997) show that the defender does not preempt the challenger because it is risk averse, values the *status quo*, and prefers to postpone action once early opportunities are bypassed. In a contested dyad, the challenger is willing to take risks, and since its highest likelihood of success is after the point of parity, then the peak in the likelihood of conflict occurs just after the transition point.<sup>13</sup>

Moreover, the cubed RP term highlights the importance of satisfaction in the interactive term. The more dissatisfied the challenger and the lower the values of S, the longer it takes during the power transition process for the likelihood of conflict to be reduced. At the extreme, when nations are completely dissatisfied (when  $S=0$ ), the challenger has a monotonically increasing desire to initiate conflict as the RP term increases, reflecting its increasing likelihood of capitalizing on the growing opportunity to redress grievances imposed by the defender provided by its increase in relative power.

This formulation allows us to reconcile some seemingly important discrepancies. Bueno de Mesquita (1990), for example, argues that the Seven Weeks' War between Austria and Prussia occurred at the power parity when both nations were *satisfied*, yet they still waged war. Our generalized approach accounts for this discrepancy. The likelihood of conflict was low and the structural constraints imposed on the situation kept the severity of the war limited. Thus a very limited conflict ensued and the outcome was accepted despite the capability of both sides to escalate. The interactive term allows for a small probability of conflict during a power transition between two satisfied nations, but anticipates that the intensity of such an unlikely conflict would be far lower than when between two dissatisfied nations (see Figure 1 below).

An important and unexpected result of adopting the proposed specification is that integration is most likely to occur at periods of power asymmetry. The most likely time for integration is in the post-transition period, asymmetric when the challenger and defender are jointly satisfied. Having worked through differences during the transition period, the two contenders are now set to bear the costs of integration. Deutsch et al. (1957) empirically observed that there were no occurrences of integration when all the nations were at parity.

Instead, they observed that integration occurs around “cores of strength” (1957, 28), which points to a need for dominant nation as a “nucleus” for integration (1957, 38).

This formulation allows the hierarchy terms to modify the likelihood of conflict or cooperation independently, unevenly affecting the challenger and defender. The domination of a hierarchy by a single country imposes higher costs for any conflict within that hierarchy, as well as lower costs for integration. The higher costs of conflict are associated with the dominant power’s desire to maintain a peaceful *status quo*, which is consistent with stable economic growth. The lower costs of integration reflect the regional dominant power’s ability to absorb the costs of integration being comparatively larger than the other nations in its region.

#### **CHARACTERING THE DYNAMIC MODEL**

**The dynamic relationship between satisfaction, relative power, and the conflict-integration continuum is summarized in Figure 1 for unordered hierarchies and Figure 2 for ordered, dominated hierarchies. The horizontal axis represents the relative power of the challenger versus the defender, so that the left extreme, the defender is dominant relative to the challenger and at the right extreme, the challenger is preponderant over the defender. The depth axis represents the degree of joint satisfaction. At the back end of the figure, nations are jointly dissatisfied, while at the front end of the figure they are jointly satisfied. Finally, the vertical axis represents the degree of conflict-cooperation among the competitors. Higher points on this vertical axis reflect conflictual behavior, increasing in intensity and likelihood as the surface approaches the top of the figure. Midrange points reflect a band around 0 where nations are more likely to be neutral. Finally, the lowest points on the vertical axis reflect increasing intensity and likelihood of integration.**

[Figure 1 about here]

Figure 1 shows that there is little variation in either the likelihood or intensity of conflict-cooperation in the case of a preponderant defender (on the right side of the surface). Neutrality is the likely outcome. As the relative power of the challenger increases, the degree of conflict also increases. The more capable the challenger is *vis-à-vis* the defender, the more likely the challenger is to use military force to correct the source of its dissatisfaction.

An empirically rare phenomenon is anticipated when the challenger is preponderant and dissatisfied (back right corner of the surface). The defender is likely to make concessions and satisfy its now-more powerful opponent, either through a war nearer to parity or through accommodation after parity. Empirically, Britain faced this situation during the Munich Crisis prior to the outbreak of World War II. Similarly, once the challenger reaches preeminence there is no reason to wait any longer to force a change in the *status quo* defined by the previously dominant nation.

**As we move forward on the surface, the likelihood of conflict decreases as a result of the reduction in the degree of dissatisfaction. Indeed, less intense dissatisfaction assumes the more traditional form of the power transition argument. The peak of the intensity of conflict tends to be around parity, while the need to correct some grievance for the previously dominated challenger is reduced as it becomes more satisfied and more preponderant. The extreme example of this is the very rare incidence of integration in the**

**front, right-hand corner of the surface. Integration is most likely after a power transition between jointly satisfied countries. At this point in the surface, the two countries have a history of cooperative relations and have passed through the most dangerous time in dyadic relations: the transition from dominance by one power to another. Note that integration now may take place when either the defender or challenger is preponderant.**

[Figure 2 about here]

Figure 2 shows the effects of the most dramatic hierarchical constraint: a dominated hierarchy, to illustrate the greatest possible impact of the hierarchy. Once again, the major impact is the downward shift in the elevation of the surface. As in the previous surface, integration is possible when either the challenger or defender is preponderant. Indeed, when the defender is preponderant, the challenger may be forced to cooperate even if it is dissatisfied with the dyadic relationship.

We believe this formal presentation of Power Transition represents effectively the traditional arguments made thus far, and extends these arguments logically from conflict to integration. Our next step is to assess their strength against the empirical record.

## **EMPIRICAL RESULTS**

Previous attempts to test the Power Transition propositions have taken shortcuts with respect to the representation of the theory, without capturing the precise functional form of the theorized relationship. There are many examples of incomplete tests of power transition theory including Bremer (1996), Kugler and Lemke (1996), Houweling and Siccama (1988, 1996), Geller (1993, 1996), Kim (1989, 1991, 1992, 1996), Kim and Morrow (1992), Lemke (1993, 1995, 1996), Lemke and Werner (1996), and Werner and Kugler (1996). These studies find that

power parity combined with dissatisfaction provides a decisive contributing factor to the initiation of war. However, they evaluate the effects of parity as a dummy variable—which misses the interesting effects associated with the dynamics of relative power over the whole range of possible relationships, they apply the notions of power transition theory to war events only, failing to assess the effects of the shape of hierarchy reflected in the theoretical arguments. We incorporate these elements in our empirical analysis.

The empirical side of the power transition empirical research program has come under criticism because it has generally aggregated dyad-years into 5-, 10-, 15-, and 20-year intervals. Since our interest is in developing a closer description of the dynamic process driving the likelihood of war and peace, we choose instead to use annual data to more precisely capture the changes in relative power in relation to the likelihood of war and peace.

The first test focuses on Great Power dyad-years from 1816-1996. We use the definition of Great Powers established by the MID's data set (Jones, Bremer, and Singer 1996), which are the top 5 nations in the world system at any given time. This test evaluates the fit of the model to the original propositions generated for the global region. The second test focuses on all dyads including all politically relevant minor powers—assessing the general explanatory power of the model for the global and regional hierarchies.

This section focuses on the application of the model to the degree of conflict and integration. We estimate the following statistical model:

$$CI = \beta_1 \cdot RP - \beta_2 \cdot S \cdot (RP^3) + \beta_3 \cdot RP_c \cdot H_c + \beta_4 \cdot RP_d \cdot H_d + \varepsilon \quad (2)$$

The constant term is excluded to conform more closely to the proposed model. Table 2 presents the results for Great Powers in Model 1 and all politically relevant dyads in Model 2.

[Table 2 about here]

The results demonstrate that this characterization successfully accounts for the incidence of both conflict and integration over the last two centuries. The adjusted- $R^2$  shows that the model explains over 80% of the variance for both the global and regional hierarchies. All coefficients take the expected sign, are highly significant, and have relatively small standard errors.

The relative power term is positive and highly significant. This confirms the implication that challengers are more likely to initiate as they grow larger *vis-à-vis* the defender. Again as anticipated, in both levels of aggregation the interactive term is negative and is also highly significant. This suggests that while relative power is more important, challenges occur in the presence of dissatisfaction and parity, and integration occurs in the presence of asymmetry and high levels of satisfaction—particularly after a power overtaking.

As expected, the hierarchy terms are positive and highly significant. The coefficient for the defender's hierarchy constraint is much larger than for the challenger's hierarchy constraint, demonstrating that regional hierarchies affect defenders more than challengers. This result flows naturally from the argument that defenders are risk averse, and therefore more likely to respond to regional constraints than are challengers, who are risk acceptant since they have more to gain from a reordering of the *status quo* (Kugler and Zagare 1965).

#### **SIMULATING THE POWER TRANSITION DYNAMIC**

How well does this model account for specific historical dyadic relationships? Recall that the dependent variable is the cooperative-conflictual behavior that nations engage in. Our results demonstrate that discrete events such as war and integration can be effectively viewed as part of a continuous process that is conditioned in large part by the underlying relative power, the

hierarchical structure, and the joint degree of satisfaction among competitors. Clearly, structures are important but do not determine outcomes. Integration and war are discrete events. Using a continuum to characterize these discrete events indicates when the structural conditions for conflict or integration are ripe, and the relative propensity and likely severity for such events. Systemic evaluations allow foreign policy analysts, therefore, to identify those time periods that are of particular concern because the prospects of severe wars are high. Similarly, this analysis identifies periods of particular promise where the conditions for cooperation and integration are present.

In this spirit of pre-condition we use the model to look at three critical great power dyads. First, we assess the relationship between the United Kingdom and Germany from 1815-1995. This covers the two major power transitions and World Wars in the latter half of the 19<sup>th</sup> and first half of the 20<sup>th</sup> centuries. Secondly, we assess United States-Russian/USSR dyad from 1900-1995. This period covers the super-power rivalry during the Cold War that dominated foreign policy in the 20<sup>th</sup> century. Finally, we use the model to forecast the prospect for conflict or integration during the anticipated transition between the US and China in the 21<sup>st</sup> century.

### **United Kingdom-German Dyad**

Figure 3 utilizes the coefficients in Model 1 of Table 2 to simulate changes in the levels of the dependent variable over time. The relative power and hierarchy constraints are fixed at actual historical levels, but the figure reflects the entire range of satisfaction scores to indicate what may have been possible to implement by decision makers given a different set of policies. The line indicates the path actually taken by each dyad superimposed over the model's full range of prediction of conflict-integration given the full range of joint satisfaction scores.

**[Figure 3 about here]**

Figure 3 shows that the Britain and German had an opportunity between 1815-1870 to either integrate or to engage in conflict because the structural conditions were ripe for either cooperation or confrontation. Indeed a possibility of settlement and potential integration seems to have emerged prior to the Franco-Prussian war of 1870. However, Germany's integration following the Franco-Prussian war of 1870 produces fundamental structural changes. Germany emerges as a direct competitor gaining on England in terms of relative power. Non-cooperative behavior emerges during this period as Britain does not persuade Germany to become a partner in running Europe. Instead, Britain partners with the smaller but dissatisfied France, which had lost Alsace-Lorraine in 1870 to Germany. Under these circumstances, the two contenders were structurally constrained to the degree that they faced only conflictual options. Given these conditions it is not unexpected that eventually decision makers chose to wage World War I and then World War II to alleviate Germany's dissatisfaction with the *status quo* advocated by British.

Following World War II, the dynamics of relative power again favor Germany. After 1953 the UK was again in relative decline with respect to Germany, which overtook the British in the early 1960s. However, satisfaction with the *status quo* dramatically increased in this period because of the establishment of a democratic Federal Republic of Germany. Moreover, the US-led global hierarchy was far more ordered than the structure following World War I. Thus, the conditions for integration were present. Although Germany and the UK did not take full advantage of structural opportunity for integration until the early 1990s, the success of the EU is consistent with these structural conditions, as is the absence of a major war within Europe. This

very rough sketch of the structural opportunities for cooperation and conflict between British and German seems to correctly account for the major events that occurred between 1815 and 1995.

### **United States-Russia/USSR Dyad**

Figure 4 shows the range of possible relations between the United States and the USSR. Once again, the model's prediction based on actual level of joint satisfaction is superimposed on the full range of options to indicate the path actually followed. Both nations languished in the periphery of the global system until 1918, or perhaps even 1938, because of the long shadow of *Pax Britannica*.

[Figure 4 about here]

Figure 4 indicates that relations between these two giants could easily have been conflictual or cooperative. Following World War I, both fought against Germany. The US intervened during the Russian Revolution for a short time in a futile attempt to reverse the rise of Communism. Again, during World War II, both nations collaborated in an effort to defeat Hitler's Germany, only to part company immediately after their biggest triumph.

During the Cold War period, attempts by either side to reduce tension produced limited reductions in conflict, but unlike the British-German interaction, the structure of the US-USSR relationship could easily allow for either cooperation or conflict. Thus, while the British-German rivalry was based on structural differences that could not be reconciled by policy means, the US-USSR relationship could be settled through active foreign policy and a reconciliation of preferences. Indeed this was the case following the collapse of the USSR. The United States did not take advantage of this rapid decline to destroy the previous challenger. Rather, the US

adopted a conciliatory policy that may in the long term produce a true reconciliation among these nations.

The fit in this period is less convincing than for the previous dyad. Counter-intuitively, after 1992, the model anticipates that the structural potential for conflict rises once again even though the potential for extreme cooperation is also present. Russian decline in power relative to the US—which should reduce the level of potential conflict – is insufficient to reduced the area of conflict. The reason for this is that the regional hierarchy for Russia became less ordered as a result of the Russian decline, imposing fewer constraints on Russia and increasing the potential for regional conflict that could involve the United States. Thus, the model captures the regional instability following the collapse of the USSR, but in our judgment does not give full credit to the reduction in tensions between the two great powers.

### **US-China Dyad**

Figure 5 provides a forecast of the range of possible relations, given all possible levels of joint satisfaction, between the US and China through 2050. To provide a forecast of the set of possible relations, we used the growth trajectory suggested by Tammen et al. (2000) for the next 50 years and the consequent change in regional hierarchical constraints implied by this trajectory.

**[Figure 5 about here]**

The forecast is very sensitive to changes in the level of satisfaction over the entire interval. The implication is that different foreign policy stances by the US toward China can be decisive in the choice between conflict or integration. Specifically, a reconciliation of preferences between the US and China will be very important in preventing war and achieving a

structurally stable peace. If the US and China are satisfied with the *status quo*, then high levels of cooperation are possible by 2050 avoiding the possibility of conflict. If, on the other hand, the two nations are dissatisfied with each other, a major war between these two nuclear powers remains a distinct possibility.

In today's context the choice between China as a "Strategic Partner" and China as a "Strategic Competitor" looms large. Indeed, if the first posture is adopted, then cooperation and even integration can be envisaged. If the second posture prevails, then the likelihood of a new Cold War with potentially far more serious consequences than the US-USSR confrontation remains possible.

This forecast is particularly troubling because China, unlike the USSR, is expected to overtake the United States in power sometime in the middle of this century and because of the differences in income per capita between these two societies the prospects for very different perceptions of an acceptable *status quo* remain high (Tammen et al. 2000). Under the structural conditions outlined, only concerted efforts by both sides to reconcile differences in preferences will preserve peace.

## CONCLUSIONS

This paper suggests a precise formal characterization of power transition theory that extends the argument to include power dynamics and hierarchy changes to account for both cooperation and conflict. The series of surfaces that represent the dynamic relation between relative power, satisfaction, hierarchies, and the intensity of conflict and integration provide the logical connections suggested by the theory and cast them in consistent and readily testable terms. By precise specification of power transition theory, we are able to generate a truer test of

the theorized relationship between relative power, evaluations of the *status quo*, regional hierarchies, and conflict-cooperation.

The empirical reported results are robust. We demonstrate that it is important to incorporate the *status quo* as well as the notion of hierarchical constraints into the calculus of war and integration. Additionally, it is critical to consider the relative power of nations. Our findings demonstrate that not all international politics, as many contend, are a simple extension of local politics. Domestic politics and decision makers can influence the relationship between nations at times, but they are affected and constrained by the structure of the international system. Our results show that the power relationships between nations and within regions overwhelm the role played by domestic actors. Aversion of military disputes and encouragement of integration requires understanding and the ability to take advantage of favorable evaluations of the *status quo* that allow preferences to be reconciled. The alternative is to prevent economic convergence, generating immense dissatisfaction and increasing the likelihood of war.

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## Appendix

### THE INTEGRATION ACHIEVEMENT SCORE DESCRIPTION

The level of regional integration is referred to as the integration achievement score (IAS), first developed by Hufbauer and Schott (1994). The calculation of the IAS in their work involves a smaller number of regional integration organizations for 1994. The current method adopts their initial framework and expanded the time period to include each year of the organizations from their implementation dates through 2000. The IAS is an index of six categories that measure the level of regional integration. Each category has a value of 0 (low) through 5 (high) along a Guttman scale. The following are the six categories that make up the index:

- 1) Free movement of goods and services (G&S)
- 2) Free movement of capital (FK)
- 3) Free movement of labor (FL)
- 4) Supranational institutions (SP)
- 5) Monetary coordination (MC)
- 6) Fiscal coordination (FC)

Each category ( $C_i$ ) is given a value (see Table A-1 for more detail), all six are summed, and then divided by 6 to give an average across all categories:

$$IAS = \frac{\sum_{i=1}^6 C_i}{6}$$

Different methods to calculate the score produced similar results using variables from the Penn World Tables as predictors. Also robustness tests indicate that the variable does not depend upon any single category more than the others.

## Table A-1

### Integration Achievement Score (coding system)

#### 1. Trade in Goods and Services

- 0 = No agreements made to lower tariffs and non-tariff barriers
- 1 = Preferential Trade Agreement
- 2 = Partial Free Trade Area
- 3 = Full Free Trade Area
- 4 = Customs Union
- 5 = No barriers among member countries

#### 2. Degree of Capital Mobility

- 0 = No agreements made to promote capital mobility
- 1 = Foreign Direct Investment allowed in limited form
- 2 = Capital withdrawal allowed
- 3 = Full access for foreign investment and capital withdrawal, except for national government procurement
- 4 = Full capital mobility except for large scale merges and acquisitions
- 5 = Full capital mobility without restriction

#### 3. Degree of Labor Mobility

- 0 = No agreements made to promote labor mobility
- 1 = Right of movement granted for select professions
- 2 = Full right of movement
- 3 = Transferability of professional qualifications granted
- 4 = Transferability of pensions and other retirement devices
- 5 = Full freedom of movement

#### 4. Level of Supranational Institution Importance

- 0 = No supranational institutions
- 1 = Establishment of nominal institutions
- 2 = Information gathering and advisory role
- 3 = Ability for institutions to amend proposals
- 4 = Ability for institutions to veto proposals
- 5 = Supranational institutions operate as primary decision node

#### 5. Degree of Monetary Policy Coordination

- 0 = No monetary policy coordination
- 1 = Consultation regarding policy
- 2 = Commitment to maintain parity
- 3 = Coordinated interventions
- 4 = Regional Central Bank establishment
- 5 = Single currency

#### 6. Degree of Fiscal Policy Coordination

- 0 = No fiscal policy coordination
- 1 = Consultation regarding policy
- 2 = Commitments regarding deficit spending and taxation
- 3 = Sanctions regarding breaking commitments
- 4 = Uniform tax code
- 5 = Single budget

Table 1

<b>Hostility Level Coding</b>	<b>Description of Coding</b>	<b>Goldstein-WEIS Interval</b>	<b>Adjusted Conflict-Integration Interval</b>
0	No event	0	2.5
1	No militarized action	-2.4	3.1
2	Threat to use force	-5.8	3.95
3	Display of force	-7.6	4.4
4	Use of Force	-8.3	4.575
5	War	-10.0	5.0

Table 1. Conversion of COW Hostility Scores to Goldstein-WEIS Scaling

Table 2

	<i>Model 1</i>	<i>Model 2</i>
<i>Level of Aggregation</i>	<i>Great Powers</i>	<i>Politically Relevant Dyads</i>
<b>Relative Power</b> <i>(COW Capabilities)</i>	2.350*** (.1341)	1.616*** (.0296)
<b>Satisfaction*Relative Power<sup>3</sup></b> <i>(Alliance S-Statistic)</i>	-1.148*** (.0849)	-.765*** (.0239)
<b>Hierarchy Constraint</b> <i>(Challenger's Region)</i>	.480** (.1557)	1.170*** (.0250)
<b>Hierarchy Constraint</b> <i>(Defender's Region)</i>	3.127*** (.1658)	2.552*** (.0213)
<b>Adj. R<sup>2</sup></b>	0.8852	0.8298
<b>F</b>	2814.36***	42132.63***
<b>Root MSE</b>	1.4173	1.2125
<b>N</b>	1460	34,557

Notes: coefficients reported, standard errors in parentheses, \*:  $p < 0.05$ , \*\*:  $p < 0.01$ , \*\*\*:  $p < 0.0001$

**Table 2. Results on Integration-Conflict Continuum, 1816-1996<sup>2</sup>**

Figure 1

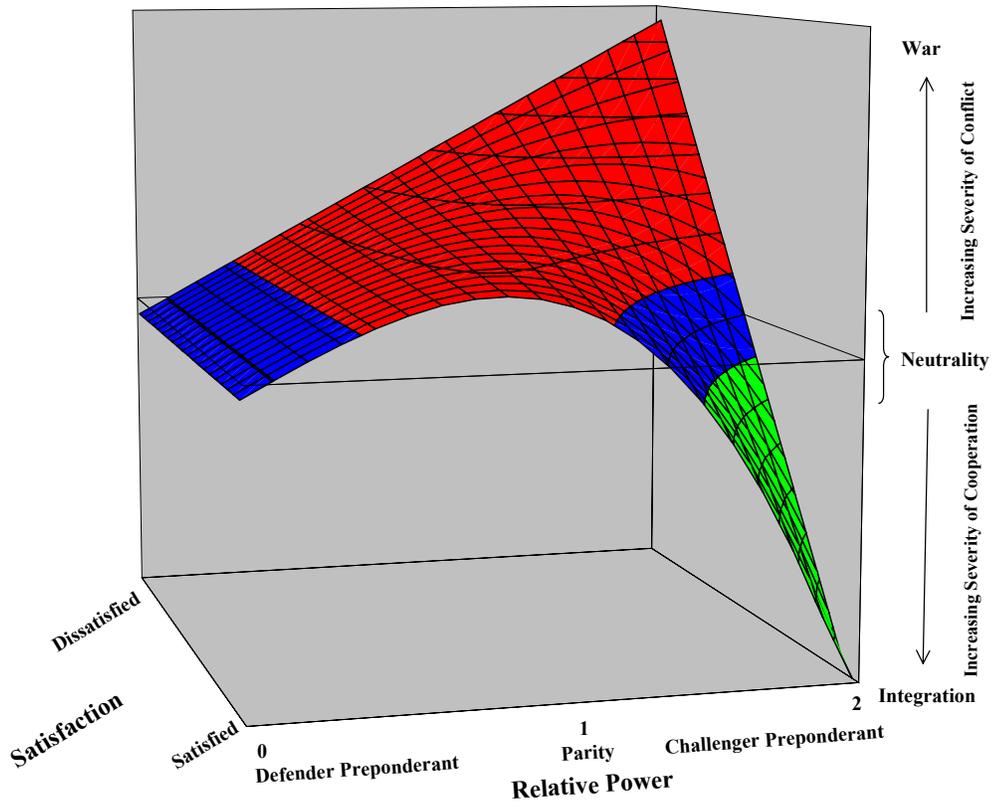
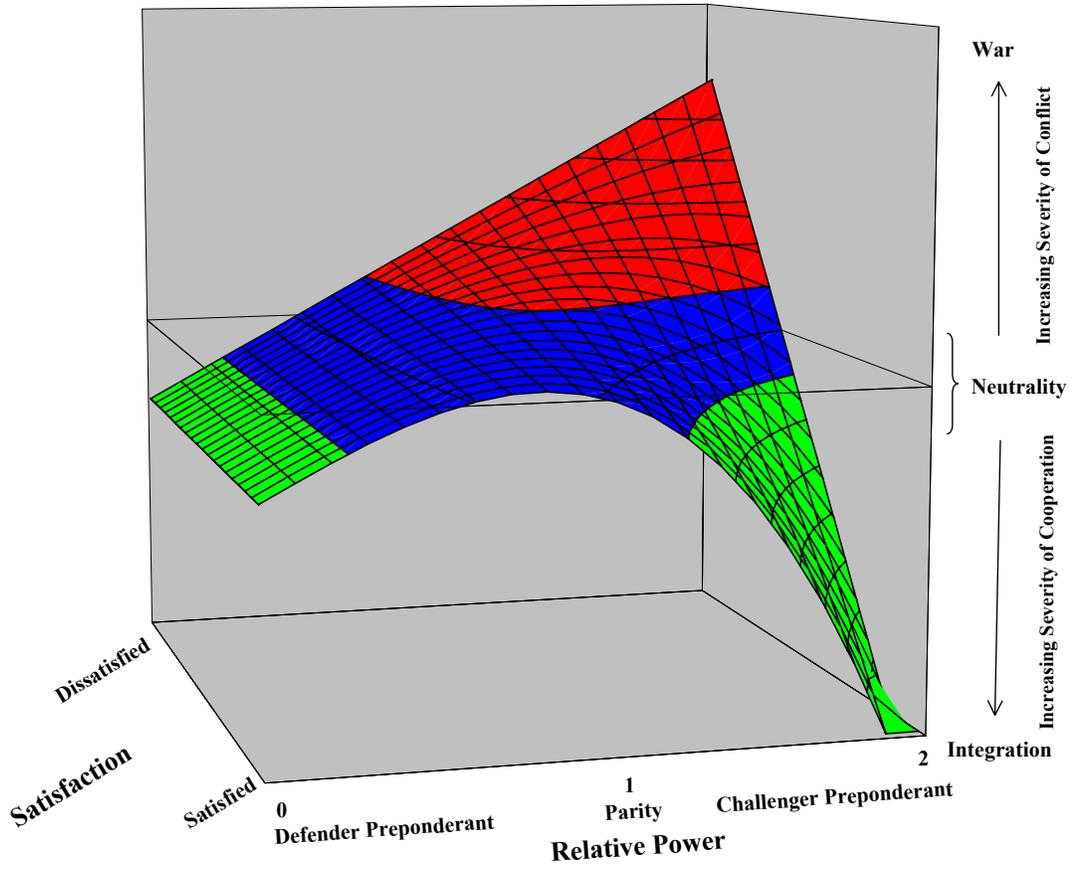
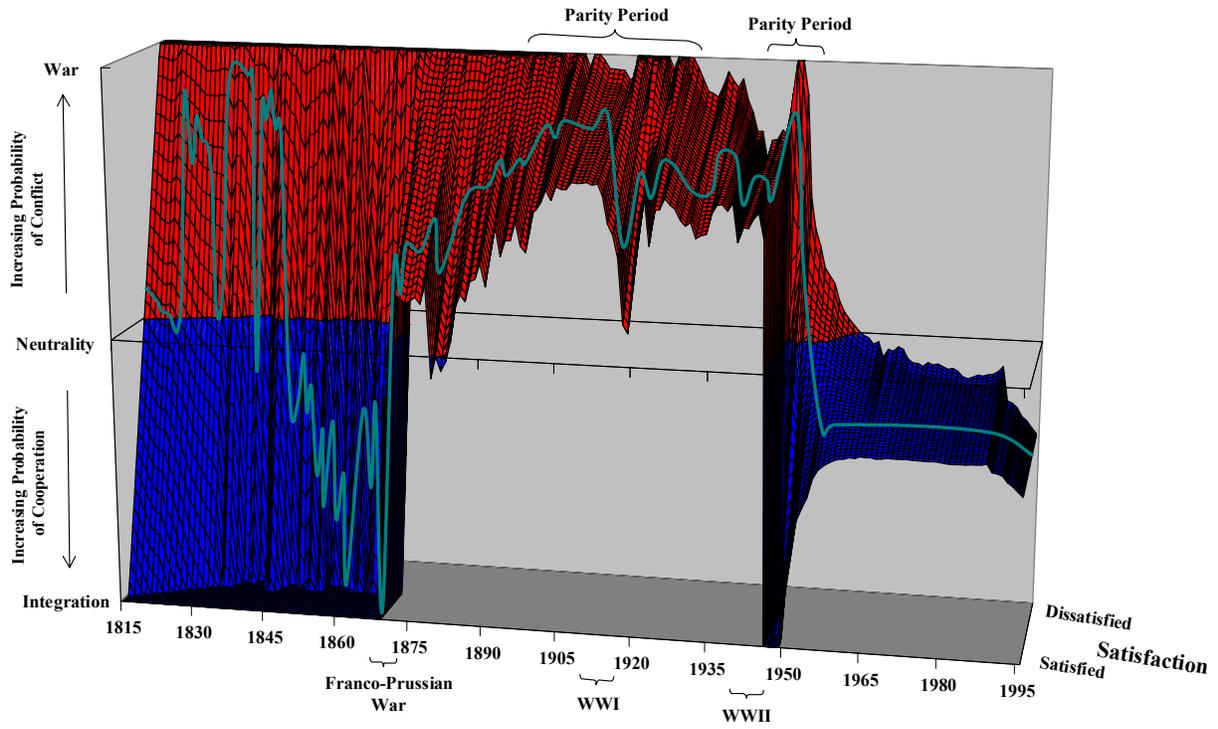


Figure 1. Relationship Between Relative Power, Satisfaction, and Degree of Conflict-Cooperation for an Unordered Hierarchy

**Figure 2. Relationship Between Relative Power, Satisfaction, and Degree of Conflict-Cooperation for a Dominated Hierarchy**





**Figure 3. Historical Simulation of UK-German Dyad, 1815-1995**

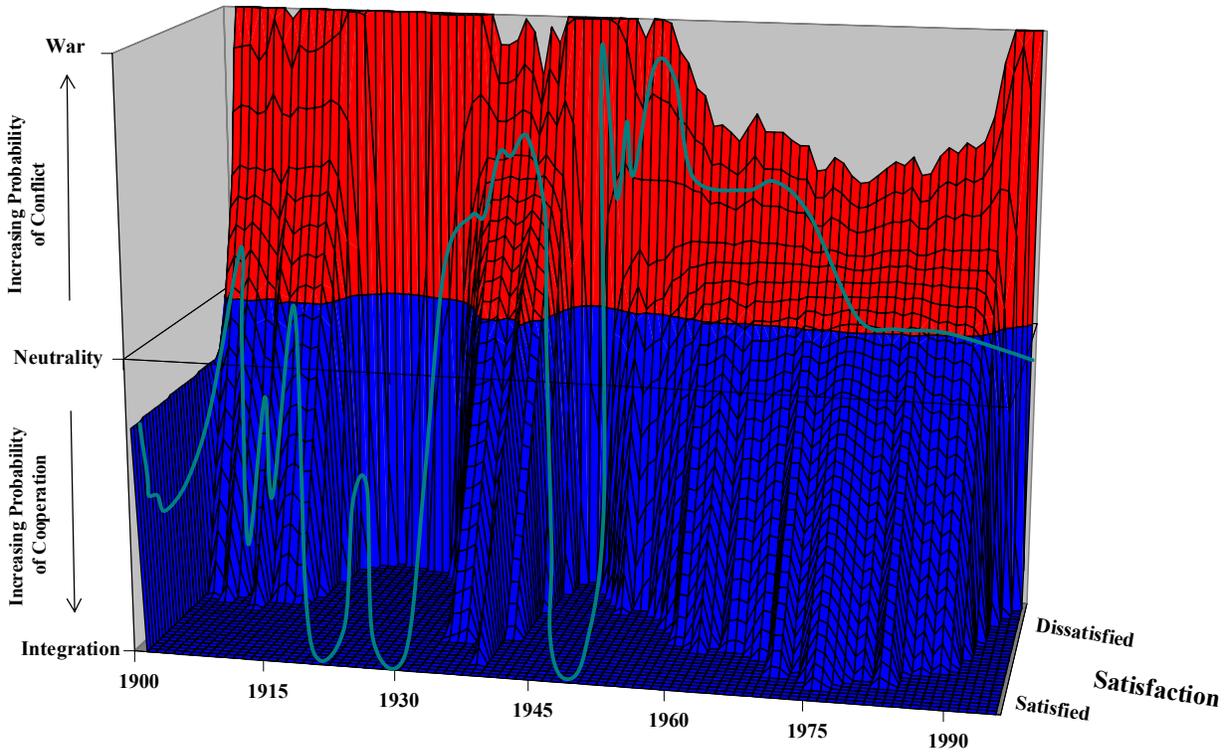
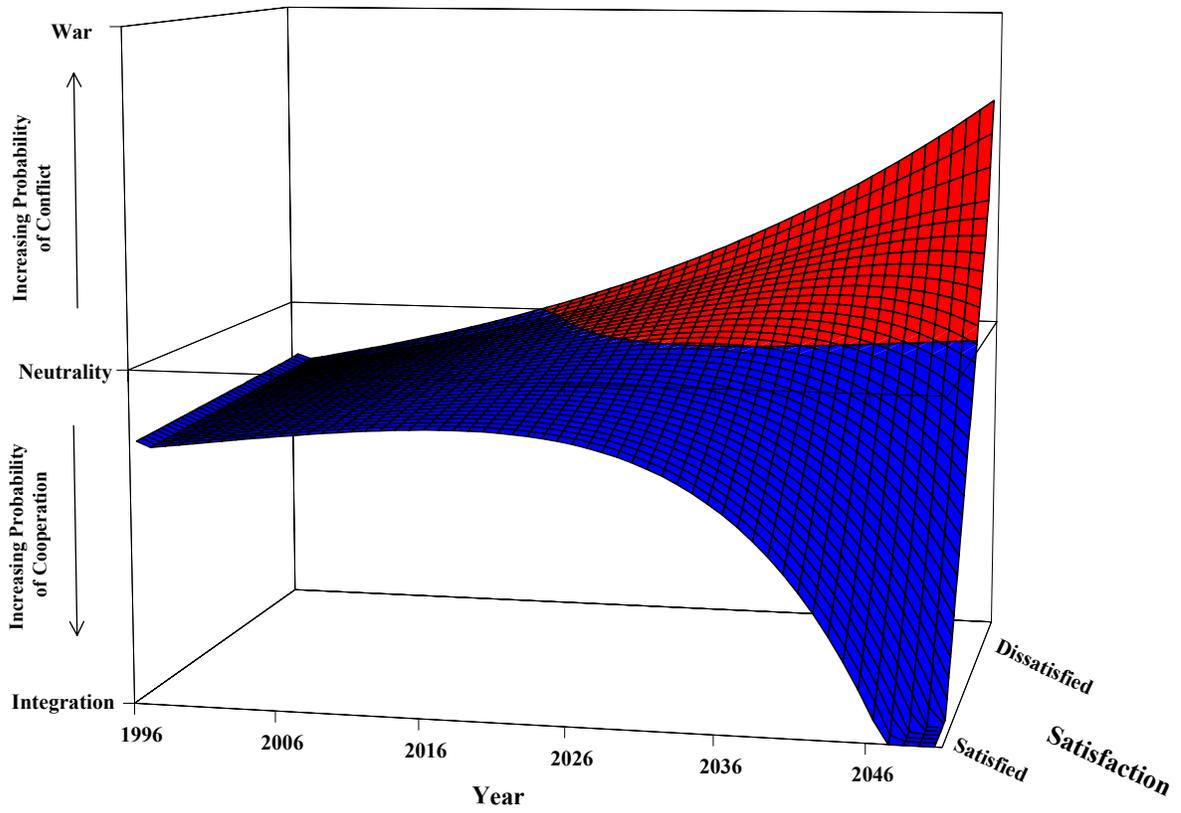


Figure 4. Historical Simulation of US-Russian/USSR Dyad, 1900-1995



**Figure 5. Forecast of US-Chinese Dyad, 1995-2050**

## Endnotes

<sup>1</sup> Efrid and Genna (2002) demonstrate the theory's empirical ability to explain regional integration.

<sup>2</sup> In rare cases, both the dominant and challenger nations dissatisfied with their dyadic *status quo* and their interactions resemble true anarchy. Here war is both likely and intense. (Tammen, et al 2000).

<sup>3</sup> The use of structural constraints to explain cooperative events has been used with some success to explain regional integration. (Haas 1961, Puchala 1971, Schmitter 1971, Mitrany 1975, Caporaso and Keeler 1995, O'Brien 1995, Haggard 1997, McCall 1976, Axline 1994).

<sup>6</sup> At present we are not modeling the decision making process underlying this dynamic process, but work in this direction can be found in Alsharabati (1995); Alsharabati, Kugler, and Volden (1999); and Kugler, Swaminathan, and Tammen (2001).

<sup>7</sup> Thanks to Glen Palmer for sharing this observation.

<sup>9</sup> High quality data on GDP for the entire set of countries since 1816 is not available however tests with the subset available show results are consistent.

<sup>10</sup> Since most Great Powers do not have more than 200% of the GDP of their competing Great Powers, this is not a severely limiting assumption. Furthermore, power transition theory has always had its greatest difficulty in explaining the behavior between vastly-asymmetric dyads. Our findings confirm the weakness in applying the theory to such dyads.

<sup>11</sup> This problem is similar to that faced by micro-theorists in their analysis of preferences that once given can be analyzed with sophisticated decision making tools like game theory.

<sup>12</sup> See Efrid (2001) for sensitivity analysis using the tau-b scores, as well as using the Gartzke, Jo, and Tucker (1999) satisfaction measures using UN voting patterns. The empirical results are unchanged with these alternatives.

<sup>13</sup> Also consistent are Schweller's (1992) arguments on the lack of motivation for democracies to fight preventive wars and Geller's (1996) conclusion based on the likelihood of war outcomes.