Democracy and Militarized Interstate Collaboration*

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It is well documented that democratic nations very rarely engage in militarized conflict with other free nations. This study expands on this notable pattern by examining the possibility that democracies may also be more amenable to collaborate in militarized interstate conflict. A theoretical rationale for this expectation is developed resting on the cooperative norms of democratic political culture. With empirical analysis encompassing all nations from the Napoleonic era to the end of the Cold War, it is found that joint democracy has a positive and robust impact on the probability that two states will be on the same side at the start of a militarized interstate dispute. This conclusion remains robust after accounting for the potent influences of major power status, geographic proximity, dyadic alliance, and regime maturity on the probability of militarized collaboration. The results suggest that researchers may wish to seek answers for democratic foreign behavior that encompass the realm of interstate cooperation as well as the often-noted absence of interdemocratic militarized conflict.

1. The Scope of Democratic Conflict Behavior
   Are democratic nations more likely than other states to collaborate in militarized interstate disputes? It is well documented that while democracies seem to fight autocracies on a normal basis, they have rarely, if ever, gone to war against each other, and they are much less likely to engage each other in militarized interstate disputes short of war. This systematic pacifism between democratic states challenges traditional views on the nature of international relations. It suggests some validity to long-dormant idealist notions that world peace can be achieved through the spread of democratic institutions of government. The importance of the so-called 'democratic peace' is further enhanced by the extension of democratic rule across the globe in recent years, though the rate of this diffusion appears to be leveling off (Ray, 1995, ch. 2; Shin, 1994).

   The primary aim of this study is to explore the possibility that the scope of the democratic peace may be wider than the absence of violence. Specifically, the question is investigated if democracies tend to be on the same side, or 'collaborate', at the start of militarized interstate disputes. There is some empirical basis for believing that this may be so. Bremer (1992b) has found, for example, that democracies tend to join more wars than other states. Siverson & Emmons (1991) have found that democracies tend to ally with one another. The results of both of these studies suggest that democracies behave differently than other regimes, a divergence that lies beyond an absence of violent conflict between them.

   This article thus extends previous research exploring the relative peace between democracies by investigating whether the phenomenon encompasses militarized collaboration. Towards this end, the study begins by defining 'militarized interstate collaboration' and demonstrating how the phenomenon serves as an indicator of the most intense levels of cooperation between nations. Next, a theoretical rationale for democratic collaboration is introduced, resting on the cooperative norms of democratic political culture. In the following sections non-regime explanations for interstate collaboration are reviewed and the analytical procedures of this study are outlined. The empirical analysis includes all states from 1816 to 1992, recognized by the Correlates of War (COW) project, with militarized interstate collaborations identified with the revised and updated COW Militarized Interstate Dispute data set. After presentation of the empirical results the article concludes with a discussion of the research implications and directions for further study.

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2. Militarized Interstate Collaboration

The importance of the democratic peace fundamentally rests on two factors. First, it indicates that joint democratic dyads are somehow less likely to experience hostility. Second, the avoidance of violent conflict itself is meaningful in its own right for, among other reasons, we have a normative inclination that it is bad. Hence, the inductively derived pattern has fostered a great deal of theorizing, with hypotheses aimed as much at explaining the absence of conflict as the absence of violent conflict. A few of the explanations for the democratic peace, for example those resting on ideological (Owen, 1994) or psychological (Hermann & Kegley, 1995) grounds, seem to offer explanations for the avoidance of conflict, not just violent, or militarized, conflict.

Still, while violent conflict affirms the presence of hostility between nations, it cannot indicate the absence of hostility. Nations may share a great deal of animosity and still fail to militarize their relationship. Consequently, the observed association between democracy and peace rests only on manifestations of the more intense levels of conflict (namely militarization and war) without accounting for the presence of hostility in non-violent dyads.

This study is aimed at filling this gap by observing collaborations at the start of militarized interstate disputes. Just as violent conflict indicates the presence, but not the absence of hostility between nations, collaboration in militarized conflict indicates the presence, but not the absence, of cooperation among nations. In this manner militarized collaboration affirms the presence of the most intense levels of interstate cooperation; just as militarized conflict affirms the presence of the most intense levels of interstate hostility.

Consider that most disputes between nations are probably settled amiably through negotiation or arbitration. If the issue is not substantial or pressing, it may wither away unresolved. Occasionally, though, adversaries cannot settle on a compromise solution to a highly salient matter, and some disputant feels compelled to threaten, display, or use force as a means to achieve the outcome it prefers. Students of interstate conflict deem such acts Militarized Interstate Disputes (MIDs).

A militarized collaboration occurs when two states are on the same side at the start of a militarized interstate dispute. Yet in most cases the initiation of violence, or militarization of a conflict, originates with the leaders of one state acting against another single state. Militarization is serious business — national security becomes clearly at issue, along with its associated potential for all out war. Hence, initiators of militarization obviously desire as few opponents as possible. For this reason, if the leaders of a state threaten to use force (or display or use force) against multiple nations at the same time, the leaders must be assuming that their target states are intimate enough that an attack on one is equivalent to an attack on both. This reveals that the target states must be quite close. For nations to join nations already in violent conflict is one thing; for two states to be so confidently perceived that they will join each other — by contemporaneous political actors — would seem to indicate a most intense level of cooperation between them.

Similarly, for two or more states to collaborate in the initiation of militarization also shows a great deal of intimacy. The leaders evidently perceive their interest as being in common and are able to cooperate in the initiation of violence; each trusts the other to follow through on this dangerous escalatory path. While it may seem reasonable to conclude that collaboration in the initiation of violence involves a higher degree of cooperation than collaboration on the target side, because the former apparently act in tandem, it should be considered that the act of militarization itself is merely one threshold of many in the ongoing conflict process. At the crossing of a previous (or following) conflict threshold, the target collaborators may very well have been (or be) the initiating collaborators.

Naturally, nations may cooperate in other realms, such as by exchanging ambassadors or through common membership in international organizations. But the former is more accurately an indicator of similarity of interests, rather than cooperation, and the latter accounts for the more mundane forms of interstate cooperation, such as shared membership in the Universal Postal Union. By examining cooperation in the most intense forms of conflict — those interstate disputes salient enough to become violent — this study observes the most intense forms of interstate cooperation. While it is well established...
that democracies are less likely to engage in militarized conflict among themselves, are they more likely to collaborate?

3. Democracy and Militarized Interstate Collaboration

Two centuries ago Immanuel Kant speculated that republican government would force man to be, if not a good moral being, at least a good citizen (1795, p. 33). Today, Kant’s original understanding is accruing a respectable degree of empirical support (Dixon, 1993, 1994; Ember, Ember & Russett, 1991; Maoz & Russett, 1993; Raymond, 1994; Weart, 1994). What has come to be known as the cultural-normative hypothesis rests on the assumption that democracy involves not just institutions but particular norms of behavior. These norms are said to be nurtured through the democratic political process where disputes are routinely settled by negotiation in a spirit of political toleration. As a result of learned norms democratic leaders are said to be adept at achieving peaceful solutions to differences among themselves, but they still may engage in normal levels of violence with autocracies because democratic leaders apply the perceived conflict norms of their adversary’s regime type (Dixon, 1994; Doyle, 1986; Russell, 1993).

Since the cultural hypothesis relies on interstate regime-based perceptions, Layne (1994) points out that the hypothesis leads to two expectations. First, public opinion should be strongly pacific between democracies. Second, democratic leaders should refrain from threatening each other with brute force (pp. 13–14). With case study analysis Layne claims to find no support for either of these predictions. Yet, as I demonstrate below, Layne’s expectations are not a necessary part of the cultural hypothesis. This is because democratic cultural norms need not be limited to the realm of conflict resolution, but may instead be derived from a relatively higher value placed on the benefits of cooperation. If this is the case then regime-based perceptions are not essential to the proposition, nor is it necessary to assume that democracies are invariably peaceful with each other.

3.1 Democratic Cooperative Norms

To offer a satisfactory explanation for militarized interstate collaboration, as well as peace, the scope of democratic norms must range beyond the avoidance of violence. As a first step in this direction I turn to John Stuart Mill’s assertion that a society is best served if everyone pursues their interests, bounded only by the need to refrain from inhibiting the rights of others. I contend that Mill’s world-view, which I shall call liberal rationality, is an inherent part of the political culture in mature democratic societies. Most individuals expect everyone to pursue their interests, with the recognition that, within the bounds of agreed upon rules, everyone will benefit. Like Isaac Newton’s vision of a balance among the stars and planets, liberal rationality sees a natural balance, or harmony of interests, ultimately existing in any system of self-interested actors.

Carrying its own logic, the liberal rational outlook encourages a regularized and consistent mode of behavior that, in time, fits the definition of an established norm (Goertz & Diehl, 1992a). Since utility maximization is implicit, an infractions of the system rules is understood to be harmful to the interests of the general community, making defection a violation of community norms. The result is a regularized mode of behavior that becomes, in time, right and proper conduct in democratic political cultures: an emphasis on fair-play and the rule of law.

I maintain that liberal rational norms tend to be weaker in less democratic societies, where—with the plausible exception of traditionalist regimes—the function of government is often aimed at protecting and extending the privileges of those in power. In such societies the pursuant of happiness requires not fair play but personal connections, such as a friend or family member in the ruling political party, military, or bureaucracy. Conflicting interests are emphasized as competing groups—whether they be social, economic, religious, or ethnic—strive for power in competitive struggles that often entail far fewer bounds than those of democratic civil society. Any group in power may institute its preferred set of privileges, so competition for power is often deep and perpetual. The result is a perceived milieu that, in the extreme case, views the world as an imbalanced dichotomy of winners and losers. As a consequence, behavioral norms are fostered which justify a maldistribution of goods and tend to favor ends over means (Diamond, Linz & Lipset, 1995, p. 32).
Certainly not everyone in a mature democracy shares the liberal rational outlook, as not everyone in an autocratic society views the world in terms of what Dixon (1994) suitably calls ‘boundless competition’. I maintain only that these divergent world-views, and consequent behavioral norms, are apt to prevail in their respective political cultures. As a result, nations tend to produce leaders sharing an approach concordant with their domestic political norms. If a mature democracy produces an illiberal leader it is likely that institutional constraints on executive authority (as suggested by Kant), or the leader’s desire to be re-elected (as suggested by Downs, 1957), may force the leader to behave in a manner compliant with liberal rational norms. As a result, nations with stronger democratic cultures and institutions are inclined to operate on the cooperative norms of liberal rationality, while less democratic nations tend to behave in a manner closer to the Machiavellian logic of boundless competition.

3.2 Democratic Norms and Militarized Interstate Collaboration

Game theoretic analyses have shown that in a reiterated prisoner’s dilemma (PD) environment an actor is better off responding in kind to an adversary’s friendly and aggressive acts, a strategy often referred to as ‘reciprocity’ (Axelrod, 1984; Keohane, 1984). This is because in the non-zero-sum environment of the repeated PD play it remains in the interest of both actors to favor cooperation, and the practice of punishing coercion and rewarding cooperation fosters this preferred outcome. In contrast, in a zero-sum environment there is no incentive to cooperate (Axelrod, 1984, p. 110).

Under the assumption of liberal rationality democratic leaders view the world less in zero-sum terms than their autocratic counterparts. Since they perceive higher pay-offs from international cooperation, democratic leaders should be more likely than other rulers to favor cooperation in world affairs. It thus follows that democratic states should be more likely than other nations to adopt strategies of reciprocity in their foreign relations. For reasons of parsimony, most game-theoretic analyses have neglected the potential role of regime-based divergency among nations (Milner, 1992). Yet, with empirical analysis, Leng (1993) has found that democratic nations are more likely than other states to adopt reciprocating strategies in militarized interstate crises.

The unilateral adoption of reciprocity, however, is not enough to induce cooperation between two states. This is because an actor practising reciprocity cannot reward non-cooperative behavior by others (Leng, 1993, p. 35). Furthermore, the notion of liberal rationality provides no basis for assuming that only democracies practice reciprocity—only that democratic leaders should be more likely, ceteris paribus, than other leaders to practice it. Nevertheless, the assumption of liberal rationality leads to the expectation that cooperation should be more likely to occur between democratic nations, for two reasons.

First, joint strategies of reciprocity are more likely to be successful when actors understand each other. Friendly behavior can easily be misunderstood, with reciprocity leading to an escalating feud rather than concerted action (Axelrod, 1984, pp. 121–123). This has been shown empirically by Leng, who noted that leaders need to ‘openly communicate their intentions’ (1993, p. 39). Under the assumption that democratic leaders tend to share liberal rational values, we should expect them to have a common understanding of the value of cooperative and coercive behavior. Thus the behavior of each leader is more likely to be clear and recognizable to the others, making the reciprocating intentions of each democratic leader very clear to the rest.

Second, democratic leaders may perceive their like counterparts to be more amenable towards cooperation, further reinforcing the clarity of each other’s intentions. These perceptions may be accrued through a history of bilateral cooperation, or may be derived from images of governing institutions. The role of interstate regime-based perceptions in the democratic peace has been suggested by numerous scholars (Bueno de Mesquita & Lalman, 1992, p. 156; Dixon, 1994, p. 17; Doyle, 1986, p. 1161; Russett, 1993, p. 31).

Nevertheless, in contrast to Layne’s critique of the cultural-hypothesis (1994), neither popular nor elite perceptions of other nations’ regime structures—and consequent dyadic pacifism—are necessary to explain the democratic peace. Nor is it essential that democratic leaders be less
likely to threaten other democratic leaders with the use of force. Rather, all that is required is that the intentions of such threats be more likely to be understood by targeted democratic leaders. Hence democracies occasionally engage each other in militarized interstate disputes but rarely, if ever, go to war. Indeed, in his analysis of four joint-democratic crises Layne shows that the participants very clearly understood each other’s intentions.

In summary, rather than resting on conflict resolution norms and interstate regime-based perceptions, I maintain that democratic peace and cooperation – stem from a community of leaders who share common values and a common understanding of the benefits of cooperation. Between democracies cooperation is fostered, and conflict is hindered, through clear and recognizable strategies of joint reciprocation. A tendency for democracies to collaborate in militarized conflict may thus be explained by intense levels of cooperation and consequent intimacy among them.

4. Non-regime Explanations for Militarized Interstate Collaboration

Beyond regime type a number of other factors may account for a pattern of militarized collaboration between nations. A primary set of these arise from the Realist school, which encompasses a multiple set of theories that nevertheless tend to share, in varying degrees, the central assumptions that all nations behave alike, the interstate world is anarchic, and nations are primarily motivated to survive (Wayman & Diehl, 1995). Realists focus on the relative power and power status of nations, and since a fair portion of major powers have been at one time or another democratic, the present empirical analysis would be incomplete without their consideration.

A leading branch of Realism focuses on the relative capability of the world’s foremost power (Gilpin, 1981; Organski, 1958; Thompson, 1988). While there is much variation within this research program, a shared assumption remains that stronger nations tend to dominate weaker ones, and the foremost power, or hegemon, is the actor who determines and enforces the behavioral norms of the interstate system. While not pretending to cover here the complexities of hegemonic theory, for our purposes we should expect the reigning hegemon to be more likely to collaborate with other states as it carries out and enforces its reign. Organski’s power transition theory (1958), for example, separates satisfied from dissatisfied states. The former support the world leadership of the hegemon while the latter oppose it. We should therefore expect the leading dissatisfied state, or challenger, to collaborate with other dissatisfied states in opposition to the hegemon. Since all hegemons and challengers have been at the same time major powers, the empirical analysis will account for the role of major power status on dispute collaboration.

Realist theory also leads to the expectation that two nations should be more likely to pool their resources and potentially collaborate when they face a common threat arising from a third nation (Waltz, 1979). Indeed, Lake (1992) suggests that democracies share a common threat from autocratic regimes, which are less constrained by their societies from earning rents and are therefore inclined towards imperialism. The presence of an alliance between nations should be an indication of common interests founded on shared insecurity.

Still, an alliance itself may also bring about militarized interstate collaborations. Gowa’s theory of security externalities (1989) posits that an alliance between nations encourages increased trade and cooperation. An alliance may also drag a nation into a conflict by encouraging an actor who militarizes a dispute to target not only the primary opponent but also any of its allies. Since it does appear that joint democratic dyads are more likely to share an alliance than other dyads (Siverson & Emmons, 1991), the empirical analysis will account for the presence of an alliance between nations.

Another factor that may foster interstate collaboration involves geographic proximity. While it is well established that common borders encourage conflict (Bremer, 1992a; Goertz & Diehl, 1992b; Oneal et al., 1996; Siverson & Starr, 1991), they also provide a great number of interaction opportunities between nations (Most & Starr, 1989). It is likely that interaction opportunities afforded by geographic proximity
encourage a degree of intimacy between states, potentially fostering collaboration as well as conflict.

Game theoretic analyses lead to the expectation that time itself should favor cooperation between nations. States are more likely to practice strategies of reciprocity when they expect their rival to reward and punish them for their respective cooperative and coercive behavior. For this to happen the actors must expect their interaction to continue (Axelrod, 1984, p. 12). An indication of how long two states expect to interact is the amount of time they have already been interacting. Since some democracies have been around for a long time, the analysis will account for the effect of regime age on dyadic collaboration. The following section focuses on the definition and measurement of these variables, their data sources, and the analytical procedures of this study.

5. Methodology and Measures
The empirical question to be investigated, whether democracies are more likely to collaborate with each other than other pairings of nations, is explicitly dyadic. Therefore the appropriate level of analysis in this study is the interstate dyad. Each unit of analysis will thus represent an annual non-directional pairing of two states, both of which must (a) interact in the interstate system and possess a substantial degree of autonomy, as defined by the Correlates of War project, and (b) have at least one million inhabitants as required for inclusion in the Polity III data set (Jaggers & Gurr, 1995). Within these broad limitations, after deleting missing democracy values I found 399,250 dyad-years from 1816 to 1992.

5.1 Militarized Interstate Collabations
The recently revised and updated Militarized Interstate Dispute data set records the day of entry for all participants in 2034 militarized interstate disputes (MIDs) recorded between 1816 and 1992. However, the data do not specifically distinguish genuine collaborators from subsequent MID joiners. Conceptually, nations that join ongoing MIDs are likely to be aware that they are joining militarized conflicts, in contrast to collaborators, who happen to be involved in highly salient disputes at the onset of militarization. Multiple parties on one or both sides of a MID on its first day may indicate genuine collaboration or very fast MID joining behavior. Following Bremer (1992a, p. 321), I assume that all participants who are on the same side of a dispute on its first day to be MID collaborators, and all nations who enter a dispute after its first day to be MID joiners.

Coded in this manner, 147 MIDs consisted of multiple originators on one or both sides on the first day of the dispute, resulting in 351 collaboration dyad-years in the population under study. Of these, only 15 encountered more than one MID collaboration in a single year, so I opted for a dichotomous dependent variable indicating whether or not a dyad-year experienced a MID collaboration. To avoid the problems associated with dependence between observations, collaboration MIDs that continued into subsequent years are not coded as multiple collaborations. These coding rules resulted in 351 collaboration years in the population of 399,250 dyad-years.

5.2 Democracy
The recently revised and updated Polity III data set provides a measure of democracy conceptualized as the presence of institutions that allow citizens to express effective political preferences, constrain the authority of the executive once in office, and protect fundamental civil liberties (Jaggers & Gurr, 1995). Operationally, a summated eleven-point index is derived from four institutional measures: degree of constraints on executive authority; competitiveness of political participation; competitiveness of executive recruitment; and openness of executive recruitment. While civil liberties are not gauged directly, reliability tests show that the protection of civil liberties is highly correlated with the democracy index (p. 475). A separate eleven-point scale of autocracy is also provided in Polity III, based on the above institutional measures, yet conceptualized as a lack of regularized political competition and participation, and where executives face few authority constraints and are selected in a closed or informal manner.

Because most measures of regime type place democracy and autocracy along a single dimension, and the democracy index has a heavily bimodal distribution, Jaggers & Gurr (1995, pp.
473–474) suggest measuring polyarchy by subtracting a state’s autocracy score from its democracy score. I adopt this suggestion here, with the slight modification of adding ‘10’ (democracy – autocracy + 10) to make all the scores positive integers. The reason for this will become clearer shortly.

Turning this 21-point national level measure into a dyadic one involves making some assumptions regarding functional form. However, as in most social science research, here theory provides precious little guidance. While the notion of cooperative norms and consequent communicative synergy among democratic leaders clearly predicts that the impact of regime-type on militarized collaboration should be limited to dyads where both states are highly democratic, little direction is provided beyond this point.

Most of the empirical studies of democratic conflict behavior have handled this question of functional form by assuming a most likely contender and then testing it (Maoz & Rusektt, 1992; Morgan & Schwebach, 1992; Oneal et al., 1996). Dixon (1993, 1994), for example, suggests that the strength of dyadic cultural norms is dependent on the least democratic state. Dixon’s approach would seem consistent with the notion of democratic reciprocity. The degree of shared cooperative norms in a dyad – and consequent clarity of joint strategies of reciprocity – would seem to be dependent on the degree to which leaders of the least democratic state value the benefits of cooperation. On the other hand, a measure representing the product of both state’s polyarchy scores would model the possibility that highly democratic leaders are able to compensate, in a small way, for the intransigence of their more autocratic counterparts.

Complicating the matter, while democratic culture may make polyarchies more likely to practice reciprocity than other regimes, its success in fostering cooperation depends on both actors understanding each other. Since regime similarity may foster common norms and thus clearer communication in joint-autocratic dyads as well as a joint-democratic dyads, there may be a regime similarity effect as well as a separate joint-democratic effect. Several studies have suggested that the impact of regime type on state behavior is not (or is not only) a matter of democracy per se, but rather (or also) a matter of regime commonality (Dixon & Moon, 1993; Weart, 1994).

Because theory leads us in several directions regarding functional form, this study examines the explanatory value of the most likely contenders:

1. Collaboration \( y_{ij,t} = \alpha_1 + \beta_1 \text{ Democracy Low}_{y_{ij,t-1}} \)
2. Collaboration \( y_{ij,t} = \alpha_2 + \beta_2 \text{ Democracy Low}_{y_{ij,t-1}} * \text{ Democracy High}_{y_{ij,t-1}} \)
3. Collaboration \( y_{ij,t} = \alpha_3 + \beta_3 \text{ Democracy Low}_{y_{ij,t-1}} + \beta_4 \text{ Democracy High}_{y_{ij,t-1}} \)

Equations (1) and (2) model the respective minimum and interactive expectations, with democracy low representing the score of the least democratic state in the dyad, and democracy high representing the score of the most democratic state. Since the interactive and minimum measures are highly correlated (Pearson 0.98), the objective of testing both models is to select the functional form that provides the better estimate. Equation (3) models a possible similarity effect, which would be shown with the democracy low variable having a positive impact on collaboration and democracy high having a negative impact. Equation (3) will also detect any unexpected independent effects, which would be shown with both democracy low and democracy high having positive and equivalent impacts on collaboration. Note that I lagged the democracy measures one year in order to account for possible reverse causality.

Like the original Polity III democracy indicator, the democracy index (democracy – autocracy) has a bimodal distribution (Jaggers & Gurr, 1995, p. 474). Since the quality of a bimodally distributed continuous measure can sometimes be improved with a bifurcation somewhere in the under-represented middle ranges, a fourth binary functional form is estimated. Following Jaggers & Gurr (1995, p. 474), a ‘coherent democracy’ is identified as a state that scores higher than 16 on the 21-point democracy index. Hence, joint democracy is a dichotomous measure indicating whether or not both states in a dyad are coherent democracies. The fourth measurement model is thus:

4. Collaboration \( y_{ij,t} = \alpha_1 + \beta_4 \text{ Joint Democracy}_{y_{ij,t-1}} \)
All four measurement models—minimum, interactive, similarity, and binary—will be tested in order to induce the best approximation of the functional form of the expected relationship between democracy and militarized interstate collaboration. The impact of the remaining independent variables, major power status, alliance, geographic proximity, and regime maturity, are all peripheral to this study’s central concern with democracy and are constructed as dummy variables.

5.3 Non-regime Variables

Major Power Status. I identified the major powers with Correlates of War rules. This national level definition was transformed into a dyadic measure with two dichotomous variables. One indicates if only one major power is present in the dyad, the other indicates if both states are major powers. In the population observed in the multivariate analysis, I found 48,728 observations to consist of only one major power, and 2,405 dyad-years to have two major powers present.

Alliance. The Correlates of War formal alliance data identify three types of alliance: mutual defense pacts, neutrality agreements, and ententes. Preliminary bivariate analysis indicated that dyads characterized by all three of these alliance categories were significantly more likely to collaborate than other dyads. Consequently all three were aggregated into a single dichotomous variable specifying the presence or absence of an alliance in the dyad. Within his schema, I found 35,414 dyad-years in alliance.

Geographic Proximity. Data on interstate contiguity were derived from the Correlates of War contiguity data set, which distinguishes five classes of proximity at the dyadic level: land border, or contiguous by water within 12, 24, 150, or 400 miles. While these classes are repeated for indirect contiguity (i.e., state to dependency to state), preliminary analysis revealed that only direct state to state contiguity has a significant impact on dyadic collaboration. Hence, for this study the direct categories were collapsed into a single dichotomous variable. Within this threshold I identified 21,917 dyad-years as geographically proximate.

Both Regimes Mature. The Polity II data set provides a measure of ‘persistence’, or the number of years since the last, abrupt regime change in a state (Gurr, 1989). This national level variable was converted into a dyadic measure by creating a dichotomous indicator of whether or not the youngest regime of the pair is at least 25 years old. Consistent with the notion of reciprocity I reasoned that after 25 years, or about one generation of coexistence, two politices should expect to continue to interact indefinitely. Since the temporal domain of Polity II is bounded at the year 1986, I updated the years 1987–92 with data from the Political Handbook of the World (Banks, 1995). Within this schema I found 52,338 dyad-years with both states mature. Like the democracy measures, I lagged all the non-regime variables one year in order to account for possible reverse causality. As a result of this lag and the inclusion of additional data sources and their inevitable missing values, 379,102 dyad-years will be observed in the full multivariate analysis, with 342 of these experiencing a MID collaboration.

6. Results

6.1 Preliminary Analysis

The analysis begins with a temporary division of all dyad-years according to three democracy-based conditions: those where both states are coherent democracies, those where only one nation is a coherent democracy, and all other dyads. Table 1 reports the frequency of collaboration years for each of these three dyad types. The first column gives the number of each dyad type in the study, with the actual number of collaborations in the second column. The third column gives the expected number of collaborations for each dyad type if democracy had no effect on the probability of collaboration. I calculated the latter by taking the product of the unconditional probability of collaboration (0.00088) and the number of dyads of each type listed in the first column. Of interest is column four, which gives the conditional probability of collaboration for each dyad type (column two divided by column one). Dyads where both states are coherent democracies appear to be over-represented in this category. Calculated Z-scores and their associated probabilities indicate that this difference is statistically significant, as
is the under-representation of both other democracy dyad types.

The results reported in Table I support the expectation that joint democracy increases the probability of collaboration between nations. It also suggests little support for any additive or similarity effects, as joint nondemocratic and "mixed" dyads are significantly less likely to collaborate. Nevertheless, a more precise estimate of the form of this relationship may be gauged with the use of the full 21-point democracy index.

6.2 Regression Results

To estimate the efficacy of the four dyadic democracy functional forms represented in equations (1) through (4), four logistic regressions were performed using maximum likelihood methods. As can be seen in Table II, all four models generate robust chi-square values, indicating that each represents a significant improvement over the null model, which postulates that there is no relationship between democracy and interstate collaboration. In addition, the impact of the coefficients is as expected. A closer examination, however, reveals that the democracy high coefficient in the similarity model is not robust. This suggests that the statistical significance of the similarity model rests primarily on the influence of the democracy low coefficient. This possibility can be tested with a chi-square statistic, calculated as

\[ \chi^2 = 2(\text{LL}_{\text{Minimum}} - \text{LL}_{\text{Similarity}}) \]

where LL refers to log-likelihood value. Computed at one degree of freedom, the likelihood ratio test indicates that the inclusion of democracy high in the similarity model does not significantly improve the estimate of the case with it (i.e., the minimum model). The chi-square value in this case is approximately 0.8, which is not significant at even the 0.25 level. In short, the data appear to provide little support for the similarity model. This concurs with the results of the difference of proportions test reported in Table I.

Table II. Estimates of the Impact of Four Measures of Dyadic Democracy on the Probability of Militarized Interstate Collaboration

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum Model</th>
<th>Interactive Model</th>
<th>Similarity Model</th>
<th>Binary Model</th>
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<td>Democracy low</td>
<td>( \beta )</td>
<td>0.079</td>
<td>0.084</td>
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<td></td>
<td>SE_( \beta )</td>
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<td>0.010</td>
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<td></td>
<td>( t )-score</td>
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<td>8.78</td>
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<tr>
<td>Democracy high</td>
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<td>-0.90</td>
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<td></td>
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</tr>
<tr>
<td>Dem low*dem high</td>
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<td></td>
<td>10.03</td>
<td></td>
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<td>Joint democracy</td>
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<td>Log-likelihood</td>
<td>-2774.9</td>
<td>-2777.5</td>
<td>-2774.5</td>
<td>-2769.5</td>
</tr>
<tr>
<td>Chi-square</td>
<td>91.5</td>
<td>86.3</td>
<td>92.3</td>
<td>102.4</td>
</tr>
<tr>
<td>Pr (chi-square)</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

N = 399,259, number of events = 351.
While both the minimum and interactive models are statistically significant, their high correlation suggests that the models are not capturing separate minimum and interactive effects, but rather each provides a fair estimate of the underlying functional form. To illustrate this duality, I conducted residual analysis and found the average predicted probability difference between the minimum and interactive models to be a scant 0.00005. In other words, the selection of one model over the other would alter the odds of a correct prediction by the quite negligible factor of about five out of 100,000. Hence, the drawing of meaningful inferences from such small differences would seem to be asking too much from the ordinal level data.

For this reason, the aim of estimating both the minimum and interactive functional forms has been to select the model that generates the better estimate. This can be gauged on the basis of their log-likelihood values, which indicate the log of the probability that the particular set of observed values would have been generated if the given model is true. A log-likelihood value of zero indicates a perfect fit between the model and data, with lower values (higher negatives) indicating a relatively poorer fit. On this basis the minimum model appears to outperform the interactive. The difference in their log-likelihood values, e².6, indicates that the minimum model is about thirteen times more likely to be true than the interactive.

While the minimum model generates the best continuous estimate, the binary model yields the highest log-likelihood value of all four measurement models. Hence, the next subsection reports the estimates of both the binary and minimum democracy measures after accounting for the potentially spurious influences of major power status, alliance, geographic proximity, and regime maturity.

6.3 Adding the Non-regime Variables
Table III reports the re-estimations of the minimum and binary models with consideration of the non-regime control variables. The chi-square values indicate that both democracy measures significantly improve the constrained model, which in this case postulates that there is no relationship between democracy and interstate collaboration after accounting for the effects of the non-regime variables. As expected, dyadic democracy appears to have a strong positive impact on the probability of militarized interstate collaboration. Comparing the log-likelihood values of the two models, we can see that the binary functional form generates the more robust results. The difference in their log-likelihood values, e².9, indicates that the binary model is about eighteen times more likely of being true than the minimum.

Turning to the non-regime variables in the binary model, we can see that all have robust and positive impacts on the probability of interstate collaboration. A bar graph in Figure 1 illustrates the multiplicative impact of each variable on the probability of interstate collab-

<table>
<thead>
<tr>
<th>Table III. Multivariate Estimates of the Impact of Minimum and Binary Democracy on the Probability of Militarized Interstate Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Democracy low</td>
</tr>
<tr>
<td>β</td>
</tr>
<tr>
<td>SEβ</td>
</tr>
<tr>
<td>t-score</td>
</tr>
<tr>
<td>Joint democracy</td>
</tr>
<tr>
<td>Both major powers</td>
</tr>
<tr>
<td>5.017</td>
</tr>
<tr>
<td>0.163</td>
</tr>
<tr>
<td>30.80</td>
</tr>
<tr>
<td>One major power</td>
</tr>
<tr>
<td>2.005</td>
</tr>
<tr>
<td>0.160</td>
</tr>
<tr>
<td>12.52</td>
</tr>
<tr>
<td>Allied</td>
</tr>
<tr>
<td>0.876</td>
</tr>
<tr>
<td>0.123</td>
</tr>
<tr>
<td>7.11</td>
</tr>
<tr>
<td>Geographic proximity</td>
</tr>
<tr>
<td>1.137</td>
</tr>
<tr>
<td>0.124</td>
</tr>
<tr>
<td>9.13</td>
</tr>
<tr>
<td>Both regimes mature</td>
</tr>
<tr>
<td>0.396</td>
</tr>
<tr>
<td>0.121</td>
</tr>
<tr>
<td>3.28</td>
</tr>
<tr>
<td>Intercept</td>
</tr>
<tr>
<td>-9.097</td>
</tr>
<tr>
<td>Log-likelihood</td>
</tr>
<tr>
<td>-1889.0</td>
</tr>
<tr>
<td>Chi-square*</td>
</tr>
<tr>
<td>Pr (chi-square)</td>
</tr>
</tbody>
</table>

N = 379,102, number of events = 342.
* Calculated as (LL_constrained - LL_model), where constrained refers to an estimate of the non-regime variables only (LL_constrained = -1908).
oration as reported in Table III (binary model). The probabilities are computed for each factor on the assumption that the remaining variables are absent. For example, I calculated the impact of joint democracy for a dyad that has no major powers and is not allied, geographically proximate, nor mature. Similarly, the impact of two major powers is computed for a dyad that is not jointly democratic, allied, geographically proximate, nor mature. I placed the variables in order of their impact on the probability of militarized collaboration.

As can be seen in Figure 1, the strongest impact appears with the indicator of two major powers, which increases the probability of collaboration in a dyad by a staggering 153 times, compared to the case without two major powers. The presence of one major power increases the probability of collaboration by about 7.5 times and geographic proximity by about 3.1 times, relative to cases without these effects. Joint democracy comes next by increasing the probability of collaboration by about 2.6 times compared to non-joint democratic dyads. Dyadic alliance and regime maturity increase the probability of collaboration by factors of 2.3 and 1.5, respectively, relative to dyads without these effects. Hence, while joint democracy does not appear to have as strong an impact on collaboration as does major power status and geographic proximity, dyadic regime status still has a potent and positive impact on the probability of collaboration, more so than dyadic alliance and regime maturity.

Figure 2 illustrates the best continuous estimate of the impact of democracy on the probability of collaboration, as reported in the minimum model in Table III. Here the predicted probability of collaboration is displayed for a dyad where both states are major powers, allied, geographically proximate, and mature—a dyad type most likely to collaborate. A predicted probability can range from zero, where there is expected to be no chance of an event occurring, to one, where the event is predicted as a certainty. As can be seen in Figure 2, the probability of

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**Figure 1. Impact of Binary Independent Variables on the Probability of Militarized Interstate Collaboration**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Multiplicative Increase in Probability of Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Both mature</td>
<td>1.5</td>
</tr>
<tr>
<td>Allied</td>
<td>2.3</td>
</tr>
<tr>
<td>Joint democracy</td>
<td>2.6</td>
</tr>
<tr>
<td>Proximity</td>
<td>3.1</td>
</tr>
<tr>
<td>One major power</td>
<td>7.5</td>
</tr>
<tr>
<td>Both major powers</td>
<td>153.9</td>
</tr>
</tbody>
</table>

* Scale of horizontal axis logged for presentation purposes.

---

**Figure 2. Impact of Minimum Dyadic Democracy on the Probability of Militarized Interstate Collaboration**

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collaboration in such a dyad-year ranges from about 1 in 6 (0.16), when the least democratic state is highly autocratic, to about 1 in 3 (0.33), when both states are highly democratic.

7. Implications and Conclusions

I began this study with the well-established findings that democracies are less likely to engage each other in militarized interstate disputes and have rarely, if ever, fought each other in war. Exploring the boundaries of democratic conflict behavior, I investigated the possibility that democracies might have a tendency to collaborate in militarized interstate conflicts. I defined interstate 'collaboration' and demonstrated how it indicates the most intense forms of cooperation between nations. I then developed a theoretical rationale for this expectation resting on the cooperative norms of democratic political culture.

The major outcome of this study is the finding that democratic states are more amenable to collaborate in militarized interstate conflicts than nations organized by other forms of government. With empirical analysis encompassing all nations from the Napoleonic era to the end of the Cold War, the democracy coefficients remained stable even after accounting for the potent effects of major power status, alliance, geographic proximity, and dyadic maturity.

This finding suggests that the scope of the democratic peace may be wider than previously thought; it appears to encompass the positive outcome of interstate cooperation as well as the negative result of an absence of violence. Naturally, more research is needed to see if democracies tend to cooperate in other realms beyond dispute collaboration. But if the positive association between democracy and international cooperation withstands further empirical scrutiny then we may wish to modify our research question. In the Lakatosian spirit of looking for explanations with excess empirical content, peace researchers may wish to seek answers for democratic behavior that encompass the realm of cooperation as well as the absence of violent conflict among them.

The analysis also found that the best estimate of the democracy and collaboration relationship is binary, as a regime-based increase in probability of collaboration seems to be limited to those dyads where both states are coherent democracies. This result is consistent with the view that democratic political culture fosters cooperative norms and a communicative synergy among democratic leaders, nurturing concerted action through joint strategies of reciprocity. Yet the processes that lead from interstate cooperation to militarized collaboration are not clear or straightforward. An absence of militarized collaboration does not affirm the absence of cooperation between nations. For this reason a null finding could not have been interpreted as a disconfirmation of the hypothesis, and this study cannot be considered a true test of the democratic cooperative norms hypothesis.

The results of this study, however, suggest that the notion of cooperative norms may provide fruitful guidance for additional inquiry surrounding democratic behavior. Further studies examining whether democracies tend to cooperate in other realms beyond dispute collaboration would appear to be in order. Additionally, the theory could probably use some refinement, as well as be subjected to more direct hypothesis testing. Since democracies should be more inclined than other states to favor collective action solutions to world problems, some hypothesis tests might include examining if democracies are more likely than other states to initiate international norms, laws and organizations. In the meantime, this study gives added weight to Kant's supposition that liberal government 'facilitates the development of moral faculties' and 'prepares men to respect right on their account' (1939 [1795], p. 50). In light of the findings of this and other studies, it appears that Kant's prophecies continue to provide useful guidance in our endeavor to comprehend the changing nature of international relations.

NOTES

1. The general consensus among peace researchers is that democracies are no less conflict prone than autocracies (Chan, 1984; Dixon, 1994; Gleditsch, 1992; Weede, 1984, 1992), though some disagree with this conclusion (Ray, 1995; Rummel, 1983, 1995; Siverson, 1995). Among the studies affirming that democracies very rarely fight each other in war (if ever, depending on the measures of democracy and war) are Babst (1972), Bremer (1992a, 1993a), Chan (1984), Maoz & Russett (1992), Rummel (1979), Small & Singer (1976), and Weede (1984). Studies affirming that democracies are less likely to engage each other in militarized interstate disputes short of war include Bremer (1993a) and Maoz & Russett (1992).
2. Other possible indicators of interstate cooperation include interstate trade and alliance patterns. Dixon & Moon (1993) have found a correlation between democracy and trade (observing USA foreign trade patterns), and Siverson & Emmons (1991) have found a correlation between dyadic democracy and alliance formation. Still, interstate trade and alliance structures might foster interstate cooperation as much as the reverse (Gowa, 1989; Oneal et al., 1996). Notably, Leeds & Davis (1995), observing major power and contiguous dyads from 1953 to 1978 with the COPDAB data set (Azar, 1980), report a correlation between interstate cooperation and dyadic democracy.

3. Layne fails to mention the work of Mintz & Geva (1993), who found, with experimental analysis, a distinct preference among people in democracies to avoid war with other democratic nations. Consistent with Layne's findings, however, Senese (1996) has found that joint democratic dyads in militarized disputes are more likely than other dyads to escalate to the use of force. It appears that joint-democratic dyads are about three times less likely to originate militarized interstate disputes, and are about thirty times less likely to originate wars than other dyads (Bremer, 1993a).

4. A 'non-directional' dyad refers to a pairing of nations where no distinction is made between side A and side B. For example, in a single year the same observation accounts for Kenya–India as well as India–Kenya.

5. The Correlates of War project considers a state to be an independent actor in international affairs if it has been a member of the United Nations, League of Nations, or before 1920 was diplomatically recognized by either Great Britain or France (Small & Singer, 1982).

6. For the period after 1946 Polity III codes independent nations with populations greater than 500,000 in the early 1990s (Jaggers & Gurr, 1995, p. 470).

7. Polity III does not provide democracy scores for nations experiencing an institutional transition interruption, or intermittence. For these periods I coded the democracy scores as missing values. With Correlates of War rules alone, 499,507 dyad-years were found from 1816 to 1992.

8. The new Militarized Interstate Dispute (MID) data were collected by the Correlates of War project at the University of Michigan in cooperation with the Department of Political Science at Binghamton University and the Peace Science Society (International). The MID data set is available on-line at http://polsci.binghamton.edu/peacesci.html.

9. Accordingly, the process underlying MID joining is likely to be divergent than that of MID collaboration. See Bremer (1993b, 1995) for elaboration on the various stages of the interstate conflict process.

10. Of the 15 dyad-years of multiple MID collaborations, 12 had two collaborations, 2 had three collaborations, and 1 had six collaborations. Most of these are MIDs associated with World Wars I and II.

11. In this 'indeendent' case, democracies would appear to be more likely than other states to collaborate with all regime types, not only each other.

12. The Correlates of War project identifies the following nation-years as major powers: United Kingdom 1816–present, France 1816–1940, 1945–present; Austria-Hungary 1816–1919; Germany 1816–1918, 1925 45. Russia 1816–1917. 1922–present: United States 1898 present; Italy 1860–1943; Japan 1895–1945; and China 1950–present (Small & Singer, 1982).

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