

Democratic Survival, Peace, and War in the International System

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Abstract

Post World War II western foreign policies are often based on the claim that the spread of democracy will result in global peace. Our understanding of how this propagation can bring about peace is limited, and we have little reason to believe that the causal arrow points only in one direction. We tackle these issues by modeling the linkages between states' regime types, interstate conflict, and the strength of the democratic community relative to the autocratic community. Analysis of our model suggests initial increases in the strength of the democratic community increase the level of conflict in a system. Beyond a threshold of democratic strength, however, conflict wanes as the democratic community waxes. Our model also suggests that the survival rate of democracies increases as the material strength of the democratic community increases, and decreases as systemic conflict rises. Empirical analyses offer support for the survival propositions.

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Scholars and statesmen draw inferences and expectations from democratic peace theory to make predictions about the global system (Clinton 1994; Gleditsch and Hegre 1997; Hermann and Kegley 1996; Starr 1992). Generally, the logic is as follows. The probability of two democratic states engaging one another in militarized conflict has been repeatedly proven to be extremely low (e.g., Russett 1993). Increasing the number of democratic regimes in the international system (and thus the number of democratic dyads, assuming a constant system size) should result in a more peaceful international system. Therefore, one possible path to global peace is democratization.

A less commonly addressed puzzle deals with a reversal of the causal arrow. How do the political qualities of the system influence the political qualities of regimes? This too has implications for any analysis of a systemic democratic peace. Given that the spread of democracy has been the (at least spoken) foundation of modern U.S. foreign policy, it seems logical that global democratic forces play a role in the propagation and survival of democratic states. As an illustration, consider the fate of democracies during two highly contentious periods of time. From 1914 to 1924, a period of intense global conflict, only one democratic regime perished. In contrast, five democracies became autocratic between 1933 and 1943.¹ Both decades contain similar challenges to states in the international system, with perhaps one exception. The later decade encompasses the Great Depression, which weakened the global democratic community, and in turn threatened democratic survival. With economic troubles at the forefront, the democratic community was ill-equipped to lend a hand. The motivation to spread democracy throughout the world may not have been diminished, but the ability of the United States, Great Britain, and others to support young democracies was constrained by problems at home. In the earlier decade, the democratic community was quite strong, and fostered democratic vitality.

Our primary task is to cultivate a more nuanced understanding of this abstract relationship in hope of answering some old questions as well as motivating new ones. How should one conceptualize the idea of a democratic community? What elements of this community influence militarized conflict in the system? Is it merely a matter of greater numbers, in which more democratic regimes in the world translates into more peace? Or do members of the democratic community possess a quality or attribute that comprises a critical component underlying the relationship between democracy and systemic peace? Finally, how do these attributes aggregate empirically, and in turn, how does this aggregation affect militarized conflict in a system?

We set out to answer these questions by first revisiting the study of global democratization and conflict. We then present a dynamic theory of democracy and conflict at the systemic level using the lower level notions of monadic regime type and dyadic conflict as our central building blocks. An analysis of the theoretical model produces several hypotheses, three of which are tested in this article: (1) as the strength of the democratic community increases, democracies are more likely to survive; (2) as the level of conflict in the system increases, democracies are less likely to survive; and (3) when the strength of the democratic community is high, conflict's deleterious effect on democratic survival is reduced or eliminated. We conclude with thoughts regarding the strengths of our theoretical endeavor, how we might improve the model itself, and the implications of the model for a broader research program.

A Systemic Democratic Peace?

Transferring expectations from the dyadic democratic peace to systemic-level behavior has been criticized by Ray (1997, 2001) as an exercise in ecological fallacy. In short, Ray argues that the

only condition under which one may draw inferences from the dyadic democratic peace to conflict at the system level is when a system is uniformly democratic. An increase in the proportion of democratic regimes in a system generates two types of behavior. First, the expansion of the democratic community encourages democratic regimes to be more aggressive toward nondemocratic regimes. Second, the expansion of the democratic community increases the fear and isolation of nondemocratic states, and nondemocratic states will respond to this condition in the international system by being more aggressive toward democratic regimes. As such, the proliferation of democratic regimes may in fact raise, rather than lower, the level of interstate conflict in the system, as the system of states moves toward uniform democracy. Ray's hypothesis suggests that system level phenomena can have important implications for dyadic-level behavior. It also suggests that democratization may aggravate conflict at the system level.

Over the past decade the impact of domestic regimes on interstate behavior has been central to the study of world politics. This body of research focuses primarily on the influence of democratic institutions and culture on interstate behavior, particularly the likelihood of militarized conflict between different types of states. At the monadic level, scholars argue that democratic states are as conflict prone as nondemocratic states (Maoz and Russett 1993, Hermann and Kegley 1996), as well as that they are more peaceful (Benoit 1996; Ray 1995; Rummel 1995; Rousseau et al. 1996). On the dyadic level there is considerably less debate about whether democratic states are prone to engage one another in interstate conflict (Bremer 1992; Gowa 1999; Maoz 1997; Russett 1993), though the motivation underlying this pacifism remain the subject of debate (Bueno de Mesquita, et al. 1999; Gates, Knutsen, and Moses 1996; Maoz 1997; Rousseau et al. 1996; Thompson 1996). Systemic analyses examine how changes in the proportion of democracy and the amount of conflict in the global system are related (Crescenzi and Enterline 1999; Gleditsch and Hegre 1997; Maoz and Abdolali 1989; Mitchell, Gates and Hegre 1999; Small and Singer 1976).

Although most of these inquiries into the impact of democracy on militarized conflict explicitly examine a single level of analysis, many at least implicitly formulate cross-level expectations about interstate behavior. In discussing this cross-level inference, we focus on two examples here, the research contained in Gleditsch and Hegre (1997) weighed against recent work by Mitchell, Gates and Hegre (1999) and Crescenzi and Enterline (1999). Gleditsch and Hegre suggest that earlier analyses, such as those by Singer and Wildavsky (1993), Small and Singer (1976), and Starr (1992), mistakenly argue that an increase in the number of democratic regimes in a system logically leads to a reduction of conflict. Gleditsch and Hegre contend that initial increases in the number of democratic regimes increase the frequency of mixed dyads in the system. Given that mixed dyads are the most conflict prone, this will raise the level of conflict in the system. While this condition holds when democratic dyads are in the minority, Gleditsch and Hegre suggest that this relationship changes when democracies become a majority. Once a majority is achieved, additional democracies result in a decrease in the proportion of mixed dyads, an increase in the proportion of democratic-democratic dyads, and more pacific interstate relationships. Gleditsch and Hegre formalize their argument with a mathematical model that specifies a parabolic relationship between democratization and war. Although they concede that it is difficult to test the expectations derived from the model, the authors do find rough empirical support for their parabolic hypothesis.

Gleditsch and Hegre's work is important because their formal model and empirical analyses both demonstrate that the relationship between democracy and conflict at the system level is spatially (distribution of dyad type) and temporally (change in the proportion of dyad

types) dependent. In addition, the authors conclude that thresholds are important with respect to the behavior of these relationships. These thresholds appear to be a function of the number of democracies as a proportion of all states, as well as a function of the probability of conflict for mixed and autocratic dyads. For a given set of dyadic conflict probabilities there exists a threshold of democracies in the system after which further democratization will decrease conflict. Before reaching this threshold, however, we can expect to see a positive relationship between democracy and conflict. In sum, Gleditsch and Hegre's thresholds produce a \cap -shaped parabolic relationship between systemic democracy and conflict.

While Mitchell, Gates and Hegre (1999) reject the parabola's empirical veracity, a closer look at their results suggests this conclusion may be premature. Their Kalman filter analysis produces two important findings—war leads to more democracy and democracy leads to less war. The first finding, which holds rather well from 1865 onward, is consistent with the first half of the \cap . The second finding, which holds only in the post WWII time period, is consistent with the second half of the \cap .

Again, it seems that the pacific effects of democracy are realized at the systemic level only after some critical value in democracy is reached. In a separate analysis, Crescenzi and Enterline (1999) find no evidence of the first half of the parabola in the global system, but they do find evidence of the second half of the parabola during the 1936-1992 time period.

Other research uses rational choice to explicate the role of domestic politics in the democratic peace (Bueno de Mesquita et al. 1999, Schultz 1998, Smith 1998). Such theories are grounded in the behavior of individuals. Yet the systemic puzzle calls for an understanding of aggregate, evolutionary patterns over long periods of time. For this purpose, we offer another type of formal model, one that is built using a system of differential equations. We now turn to the task of building that model.

Modeling Regime Change, Conflict, and Community

The challenge of constructing a model of the international system is to represent the elements of the system that are crucial to our puzzle without losing tractability. The goal is to learn about the relationship between democracy and conflict at the systemic level. Therefore, we focus on the way regimes change as a result of conflict as well as how regime intensity alters conflict patterns. Two micro-level variables serve as the building blocks for our model of systemic conflict: *regime intensity* and *dyadic conflict behavior*. The term *regime intensity* represents both the quality and degree of a regime's characteristics. For example, we care about whether a regime is democratic vs. autocratic, but we are also interested in *how* democratic it is. The interaction and aggregation of these variables leads to propositions about the strength of the democratic community and systemic conflict.

We begin by modeling changes in regime intensity, because these dynamics drive the evolution of threat in conflict. Ray (1997) suggests a connection between regime change and threat, but subsequent research often overlooks it. We then examine how regime types and other forces influence dyadic conflict. By combining the intensity of each state's regime type, the number of democracies in the system, and the strength of each state's influence over others, we then devise a systemic variable to represent the well being of the *democratic community*. This systemic power distribution across regime types defines a more abstract notion of threat and competition between democracies and autocracies. Finally, we aggregate dyadic conflict to

create a systemic variable called *total conflict*. Together, these components represent the dynamics of systemic conflict. While the model is discussed in general terms, for tractability we confine our theoretical analysis to a three-state system. Our system provides a basis for generating a set of testable propositions about the international system.

Regime Change

The modeling process begins at the national level where we are concerned with the processes of *democratization* and *autocratization* (Ward and Gleditsch 1998; Mansfield and Snyder 1995). If we wish to know whether democratization increases or decreases systemic conflict (or how conflict increases or decreases democracy), then we first need to understand regime change at a lower level of analysis. Regime change is both an evolutionary process and a product of conflict. We assume that in the absence of conflict all states in the system gradually evolve towards democracy. This may seem heroic until one considers the viability of alternative assumptions, namely that all states erode toward autocracies or that regime development is not at all self-generated. It is appealing to assume instead that individuals, who are inherently interested in more libertarian and open societies, work toward that goal and are more capable of attaining that goal as the society in which they live becomes freer. Empirical support for this can be found in the positive and significant contribution of a state's past level of democracy on its future level (Burkhart and Lewis-Beck, 1994). At the same time, this evolution can be hindered or reversed by conflict with other nations. For example, conflict with other states can lead to the suspension of democracy, declarations of a state of emergency, and so forth, which can threaten democratic institutions (Thompson 1996). These two components are combined to define nation i 's regime change over time:²

$$r'_i = \alpha_i(r_i - r_i^2) - \gamma_i r_i (1 - r_i) \sum_{j \neq i} c_{ij} \quad (1)$$

where r_i is the regime intensity variable for nation i , c_{ij} is the dyadic conflict variable for nations i and j , and α_i and γ_i are parameters that weight the relative influence of the two components in the equation.

The regime variable, r_i , ranges from 0 to 1, inclusively, with 0 representing pure autocracy (non-democracy) and 1 representing pure democracy. Further, a location at some point approximating the middle of an imaginary distribution of regimes (~ 0.5) reflects a regime that we might refer to as an anocracy (Maoz and Russett 1993); that is, a regime characterized by the presence of both democratic and non-democratic attributes in a single political system. We assume that anocratic regimes are more susceptible to change than regimes that are clearly classified as democracies or autocracies on the continuum. The first component of equation (1), $\alpha_i(r_i - r_i^2)$, is a function that drives r_i toward a value of 1.

The second piece of equation (1), $-\gamma_i r_i (1 - r_i) \sum_{j \neq i} c_{ij}$, represents the negative influence of conflict with nations j and k (c_{ij} and c_{ik}) on the democratization process. We assume that the effect of conflict on the national-level political development of states is more pronounced in political regimes that are inherently unstable; that is, when r_i is near .5. While fully democratic regimes have historically restricted the civil liberties of their citizens during times of war (e.g., American internment of Japanese Americans during the Second World War), we reason that these domestic political responses to threats abroad are less severe than in regimes where

political expectations are less clearly understood. Such expectations are also well understood in firmly entrenched autocracies. Therefore, regimes near either extreme (when r_i is close to 0 or 1) are resilient to the deleterious effects of conflict on the development of the regime.

Dyadic Conflict

We model conflict by looking at the various forces affecting two opponents. We assume that conflict in each dyad can be represented by a single variable, c_{ij} , and make no assumption about which actor is the initiator or target. Equation (2) specifies three competing components that drive bilateral conflict:

$$c'_{ij} = \kappa_{ij}(c_{ij} + c_{ik} + c_{jk}) + f(r_i, r_j, c_{ij}) - \eta_{ij} c_{ij} g(r_i, r_j, r_k) \quad (2)$$

The first component, $\kappa_{ij}(c_{ij} + c_{ik} + c_{jk})$, expresses a relationship in which the change in conflict between states i and j is a positive function of extant conflict between i and j as well as conflict between other dyads in the system. This piece is intended to capture the importance of environmental as well as dyadic conflict. Systemic causes, such as the spread of conflict (Gleditsch and Ward 2000; Kadera 1998), bear heavily on the evolution of dyadic conflict. For example, conflict between Israel and Iraq is not just a function of this conflict's history but also conflict between Israel and Iran and conflict between Iran and Iraq.

The second component contained in equation (2) represents a dyadic regime effect on dyadic conflict.³ This effect varies depending on the type of dyad—democracy-democracy, nondemocracy-nondemocracy, or nondemocracy-democracy. Equation (3) specifies the three possible manifestations of this regime compatibility feature in our model:

$$\begin{aligned} f(r_i, r_j, c_{ij}) &= \delta_{dd} c_{ij} r_i r_j, \text{ if } r_{i,j} > 0.5 \\ &= \delta_{nn} (1 - r_i)(1 - r_j), \text{ if } r_{i,j} \leq 0.5 \\ &= \delta_{nd} (1 - r_i)(1 - r_j), \text{ if } r_i > 0.5 \text{ and } r_j \leq 0.5 \end{aligned} \quad (3)$$

where $\delta_{dd} < 0$, $\delta_{nd} > \delta_{nn} > 0$. These assumptions about the values and ordering of δ values parallel Gleditsch and Hegre's (1997) empirical findings for the dyadic rates of interstate war and militarized disputes. Note that if both states are democratic (dd), there is a combined effect of regime and conflict such that if they are engaged in conflict, regime compatibility dampens the conflict. This dampening effect is stronger for those states that are more democratic, and does not hold for dyads involving an autocratic state. Joint autocracy (nn) is modeled as conflictual, with an increasing effect for more pronounced autocracies. A mixed dyad (nd), however, is the most escalatory type of pairing, with an increased effect for more disparate regime values.

The third component of equation (2) represents the systemic regime effect on dyadic conflict. The impact of the regime characteristics of the international community is contingent on its composition in terms of the number of democracies, how democratic or autocratic each state is, and how much influence each has over other states in the system ($\rho_i \in [0,1], \sum_i^k \rho_i = 1$).

Equation (4) specifies the function g :

$$\begin{aligned}
g(r_i, r_j, r_k) &= \sum_i^k \rho_i r_i \text{ if } r_i, r_j, r_k, > 0.5 \\
&= \sum_i^j \rho_i r_i \text{ if } r_i, r_j > 0.5 \text{ and } r_k \leq 0.5 \\
&= \rho_i r_i \text{ if } r_i > 0.5 \text{ and } r_j, r_k \leq 0.5 \\
&= 0 \text{ if } r_i, r_j, r_k \leq 0.5
\end{aligned} \tag{4}$$

Holding the influence of all nations constant at equality ($\rho_i = \rho_j = \rho_k = .33$) allows us to assess the impact of each conditional version of equation (4). An entirely democratic system has the largest pacific influence on any dyadic conflict.⁴ With two democracies in the system, the international community has a modest dampening effect on dyadic conflict. A system with a lone democracy will have a weak effect, and an entirely autocratic system has no pacific influence on dyadic conflict.

Strength of the Democratic Community

Our characterization of systemic democracy combines Wilson's call for a "democratic partnership" (1917) with the practical means of pursuing such a goal (Morgenthau 1985). We label the result "strength of the democratic community," or S . To construct S 's functional form, we first multiply each state's proportion of systemic power (ρ_i) by its regime score (r_i). We then aggregate these scores for all n states in the system:

$$S = \sum_i^n \rho_i r_i \tag{5}$$

Thus, the strength of the democratic community (S) ranges from 0 to 1. A value of 0 for this variable indicates that all of the power in the system belongs to pure autocracies, whereas a value of 1 indicates that all of the systemic power belongs to purely democratic regimes. Interacting regime type and state power, both continuous variables, produces a rich set of possible scenarios in which the system influences its member states.⁵ We have constructed this function, S , such that it taps three important characteristics of the international system. First, it accounts for the number of democracies relative to the number of autocracies. As democracies increasingly outnumber autocracies, the number of r_i s with values above .5 grows, and so does the value of the sum across all r_i s. Second, S 's value reflects a comparison of the intensities of democracies' regimes relative to the intensities of autocracies' regimes. As the r_i s greater than .5 move toward unity and as the r_i s less than .5 move toward .5, S increases. Last, this systemic variable captures the strength of democracies relative to the strength of autocracies. When the ρ s of democracies (those with r_i greater than .5) are larger than the ρ s of autocracies (those with r_i less than .5), S is augmented. When the ρ s of autocracies are smaller than the ρ s of democracies, S diminishes. As a result, a system of anocratic states may produce the same systemic regime effect as a system characterized by competing stable democracies and autocracies.

Aggregating Conflict

We draw on Mitchel, Gates, and Hegre's (1999) interpretation of Kant's ([1784] 1991) "perpetual peace" as ultimately being a systemic phenomenon. To represent systemic conflict,

we aggregate all dyadic conflict in the system. Equation (6) specifies this aggregation in the following manner:

$$C = \sum_{i,j,i \neq j}^n c_{ij} \quad (6)$$

Although equation (6) might be interpreted as a very simple representation of conflict in the system, it is derived from a belief that many complexities of the system have already been built into the basic components of the model, such as c_{ij} . At this initial stage, we are content to represent systemic conflict as the sum of all dyadic conflict.⁶ The full model is therefore represented by a system of eight equations—three for regimes (equation (1) and parallel equations for nations j and k), three for dyadic conflict (equation (2) and its parallels for the ik and jk pairings), and two for systemic democracy and conflict (equations (5) and (6)).

Deductions from the Model

The analytic solution of our system of differential equations, three of which are partially composed of functions that are conditionally specified, is not currently possible. A standard alternative is numerical solution, which we employ in order to carry out our simulations.⁷ We begin by randomly generating initial conditions for each of the six variables: r_1 , r_2 , r_3 , c_{12} , c_{13} , and c_{23} . Regime variables are constrained to the range between 0 and 1, inclusive; and conflict values are constrained to positive values of 5 or less. The random generation is executed 15 times, resulting in 15 sets of initial conditions. Additional sets of conditions are later added as necessary. Each set of initial conditions is used as a starting point for the system of differential equations. Once a starting point is determined, the system of equations can generate all subsequent and previous values for all variables.⁸

When plotted together, these previous and subsequent values comprise a *trajectory*, or a path of movement over time. When moving forward in time, simulations are stopped once all regimes become “pure democracies,” or attain the most democratic condition possible. When moving backward in time, simulations are stopped if any conflict variable becomes negative.⁹ Performing this procedure repeatedly affords us the ability to generate something akin to a map of system behavior in various regions. From this mapping, we can draw generalizations about the distinct types of trajectories that characterize the concomitant movements of regime type and conflict behaviors over time. These generalizations provide the basis for formulating testable expectations.

Several systemic themes emerge from the simulation analysis. Eight representative trajectories demonstrate typical behavior of aggregate conflict and the strength of the democratic community in Figure 1, in which arrowheads represent the direction of movement over time.¹⁰

< Figure 1 about here >

A review of the trajectories reported in Figure 1 suggests two possible types of paths. In one scenario, conflict and democratic community increase together until some point at which the strength of the democratic community declines. As this downturn occurs, conflict in the system escalates. The fate of regimes in such a scenario is more clearly portrayed in the detailed presentation of a single simulation, as in part a) of Figure 2. Plotting each variable’s value over

time provides information on monadic regime levels and dyadic conflict levels. In the first graph of Figure 2, part (a), nations 2 and 3 both achieve democracy (their regime scores surpass .5), but they are unable to permanently maintain a free system of government. Ultimately, these democracies expire. Therefore, even states that temporarily experience democracy (those that undergo “rocky transitions” (Ward and Gleditsch 1998)) ultimately perish as political entities under such conditions. Regardless of whether a state is a temporary democracy or a persistent autocracy, this set of conditions appears foreboding, as the uncontrollable escalation of conflict surely becomes costly for any regime, regardless of its type. Only some exogenous shock to the system offers any hope for democratic survival in this bleak scenario.

< Figure 2 about here >

A more promising scenario for democratic endurance can be found in the trajectories reflecting a \cap shaped pattern that is reminiscent of Gleditsch and Hegre’s (1997) parabola.¹¹ In these scenarios, systemic conflict and democratic community increase together until a turning point at which conflict is alleviated. Under these circumstances, the simulations suggest that democratic regimes are more likely to persist. The long-run survival of all democratic regimes is more clearly portrayed in the single simulation in Figure 2, part b). Nations 2 and 3, which begin as autocracies, evolve into full-fledged and long-lasting democracies. Democratic longevity is also foretold by the trajectories beginning at the far right; trajectories in which the system is initiated under conditions of high levels of both conflict and democratic community but then exhibits a precipitous drop in conflict.

Examination of the initial conditions producing the different types of trajectories reveals that there is a distinct cleavage between lower initial levels of democratic community that produce the escalatory pattern and higher initial levels that produce the \cap pattern. Visual inspection of the portraits also

informs us that as the democratic community increases, so does the likelihood that the scenario will be one in which democracies endure. This observation forms the basis of hypothesis 1: *As the strength of the democratic community increases, democracies are more likely to survive.*

Levels of systemic conflict ($C = \sum_{i,j,i \neq j}^n c_{ij}$) also distinguish between the scenario in which

democracies fail and that in which they cheat death. High and escalatory conflict patterns are associated with the exponential decay of regimes into full autocracies. The midrange and lower levels of conflict found in the I trajectories are instead associated with democracies that carry on to maturity. Hence, we propose hypothesis 2: *As the level of systemic conflict increases, democracies are less likely to survive.*

How do fledgling democracies manage to overcome the midrange levels of conflict found in the peak of the \cap curves? In the second component of equation (1), we assumed that aggregate conflict levels

work against the development of mature democracies. Yet the \cap simulations tell us that weakly

democratic states triumph over this force when they are able to draw on the strength of their protectors. In other words, democratic community and conflict interactively affect the likelihood of democratic survival. When the democratic community is strong, conflict's contagious and action-reaction tendencies are ameliorated. Strong democratic states can shield fledgling democracies from invasion and annexation. They can help safeguard democratic institutions and leaders from local coup attempts. Although the deleterious effects of conflict may be inherent to international politics, the strength of the democratic community can buffer its members from these effects, making them less pronounced. This interactive effect is postulated in hypothesis 3: *When the strength of the democratic community is high, conflict's deleterious effect on democratic survival is reduced or eliminated.*

In sum, the simulations demonstrate that a democratic community with numerous and strong members who are committed to democratic ideals offers important benefits to those members. Such a community fosters young democracies by providing an environment in which they can mature as the disruptive effects of conflict are ameliorated. Even under this preferred circumstance, states must expect to endure temporary aggravation of conflict as the community evolves into a dominantly democratic one. States belonging to more autocratic communities, even democracies, are unfortunate enough to be caught in a situation of perpetually aggravated conflict in which democratic governance eventually disappears.¹²

Empirical Analysis

We use event history analysis to explore the empirical process of democratic survival. This approach allows us to model the hazard rate, or the probability that an event will happen at time $t + 1$ given that the event has not happened up until time t (Box-Steffensmeier and Jones 1997). For our purposes, the hazard rate tells us the "risk" of a democracy reverting to a non-democracy. Hazard analyses are commonly used to investigate democratic lifespans (Bernhard, Nordstrom, and Reenock, 2001; Reiter 2001).

We chose a Weibull model from the class of parametric event history models because it allows us to easily handle time-varying covariates and to estimate a separate parameter, λ , which indicates the existence and direction of duration dependence. The coefficients, $\beta'X$, in conjunction with the λ parameter of duration dependence, reflect the effects of the independent variables on the hazard rate. A negative coefficient indicates that the variable decreases the risk that a democratic regime will fail, and a positive coefficient indicates that the variable increases the risk of democratic failure.

Democratic Survival

Our dependent variable is democratic regime failure. We analyze the lifespan of all democracies from 1816 to 1992. The democracy data are derived from the Polity 4 data set (Marshall and Jaggers 2000). For each country, Polity creates an annual democracy score ranging from 0 to 10 and an autocracy score ranging from 0 to 10. The autocracy score is subtracted from the democracy score, resulting in an overall Polity score between -10 and 10. The universe of analysis includes all state-years for which a state had an overall Polity score of 7 or above.¹³ Democratic failure is 0 for all years in which a democracy remains at or above the Polity threshold of 7. It takes on a value of 1 if a democracy drops below the threshold during a particular year.¹⁴ Suppose, for example, that a state first achieves a Polity score of 7 in 1920 and

maintains at least that level until 1924 when it becomes autocratic and drops to a 2. Then its failure variable would be 0 for 1920 through 1923 and 1 for 1924.

Two important points concerning the dependent variable bear mentioning. First, states that are democratic before the beginning or after the end of the analysis period present a censoring problem. In our study, only one state (U.S.) is democratic in 1816, so left-censoring is minimal. Similarly, many democracies remain (i.e., have not yet failed) in 1992. However, the likelihood function for estimating hazard models corrects for right-censoring (Box-Steffensmeier and Jones 1997, 1430). Second, we are not concerned here with the way a democracy collapses. We are not claiming that the system is the primary cause of collapse; only that it can contribute to a regime's resilience to whatever threatens its survival.

International Society Variables

The primary independent variable of interest is the material strength of the democratic community, *DemCom*. *DemCom* imitates the functional form and conceptualization of the formal model's systemic variable *S* (see equation 5). First, we multiply each state's CINC score (Singer, Bremer, and Stuckey 1972), which measures industrial, demographic, and military capabilities, by that same state's Polity score. These scores for each state are then summed over all states in the system during each year. The result is a yearly systemic measure of the strength of the democratic community. During certain years, the world is composed of autocracies whose joint regime intensity and material strength outweigh that of democracies in the system, so the strength of the democratic community is negative during those years. The variable ranges between - 6.85 and 9.69. Just as *S* does, *DemCom* taps three important characteristics of the international community: the number of democracies relative to the number of autocracies, the intensity of democracies' regimes relative to the intensity of autocracies' regimes, and the strength of democracies relative to the strength of autocracies.

Accounting for the systemic effects of democracy might instead be achieved by using the proportion of democratic states in the world, *PropDem* (see Crescenzi and Enterline 1999; Mitchell, Gates and Hegre 1999; Przeworski et al. 1996). Because the proportion of democracies and the strength of the democratic community variables are highly correlated ($r = .81$), we do not include both variables in each statistical model. Indeed, we compete these variables in order to test whether a democratic community is a better representation of the system than a simple proportional.

Regional levels of democratic society might seem more relevant to a democracy's survival than global indicators. A common measure is the proportion of democracies in a state's geographic region at any given time. However, this local indicator is in rather nascent stages of development. Initial efforts to include it in statistical analyses of democratization show that either the results are not robust when model specifications vary or that the proportion of regional democracy has no effect (see Przeworski et al. 1996; Bernhard, Nordstrom, and Reenock 2001; Reiter 2001; Crescenzi and Enterline 1999). Several problems with the regional measure are likely. For instance, when one state exists in a region, and that state is democratic, the state's regional democracy score is unity. South Africa seems to be surrounded by an entire continent of African democracies in 1898 when it is in fact isolated. Not until the 20th century do we see multiple states in all geographic regions. Additionally, a universally accepted standard for distinguishing geographic regions has not yet been established. For example, South America, Central America, and North America are sometimes distinct from one another and sometimes folded into one hemispheric region called the West (cf. Przeworski et al. 1996; Reiter 2001). In

sum, regional democracy means different things in different regions and at different times. Therefore, the preliminary nature of this variable cautions against its use here.

‘Go It Alone’ Variables

Reliance on others puts an adolescent democracy at risk of being abandoned. Prudence might therefore dictate that democracies insure their own survival by looking inward for strength. Specifically, we consider whether a democracy’s own per capita GDP, material strength, and level of democracy enhance its chances of survival.

Perhaps the most robust finding in the democratization literature is the strong positive relationship between economic development and democratic consolidation (e.g., Burkhart and Lewis-Beck 1994; Przeworski and Limongi 1997). A similarly strong relationship exists between economic performance and democratic survival (Przeworski et al. 1996; Reiter 2001; Bernhard, Nordstrom, and Reenock 2001). To control for this effect, we include a measure of per capita GDP obtained from the Penn World Tables for 1950 to 1992. Unfortunately, reliable yearly economic data are not available for all democracies in earlier years. Closely related to economic development is a state’s own material strength, which we measure using the COW composite indicator of national capabilities (CINC).¹⁵ CINC is a broader measure of a state’s material strength than is GDP. Two of the six indicators used to construct CINC are economically based (iron and steel production and energy consumption). CINC additionally incorporates demographic (urban population and total population) and military (military expenditures and military personnel) components, providing a measure of a state’s overall strength.

Continuing democratic success (i.e., avoiding failure) alternatively depends on how democratic a state currently is. A state’s level of democracy contributes toward its survival in two ways. First, it can serve as a proxy for unobservable “social forces” (Burkhart and Lewis-Beck 1994, 905) or for the legitimacy of the democratic government (Mainwaring 1992). Second, a state’s democracy level may indicate a self-generating process, such as that assumed in the first component of equation (1). To account for this, we include each state’s Polity score in the statistical analysis. We expect that higher scores will reduce the likelihood of regime failure.

Conflict in the System

Hypothesis 2 tells us that, *ceteris paribus*, systemic conflict is positively related to the likelihood of democratic failure. Following other studies of global democracy and conflict, we measure the systemic level of conflict with the number of war participants in a given year, normalized by the number of states in the international system (Crescenzi and Enterline 1999; Mitchell, Gates and Hegre 1999). Data for our *War* variable were taken from the COW dataset (Singer and Small 1994).¹⁶

Because Hypothesis 3 speculates that the deleterious effects of war will be more pronounced when the strength of the democratic community is low and less pronounced when the strength of the democratic community is high, we construct two interactive variables to test for this effect. When the overall strength of the democratic community outweighs the overall strength of the autocratic community, *DemCom* is positive; whereas when the overall strength of the autocratic community outweighs the overall strength of the democratic community, *DemCom* is negative. *BiDemCom* is a dichotomous variable that takes on the value of 1 when *DemCom* is nonnegative (when democratic strength outweigh autocratic strength) and 0 when *DemCom* is

negative (when autocratic strength outweighs democratic strength). *BiDemCom* interacted with *War* represents the effect of conflict when the democratic community is strong. We also interact $(1-BiDemCom)$ and *War* in order to show the effect of conflict when the democratic community is weak. Placing both interactive terms in the statistical model eases the interpretation of *War*'s effects under the two conditions of democratic community. Hypothesis 3 tells us to expect that the coefficient on $(1-BiDemCom)*War$ is positive and larger than the coefficient for $BiDemCom*War$, which should be 0 or positive.

Results and Discussion

The results of the hazard analysis support Hypothesis 1's expectation that a strong democratic community fosters democratic regime survival. The coefficients for the Weibull models in Table 1 are presented in log-relative hazard form, so a negative coefficient represents a decrease in the hazard or an increase in the survival rate. *DemCom* is negative and significant for all statistical models in which it appears. Therefore, we conclude that as the strength of the democratic community increases, the risk of a democratic regime failing decreases. The solid line in Figure 3 uses the fully specified model for the entire time period (Model 1) to present the marginal effects of democratic community strength on the hazard of failure, holding *CINC*, *Polity*, and *War* at their mean values. When the strength of the democratic community is at its minimum observed value, the hazard rate of a democratic regime failing is 4.84. If the democratic community is at its maximum strength, the hazard rate of democratic regime failure drops to 0.11. In other words, the hazard rate of democratic regime failure decreases by 26.43 percent for each one-unit increase in strength of the democratic community.

< Figure 3 about here >

< Table 1 about here >

Additionally, the statistical analyses test the viability of increasing the proportion of democracies in the world as an alternative strategy for promoting the lifespan of democracies. Models 2 and 4 indicate that the proportion of democracies in the world does not significantly influence democratic survival from 1960 to 1992, as the coefficient on *PropDem* is statistically significant in neither model. This result offers even more support for the dynamic model's first hypothesis, as the analysis shows that merely having a large proportion of democracies in the system is not enough to ensure individual democratic survival. Rather, a materially strong democratic community, as indicated by high values of *DemCom*, is necessary to promote the longevity of its members.¹⁷

The go-it-alone policy option is tested as well. *GDP* per capita appears in Models 3 and 4, which are restricted to the 1960 to 1992 due to GDP data availability. *CINC* substitutes for *GDP* in Models 1, 2, and 5, which cover the entire 1816 to 1992 period. *Polity* can be found in all five statistical models.¹⁸ *CINC* never makes a strong showing, leaving us to infer that it is a poor predictor of democratic regime vitality. At the same time, we know that *CINC* scores play a significant role when they are factored into our measure of *DemCom*. Although a state's individual material strength does not seem to matter, the aggregate material strength of democracies does.

Unlike *CINC*, *GDP* and *Polity* consistently perform quite well. Their coefficients are always negative and significant, indicating that democratic states are more able to ensure their survival when they increase their levels of economic and political development and democracy.

Moreover, model 3 shows that *DemCom* predicts democratic survival even when accounting for states' individual attributes such as the levels of political and economic development. The gray line in Figure 3 uses Model 3 to present the marginal effects of democratic community strength, holding *GDP*, *Polity*, and *War* constant at their mean values. When *DemCom* is at its minimum observed value, the hazard rate of democratic regime failure is 0.008, but when *DemCom* increases to its maximum, the hazard rate falls to 0.002. Each unit increase in *DemCom* forces a 21.8 percent decrease in the hazard ratio of democratic failure. In sum, the contribution of the well being of the democratic community to the longevity of a democracy is complemented by the vigor of the democracy's own political and economic attributes. Although the dynamic model did not produce this expectation, it also did not preclude the finding.

The results of the test of hypothesis 2 are found in the coefficients on *War* in Models 1 through 4. Immediately, we note that *War*'s coefficient is positive and significant for the entire time period but insignificant for the shortened 1950 to 1992 period. International conflict hastens democratic death, but apparently not after 1950. Why might this effect be temporally limited? One possible explanation is that by 1950, *GDP* levels, *DemCom*, or both of them become so strong as to insulate democracies from the risks associated with conflict.

Hypothesis 3 is strongly supported by the empirical analysis, as illustrated by Model 5. The coefficient of the $1-BiDemCom*War$ variable is positive and significant, indicating that a weak democratic community cannot prevent democratic regime failure due to high levels of international conflict. Such was the case when an alarmingly high number of democracies fell victim to the conflict-ridden environment from 1933 to 1943. A chi-square test reveals that the $1-BiDemCom*War$ coefficient is larger and significantly different from the positive $War*BiDemCom$ coefficient. Figure 4 compares the risks due to conflict under a strong democratic community with those under a strong autocratic community. Our side-by-side evaluation shows that democratic susceptibility to conflict is always lower when the democratic community is robust and healthy. This result illuminates the expectations of hypothesis 3; conflict can threaten the lifespan of democracies, but a materially strong democratic community can insulate democracies from this deleterious effect of conflict. It was precisely this strength that enabled the democratic community to hold its losses to only one democratic failure in the 1914 to 1924 period, despite extensive war activity.

< Figure 4 about here >

One other aspect of the Weibull analysis warrants our attention. Notice that the λ parameter is always positive and significantly different from 1. This tells us that the longer a democracy lasts, the more likely it is to fail. For several reasons, we hesitate to conclude definitively that this is indeed the case. Both the democratic consolidation literature (Burkhart and Lewis-Beck 1994; Mainwaring 1992) and our own results for the *Polity* variable indicate that the longer democracies last and the more mature they become, the more likely they are to remain democracies. In other words, democracies that last longer may be more at risk, but this risk can be counteracted by progression toward becoming more democratic.¹⁹ In addition, positive duration dependence may be an indication that time is a proxy for another variable not yet specified in the statistical model (Bennett 1999). Regional democracy stands out as one variable we would have liked to include had the dataset been more refined. Several measures of the cohesiveness of the democratic community are also candidates for inclusion: a democracy's geographic proximity to other democracies, levels of trade among democracies, and alliance ties

within the democratic community. The addition of such variables serves as part of our future research agenda.

Overall, the empirical analysis strongly supports the expectations of the theoretical model. The greater a democracy's own economic strength and level of democracy, and the greater the material strength of all democracies in the system, the more likely it is to survive. A strong GDP and stable political institutions promote democratic longevity. Moreover, the strength of the democratic community benefits the survival of immature democracies that have not yet realized advantages accrued from economic and institutional development. Our analysis reveals that having a large proportion of democracies in the system does not significantly help fledgling democracies to become stable regimes. Rather, a large proportion of materially strong and mature democracies, or a strong democratic community, gives democracies the extra edge needed to survive.

Conclusion

The dynamic model that we develop here is intended to address claims made in the policymaking community linking democratization with global peace, as well as models proffered by the academic community that explore the theoretical linkages integral to this causal claim. Our approach is motivated by the belief that the material well being of a political community affects the likelihood that its individual members will persist and influence conflict in the global system. Analysis through the use of simulation techniques suggests that initial decreases in the strength of the autocratic community increase the level of conflict in a system, but that conflict decreases as the autocratic community ebbs markedly. Both theory and empirical evidence demonstrate that the survival rate of new democracies increases with the strength of the democratic community.

This reinforcing mechanism suggests an eventual trend towards democratic governance. While this trend is by no means fully determined, our model predicts that if it occurs it will be accompanied by peace. Finally, the model distinguishes itself from extant approaches to this problem in two important ways. First, it offers explicit linkages across the monadic, dyadic, and systemic mechanisms of the democratic peace. Second, it conceives of a democratic system as not merely an aggregation of national level regime types, but rather as community or membership that varies in numbers, intensity of commitment to democratic ideals, and influence in the system at large.

Our research suggests that liberal governments must combine the propagation of democratic ideals with pragmatic goals of national economic and military strength. Rather than viewing the support of democracies as a burden, policy makers should consider that such efforts might actually prove to be beneficial to advanced western democracies in the long run. Lake (2000) argues that the vulnerability of governments around the world can translate into national security problems for the United States. Our conclusions parallel his warning: the global democratic community plays a role in the survival of democracy, and in the long run it is this survival that is key to achieving a global democratic peace.

Table 1. Weibull Analyses of the Survival of Democracy

	Model 1	Model 2	Model 3	Model 4	Model 5
Variable	(1816 – 1992)	(1816 – 1992)	(1950-1992)	(1950-1992)	(1816 – 1992)
DemCom	-.307*** (0.126)	-----	-.246* (.177)	-----	-.278** (.124)
PropDem	-----	-3.097 (3.288)	-----	-2.237 (5.002)	-----
War	1.934** (1.001)	2.250*** (.995)	-9.846 (10.575)	-12.091 (9.551)	-----
GDP per capita	-----	-----	-.0006*** (.0002)	-.0006*** (.0002)	-----
CINC score	-2.612 (6.873)	-2.068 (6.674)	-----	-----	-3.877 (5.921)
Polity score	-.063*** (.006)	-0.065*** (.006)	-.056*** (.005)	-.057*** (.005)	-.064*** (.006)
War*BiDemCom	-----	-----	-----	-----	1.588* (1.073)
War*(1-BiDemCom)	-----	-----	-----	-----	5.404*** (1.661)
Constant	-22.8*** (5.2)	-22.184*** (5.712)	-59.753*** (10.415)	-55.995*** (9.199)	-22.977*** (5.277)
λ	4.439*** (.985)	4.408*** (.983)	11.877*** (2.046)	11.223*** (1.798)	4.463*** (1.000)
N (failures)	2498 (33)	2498 (33)	1547 (23)	1547 (23)	2498 (33)
Log likelihood	.074	-2.527	29.632	28.969	1.03
χ^2 (Wald)	229.56***	230.94***	126.74***	128.07***	243.52***

Coefficients are presented in log-relative hazard format.

*** = significant at the .01 level, ** = sig. at the .05 level. * = sig. at the .10 level. All tests are one-tailed. Figures in parentheses are robust standard errors, calculated by clustering on country.

Figure 1. Phase Portrait of Systemic Democracy and Conflict

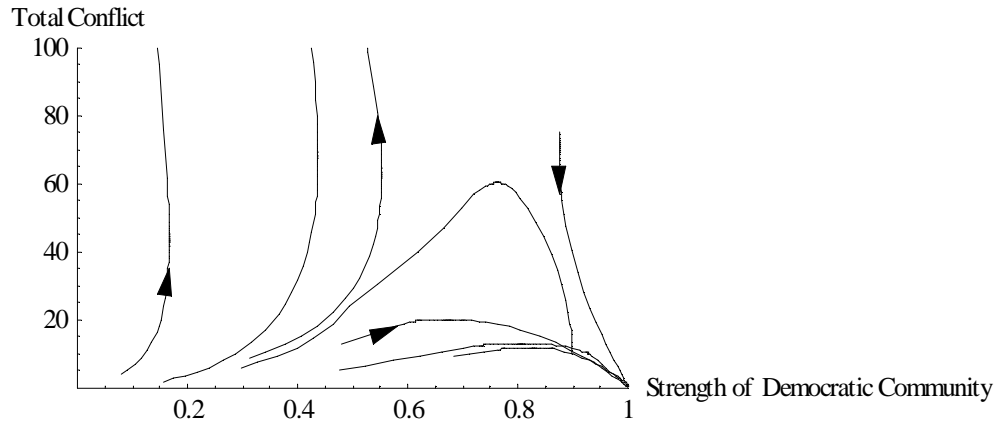
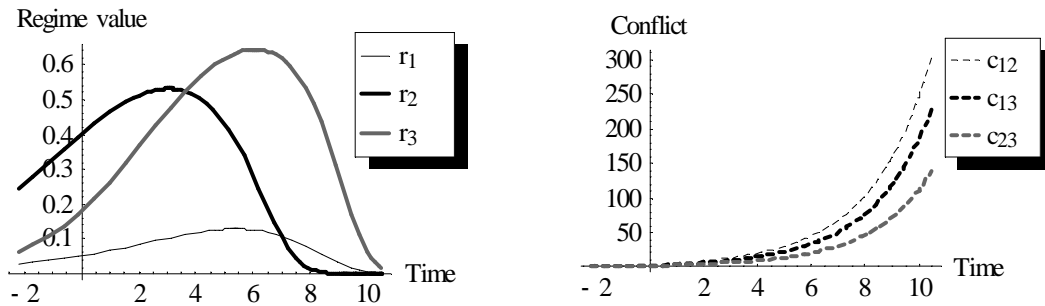


Figure 2. The Fate of Regimes

a) Democracies Perish Under Low Democratic Community



b) Democracies Persist Under High Democratic Community

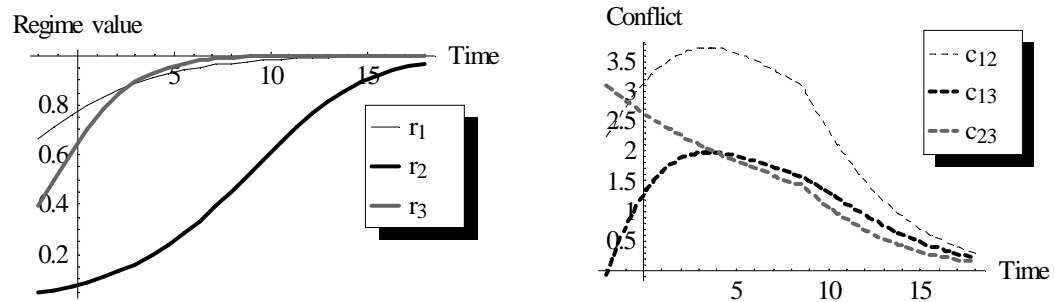


Figure 3. Democratic Failure and Democratic Community

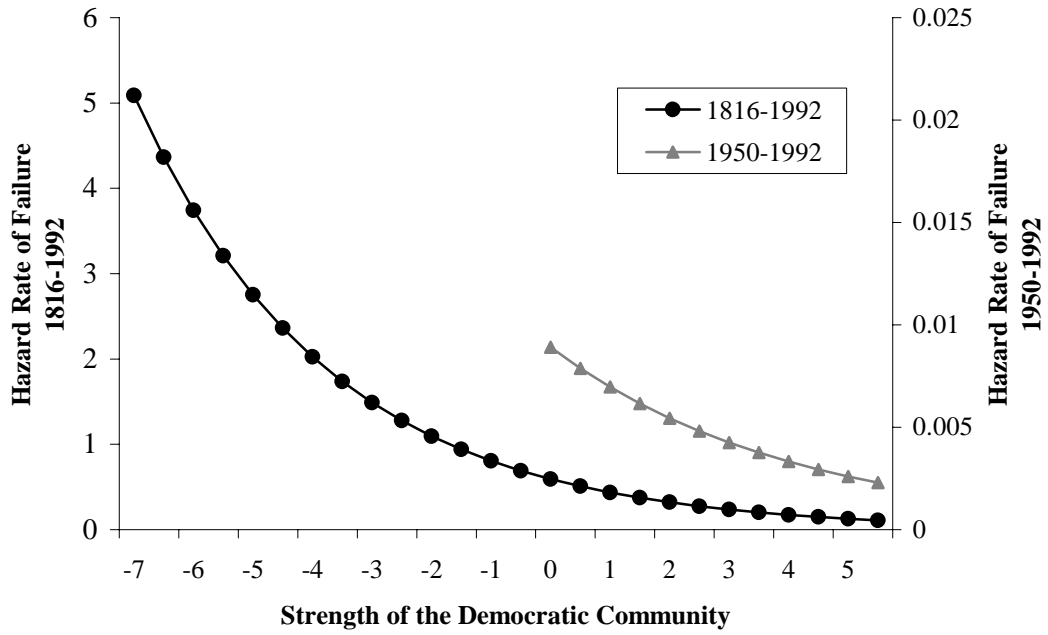
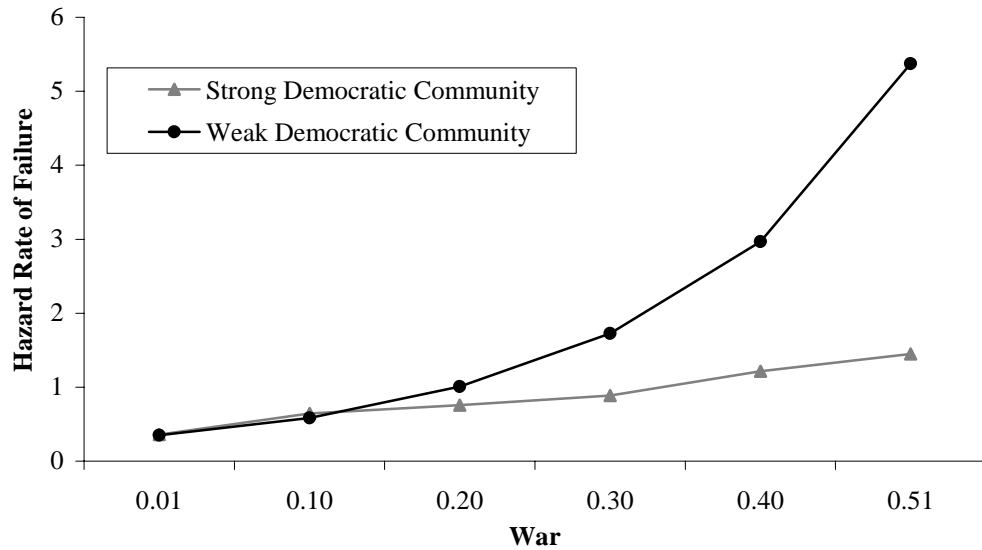


Figure 4 – The Effect of Conflict Under Different Democratic Community Conditions



References

- Bennett, D. Scott. 1999. "Parametric Models, Duration Dependence, and Time-Varying Data Revisited." *American Journal of Political Science* 43(1): 256-270.
- Benoit, Kenneth. 1996. "Democracies Really are More Peaceful (In General)." *Journal of Conflict Resolution* 40(4): 636-57.
- Bernhard, Michael, Timothy Nordstrom, and Christopher Reenock. 2001. "Economic Performance, Institutional Intermediation, and Democratic Survival." *Journal of Politics* 63(3): 775-803
- Box-Steffensmeier, Janet M., and Bradford S. Jones. 1997. "Time is of the Essence: Event History Models in Political Science." *American Journal of Political Science* 41(4): 1414-1461.
- Bremer, Stuart A. 1992. "Dangerous Dyads: Conditions Affecting the Likelihood of Interstate War, 1816-1965." *Journal of Conflict Resolution* 36(2): 309-41.
- Bueno de Mesquita, Bruce, James D. Morrow, Randolph M. Siverson, and A. Smith. 1999. "An Institutional Explanation of the Democratic Peace" *American Political Science Review* 93(4): 791-808.
- Burkhart, Ross E. and Michael S. Lewis-Beck. 1994. "Comparative Democracy: The Economic Development Thesis." *American Political Science Review* 88(4): 903-910.
- Clinton, William. Jefferson. 1994. "We Must Secure Peace: A Struggle Between Freedom and Tyranny." *Vital Speeches* LXI: 1, 2-5.
- Crescenzi, Mark J.C. and Andrew J. Enterline. 1999. "Ripples from the Waves: A Systemic, Time-Series Analysis of Democracy, Democratization, and Interstate War" *Journal of Peace Research* 36(1): 75-94.
- Gates, Scott, Torbjørn L. Knutsen, and Jonathan W. Moses. 1996. "Democracy and Peace: A More Skeptical View." *Journal of Peace Research* 33(1): 1-10.
- Gleditsch, Kristian S. & Michael D. Ward. 2000. "Peace and War in Time and Space: The Role of Democratization," *International Studies Quarterly* 44(1): 1-29
- Gleditsch, Nils Peter, and Havard Hegre. 1997. "Peace and Democracy: Three Levels of Analysis." *Journal of Conflict Resolution* 41(2): 283-310.
- Gowa, Joanne. 1999. *Ballots and Bullets: The Elusive Democratic Peace*. Princeton, Princeton University Press.
- Hermann, Margaret. G. and Charles. W. Kegley, Jr. 1996. "Ballots, a Barrier Against The Use of Bullets and Bombs: Democratization and Military Intervention." *Journal of Conflict Resolution* 40(3): 436-60.
- Ireland, Michael J. and Scott Sigmund Gartner. 2001. "Time to Fight: Government Type and Conflict Initiation in Parliamentary Systems." *Journal of Conflict Resolution* 45(5): 547-68
- Kant, Immanuel. [1784] 1991. "Idea for a Universal History with a Cosmopolitan Purpose." In *Kant: Political Writings*. ed. H. Reiss (Cambridge, UK: Cambridge University Press): 41-53.
- Kadera, Kelly M. 1998. "Transmission, Barriers, and Constraints: a Dynamic Model of the Spread of War" *Journal of Conflict Resolution* 44(3): 367-88.
- Kadera, Kelly M. 2001, *The Power-Conflict Story: A Dynamic Model of Interstate Rivalry*. Ann Arbor, Michigan: The University of Michigan Press.
- Lake, Anthony. 2000. *Six Nightmares: Real Threats in a Dangerous World and How America Can Meet Them*. Boston, Massachusetts: Little, Brown & Company.
- Mansfield, Edward D. & Jack Snyder. 1995. "Democratization and the Danger of War." *International Security* 20(1): 5-38.
- Mainwaring, Scott. 1992. "Transitions to Democracy and Democratic Consolidation: Theoretical and Comparative Issues." pp.294-341 in *Issues in Democratic Consolidation: The New South American*

- Democracies in Comparative Perspective*. S. Mainwaring, G. O'Donnell and J. S. Valenzuela, eds., Notre Dame, Indiana. University of Notre Dame Press.
- Maoz, Zeev. 1997. "The Controversy Over the Democratic Peace." *International Security* 22(1): 162 – 198.
- Maoz, Zeev and Nasrin Abdolali. 1989. "Regime Types and International Conflict: 1815-1976." *Journal of Conflict Resolution* 33(1): 3-35.
- Maoz, Zeev and Bruce M. Russett. 1993. "Normative and Structural Causes of Democratic Peace, 1946-86." *American Political Science Review* 87(3): 624-38.
- Marshall, Monty G. and Keith Jaggers. 2000. Polity IV dataset. www.bsos.umd.edu/cidcm/inscr/.
- Mitchell, Sara M., Scott Gates, and Havard Hegre. 1999. "Evolution in Democracy-War Dynamics" *Journal of Conflict Resolution* 43(6): 771-792.
- Morgenthau, Hans. 1985. *Politics Among Nations: The Struggle for Power and Peace*, 6th ed. (New York, NY: Alfred A. Knopf)
- Przeworski, Adam, Michael Alvarez, Jose A. Cheibub, and Fernando Limongi. 1996. "What Makes Democracies Endure?" *Journal of Democracy* 7(1): 39-55.
- Przeworski, Adam and Fernando Limongi. 1997. "Democracy and Development." in Axel Hadenius, ed. *Democracy's Victory and Crisis*. New York: Cambridge University Press..
- Ray, James Lee. 2001 "Integrating Levels of Analysis in World Politics" *Journal of Theoretical Politics* 13(4): 355-88.
- Ray, James Lee. 1997. "On the Level(s): Does Democracy Correlate with Peace?" Paper presented at the Norman Thomas Lectures on Scientific Knowledge of War, Vanderbilt University, Nashville, TN.
- Ray, James Lee. 1995. *Democracy and International Conflict*. Columbus: University of South Carolina Press.
- Reiter, Dan. 2001. "Does Peace Nurture Democracy?" *Journal of Politics* 63(3): 935-949.
- Rousseau, David L., Christopher Gelpi, Dan Reiter, and Paul K. Huth. 1996. "Assessing the Dyadic Nature of the Democratic Peace, 1918-88." *American Political Science Review* 90(3): 512-533.
- Rummel, R. J. 1995. "Democracies ARE Less Warlike Than Other Regimes." *European Journal of International Relations* 1(4): 457-79.
- Russett, Bruce M. 1993. *Grasping the Democratic Peace: Principles for a Post-Cold War World*. Princeton, NJ: Princeton University Press.
- Schultz, Kenneth A. 1998. "Domestic Opposition and Signaling in International Crises" *American Political Science Review* 92(4): 829-844.
- Singer, J. David, Stuart A. Bremer, and J. Stuckey. 1972. "Capability Distribution, Uncertainty, and Major Power War, 1820-1965." pp.19-48 in *Peace, War, and Numbers*, ed. B. Russett. Beverly Hills: Sage.
- Singer, J. David and Melvin Small. 1994. Correlates of War Project: International and Civil War Data, 1816-1992. Computer File. Ann Arbor, MI: ICPSR 9905.
- Singer, Max, and Aaron B. Wildavsky. 1993. *The Real World Order: Zones of Peace/Zones of Turmoil*. Chatham, NJ: Chatham House.
- Small, Melvin and J. David Singer. 1976. "The War Proneness of Democratic Regimes." *Jerusalem Journal of International Relations* 1 (Summer): 50-69.
- Smith, Alastair. 1998. "International Crises and Domestic Politics" *American Political Science Review* 92(3): 623-638.
- Starr, Harvey. 1992. Why Don't Democracies Fight One Another? Evaluating the Theory-Findings Feedback Loop." *Jerusalem Journal of International Relations* 14(1): 41-59.

- StataCorp. 1999. *Stata Statistical Software: Release 6.0*. College Station, TX: Stata Corporation.
- Thompson, William R. 1996. "Democracy and Peace: Putting the Cart Before the Horse?" *International Organization* 50 (1): 141-74.
- Ward, Michael D. and Kristian S. Gleditsch. 1998. "Democratizing for Peace." *American Political Science Review*. 92(1): 51-62.
- Wilson, Woodrow. 1917. From the April 2nd Address to Congress Asking for Declaration of War.
- Wolfram Research, Inc. 2000. *Mathematica* (software package). Champaign, IL. Version 4.

Endnotes

¹ Greece is the case for the earlier time period. The cases for the later decade include Latvia, Greece, Spain, Belgium, and France.

² All derivatives discussed here are defined with respect to time t .

³ Our approach differs slightly from Ray's (2001) recommendation. Ray prefers directed dyads. We do not include this information because (a) it is not a part of our theory and (b) the available data on conflict initiation is not sufficiently vetted to be useful in empirical analysis.

⁴ We do not presently specify the type of conflict-dampening work performed by members of a democratic community but suspect it may be along the lines of mediating disputes or making highly reputable alliance commitments that deter attacks.

⁵ This representation satisfies Ray's claim that "System level analyses only make important contributions to our knowledge when they do *not* produce results perfectly predictable in some arithmetic or additive fashion from analyses on a lower level of analyses" (2001, 378).

⁶ An alternative representation would be to weight each conflict by the power of the disputants.

⁷ A more detailed discussion of the procedure for numerical analysis can be found in Kadera (2001).

⁸ *Mathematica*'s NDSolve routine (Wolfram 2000) was used to produce these values.

⁹ The equations prevent conflict from becoming negative when moving forward in time. They do not prevent negative values of conflict from becoming positive.

¹⁰ Although the simulations presented here were all run under the condition of unipolarity, the deductions in Hypotheses 1, 2, and 3 apply regardless of the stipulation on power polarity.

¹¹ Because the \cap trajectory is not the only type produced by the model, we do not directly translate this parabolic conclusion into a testable hypothesis distinct from the others.

¹² Analysis of the model produced additional hypotheses (due to space constraints, they are not tested in this article): H4: *As the number of non-democratic regimes approaches zero, there is an increasing probability that conflict will decline.* H5: *As the number of poles in a system increases, the magnitude of the impact of systemic democracy on systemic conflict increases.* H6: *As the number of poles in a system increases, the magnitude of the impact of systemic conflict on systemic democracy increases.*

¹³ This threshold of 7 is used frequently in the literature (Reiter 2001; Crescenzi and Enterline 1999; Rousseau et al. 1996).

¹⁴ In several cases in the data, a democratic country dropped below the threshold and later re-entered as a democracy. Altogether, 11 democratic states fail and re-enter our dataset as new democracies.

¹⁵ Note that *CINC* measures a state's own strength while *DemCom* is a systemic distribution measure.

¹⁶ We also considered annual global battle deaths as a measure of systemic conflict, but their erratic performance in our statistical analyses forced us to use only the war participants measure. The battle deaths data distribute a single war's deaths equally across the war period (Mitchell, Gates, and Hegre 1999), so the measure may not accurately reflect conflict levels for particular times. War participant information is more temporally accurate, which is important when using a hazard analysis.

¹⁷ It is surprising that they perform so differently. Using OLS to predict *DemCom* with values of *PropDem* reveals that although the two are highly correlated, this correlation is cyclical and fluctuates over time. Large upswings in errors may coincide with decolonization and nation building. This reinforces the argument that having more democracies is not sufficient. Democracies must also be strong in order to provide protection and support for other members of their community.

¹⁸ Given the relationship between *Polity* and the dependent variable, and because *Polity* violates the proportional hazards assumption in some tests, we also ran all models without *Polity* as an independent variable. The results were consistent for every model, except that a) *DemCom* and *War* typically were statistically significant at a higher level, and b) in model 2 *PropDem* is negative and significant at the 0.10 level.

¹⁹ We also ran all 5 models using the Cox specification to test for robustness (Ireland and Gartner 2001). The only notable difference between the Cox and Weibull results was that the coefficient for *War*BiDemCom* is insignificant using Cox. This gives additional support to hypothesis 3.