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# MILITARIZED INTERSTATE DISPUTES, 1816-1992: RATIONALE, CODING RULES, AND EMPIRICAL PATTERNS

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Abstract. Militarized interstate disputes are united historical cases of conflict in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state. Disputes are composed of incidents that range in intensity from threats to use force to actual combat short of war. The new dispute data set generated by the Correlates of War project contains information on over 2,000 such disputes found to have occurred in the period 1816-1992. As in the earlier version of the data set, the participants, start and end dates, fatality totals, and hostility levels for each dispute are identified, but the newer version disaggregates this information for each participant and provides additional information about the revisionist state(s), type(s) of revision sought, outcome, and method of settlement for each dispute. A preliminary analysis of the data shows some interesting empircal patterns. Contagion and a slight upward trend are found in the frequency of disputes at the system level. The duration of disputes appears to be positively associated with the level of hostility reached and the number of states involved, and disputes appear to have a feud-like character. The single most important factor found to increase the fatality level of a dispute is the number of states that join after its onset. However, most disputes begin and end as one-on-one confrontations, and this tendency is stronger in the current period than in the past. An examination of dispute escalation reveals that many disputes begin with uses of force rather than less intense threats or displays of force and that states joining an ongoing dispute raise the likelihood that the dispute will reach higher levels of hostility. With respect to the settlement of disputes it was found that the longer a dispute continues, the higher the likelihood of some settlement, either negotiated or imposed, being achieved, althogh there is a discernable trend away from such settlements over the period studied. A related trend was found with respect to the outcome of disputes as stalemate has become a much more likely outcome in the present than in the past.

More than three decades have passed since the Correlates of War project received its initial grant to collect data on the causes and consequences of war. Since then, a multitude of data sets have been born covering a wide variety of phenomena in international relations. We now have data on alliances, material capabilities, diplomatic recognition, international organizations and their memberships, inter- and intra-state conflict, regime type, changes of government, cultural composition of states, and several forms of political rebellion. Clearly, these data sets have helped to provide a foundation that has allowed the scientific study of war to make remarkable progress in recent years. Nevertheless, many areas within international politics are still arguably theory-rich and data-poor, and, as a result, much of what passes as theory is based largely upon speculation rather than arguments constructed from hard evidence. Despite the best efforts by scholars in the field, the empirically based knowledge on the causes, courses, and consequences of interstate conflict is still far from complete.[1] The literature on interstate conflict is both extensive and fragmentary, at the same time. Several facets have been rigorously pursued such as the war-to-war question, the success of deterrent policies, the conflict propensities of regimes, the interplay between economics and war, and the relationship between system structure and conflict. However, our results are often not comparable due to conceptual and methodological disagreements or different spatial-temporal domains (Bremer, 1993). Meanwhile, other important questions within the conflict puzzle lay dormant because the data needed were unavailable. In contrast to our colleagues in American politics, who have access to assembled data from numerous government sources or opinion surveys, we must collect and process data while being constrained by finite budgets and limited time that ultimately determines what we can and cannot investigate.

One such under-analyzed, data-poor area is that of sub-war interstate conflicts that are serious enough to become militarized. While we have done a credible job in analyzing interstate war, not nearly enough effort has been devoted to understanding the vast number of disputes in which militarized behavior occurs without escalation to war. In part, this bias can be attributed to the importance we place in understanding war. However, the lack of agreement on conceptual or operational definitions and the limited scope of the previously available data on interstate conflict also work to restrict analysis on sub-war disputes. Most of the data sets containing information about interstate conflict can be classified into two distinct categories: 1) data sets that focus on all interstate events such as

Azar's (1980) Conflict and Peace Data Bank (COPDAB) and McClelland's (1978) World Events Interaction Survey (WEIS), and 2) data sets that cover a longer time span and focus on more hostile aspects of interstate interactions (crises, wars, or militarized interstate disputes) such as Leng's (1993) Behavioral Correlates of War (BCOW), Small and Singer's (1982) International Wars, and Militarized Interstate Disputes (MID) as first reported by Gochman and Maoz (1984). Event data attempt to chronologically record all reported interactions between states or other actors without any attempt to aggregate these actions into coherent cases, or discriminate one historical dispute from another. Event data purposively break down complex phenomena into basic interactions that allow a researcher to aggregate actions into summary measures of foreign policy behavior. In contrast, conflict oriented data sets intentionally limit the search to tense interactions between states. This restriction obviously narrows the scope of inquiry, but it does provide a manageable, operationally defined subset of state interactions and allows for the creation of historically unified cases of conflict events, instead of all types of events, from which analysis can proceed.

Firmly grounded in the latter tradition of analyzing coherent hostile episodes that have the possibility of escalating to interstate war, our purpose here is twofold. First, we will attempt to develop a fuller understanding of what conceptually constitutes a militarized interstate dispute by providing an operational definition and a detailed description of the process used to collect historical information within the data set. Only a well-defined population of cases produced from operationally defined characteristics can serve as a legitimate starting point for generalization about interstate conflict. Second, we seek to add to the existential and correlational knowledge about the distribution and characteristics of militarized interstate disputes since 1816. Knowledge about the onset and evolution of militarized interstate disputes will, we believe, illuminate some of the conditions that make war more likely. In this paper, however, our goal is a more modest one of presenting an empirical description of some basic patterns that are to be found in the data.

What we present here is a data set that has gone through an awesome range of iterations over the more than twenty-five years since the effort got under way. Among those who participated—from designing and pre- testing to coding and recoding through compiling and organizing the data—are many graduate and undergraduate students who gained some useful experience and went on to other things as well as those few students and colleagues whose names are quite

familiar to those in today's scholarly community. All have labored in the empirical vineyard of world politics and in the process helped move the discipline a step or two further along the road to data-based theory in international conflict. As others make use of this valuable data set, we trust they will not only pause for a moment of gratitude, but also let us know of any errors suspected or confirmed, all the while vowing that they too will someday contribute to this indispensable element in the scientific enterprise. The discipline can only prosper to the extent that each of us is both a producer and a consumer of operational evidence.

## THE NEW MILITARIZED INTERSTATE DISPUTE DATA SET

Tracing its roots to the pioneering efforts of Sorokin, Wright, and Richardson, the Correlates of War team has since its beginnings dedicated much time and energy to collecting and processing vast amounts of historical information covering nearly two centuries, in an attempt to identify and explain the empirical regularities that differentiate those disputes that do and do not escalate to war. From the earliest days we understood that any reasonable research design would require us to identify situations that held some moderate potential for interstate war. Given the fact that, by any criteria, war is a rare event, it would not do to consider all pairs of states, all regions, all years, or even all events as containing equally probable seeds of war. Depending on one's theoretical proclivities, one could try to isolate war potentials in regime types, cultural differences, geographic localities, relative capabilities, levels of economic or technological development, and so forth (Bremer, 1992). One of the more promising options for identifying situations in which the likelihood of war is high, of course, was to focus on crises, and that strategy has led to some important research (Leng, 1993; Brecher, 1993), but while there is no paucity of historical cases, there still remain the difficulties of definition and of sampling. These and other considerations, then, led us early on to the idea of "serious" interstate disputes—those confrontations that led politicians in opposing states to invest energy, attention, resources, and credibility in an effort to thwart, resist, intimidate, discredit, or damage those representing the other side.

As we pondered the full meaning of "serious," examined the historians' narratives and interpretations, and sought criteria that would be as valid as they were reliable, it became increasingly obvious that a dispute or confrontation—for the historical period under examination—had to carry the implication of war. From there it was reasonable to argue that such an implication could flow from any of

three types of state behavior: the explicit threat to resort to armed force, the display or mobilization of armed force, and finally, the use of armed force but short of the sustained combat that characterizes a war. The typology and the coding rules went through several iterations, the first of which was a more general scheme of considerable complexity intended to be a logically exhaustive catalog of types of state behavior whose categories were meant to be mutually exclusive (Leng and Singer, 1970). From there, the Correlates of War project moved incrementally to the first version of the data set containing 965 cases covering a 160 year period as reported by Gochman and Maoz (1984). Conceived during the period when Singer and Small were completing *The Wages of War* (1972), the first version provided information about the starting and ending date, the participants, the highest level of hostility reached, and the total fatality range for each dispute.

As we and others began to analyze the first version of the Militarized Interstate Dispute (MID) data set and to examine the relationship between these disputes on one hand and their precursors and outcomes on the other, it became evident that our search, diligent and costly as it was, had not yielded the full population of cases. First, in our earlier effort, resource limits restricted the number of assistants we had and thus the number of secondary historical sources we could scour; and because our primary sources tend to under-report disputes that occur outside the central (basically western Europe) system, we missed quite a few that occurred at the periphery. Second, it was not until the liquidation of the old empires and the establishment of many of the newly independent states in the 1960s that scholars began to pay adequate attention to these regions.

Perhaps even more significant was the limited ambition of the earlier effort. Not only were we focusing on the major powers alone in the earliest iteration,[2] we were also paying little attention to those disputatious acts that went unreciprocated. The new version of the MID data set extends the domain of the study up to 1992 and now includes over 2,000 cases. Several new variables were added, including dispute outcome, method of settlement, identity of the revisionist and status quo states, type of revision sought, the dates of dispute entry and exit of each participant, and the fatality level of each participant. Many of the early coding rules and conceptual definitions survived the test of time to form the rules and guidelines that define the current data set. Likewise, several of the original disputes remained unchanged.

*Operational Definition*

Defining a militarized interstate dispute is not easy because words like "dispute," "conflict," "crisis," and "war" are not uniformly defined and are often used interchangeably. For our purposes, conflict refers to a sharp disagreement or collision in interests between two or more actors, while a crisis and ultimately war are more serious and intense episodes of militarized interstate disputes that have escalated. With a multitude of actors of varying capability and status, and plenty of coercive options available, conflict in the international arena can take on a wide variety of forms ranging from mild diplomatic rebukes to war. While each conflict involves a fundamental disagreement over one or more issues, not all episodes involve interstate members or militarized actions. Because the MID data set records those disputes between system member states that became militarized, it is important to distinguish between all forms of international conflict involving any type of actor and militarized actions between states that are members of the interstate system. The term "militarized interstate dispute" refers to united historical cases in which the threat, display or use of military force short of war by one member state is explicitly directed towards the government, official representatives, official forces, property, or territory of another state. Clearly, this purposively excludes interactions in disputes that did not become militarized, but this does not suggest that this type of state behavior is unimportant or that non-militarized disputes are over trivial issues. States do not engage in militarized actions unless they perceive that the issues at stake are important, and, while conceding that not all serious disputes necessarily become militarized, we believe that militarization is a valid indicator that a dispute is serious. "Interstate" restricts disputes to interactions among diplomatically recognized member states of the global system and excludes interactions involving non-recognized states or non-state actors. Although diplomatically recognized states are not the only actors that are capable of fighting wars or engaging in disputes, the domain is limited to states that qualify for system membership (see Small and Singer, 1982:39-50) because our primary concern is to understand how state interactions lead to interstate war. Lastly, a "dispute" refers to the engagement in argument, the call into question, or the contestation over one or more unresolved issues between two or more actors. This reminds us that militarized interstate disputes exist because two or more states disagree as to how to resolve one or more issues.

*Defining Incidents that Constitute Disputes*

Because each militarized dispute is made up of at least one (and usually many) militarized incidents, the former cannot be fully understood until the latter is defined. Indeed, the organization of a militarized interstate dispute into a coherent historical episode is a direct result of the chronological arrangement of each incident and the application of well-specified coding rules by which we aggregate such incidents. Thus, militarized incidents provide the building blocks from which each MID is constructed, and unlock key information about the scope and domain of every dispute. A militarized incident is defined as a single military action involving an explicit threat, display, or use of force by one system member state towards another system member state. To assist in determining if a particular action qualifies, the following criteria were utilized:

1) A militarized incident must occur among, and be explicitly directed towards, one or more interstate system members. Therefore, actions between a system member and the forces of a non-system member are not included, but, if another system member undertakes a militarized action or diplomatically protests actions taken by another state against a non-system member within its boundaries, a militarized incident between the two system members is said to exist.

2) Militarized actions are excluded from the incident category when they are provided for by treaty with, or occur at the invitation of, the targeted state. In such instances, no militarized incident exists until the treaty or invitation is revoked, and a militarized incident occurs, or the militarized actions by one state clearly exceed the bounds spelled out within a treaty or agreement between both parties.

3) A militarized incident is an explicit, non-routine, and governmentally authorized action. Actions that are vague or non-specific do not qualify, and in cases of alleged or dubious actions, a militarized incident exists only when the "targeted" state responds—militarily or diplomatically—to that specific action or the action is verified by an impartial observer. In cases where violations of territory or cross-border firings occurred routinely, we coded each such incident whenever there was an authorized standing order to respond militarily to all such actions.

4) A militarized incident is an overt action taken by the official military forces or government representatives of a state (head of state, foreign minister, etc.). When regular forces are disguised as non-regular forces, operate with or command non-regular forces, or engage in covert operations, their actions are excluded unless and until further

militarized incidents involving official forces take place, or when the targeted state responds—militarily or diplomatically—to the act in question. In states where official military forces are virtually nonexistent, military actions taken by local forces qualify as government authorized only when the local forces are directed by a representative of the central government to engage in a specific military action.

5) Military interactions between two states are not coded as separate militarized incidents if they are at war. A state at war may, however, be involved in one or more incidents of military confrontation with a state that is not involved in that war.

6) Actions taken by the official forces of one state against private citizens of another state are generally not coded as militarized incidents. Exceptions include seizures (of personnel or material) within the confines of disputed territory, attacks on international shipping, and the pursuit (by air, land or sea) of rebel forces across international boundaries. Further, such incidents are included only when the "targeted" state responded militarily or protested diplomatically.

7) A militarized incident involving competing territorial claims must take place within the context of a well-defined geographic area. Uncontested expansion into the territory of an independent non-system member by itself does not constitute a militarized action until there is a militarized incident by another system member in response to the initial action. However, the expansion by military force of one interstate member into claimed or contested territory of another interstate member can, by itself, constitute a militarized incident.

*Categorizing Militarized Incidents*

Militarized incidents can vary significantly in magnitude, reflecting differences between each type of action. To assist in understanding this, three sub-war categories, *threat* of force, *display* of force, and *use* of force were adopted by the Correlates of War Project.[3] *Threats* are verbal indications of hostile intent, and since these are expressed in diplomatic language, they are not always easy to interpret. Diplomats often refer to the extreme, dire, serious, or dangerous consequences of an act without necessarily conveying that a threat to use force exists. Threatened actions can be ascertained when they are contingent and usually take the form of an ultimatum; the intention is to take a certain action against another state if the other state acts, fails to act, or does not refrain from acting in a specified manner. *Displays* of force involve military demonstrations but no combat interaction. The display of force category is usually easier to code because actions are generally more readily recorded than words, but displays of force

are non-violent military acts, and they can occur without a target being specified. In other cases displays occur within a complicated series of events involving multiple actors in which the target is not clear. *Uses* of military force represent the highest of the three sub-war categories, and, with the exception of declarations of war, all incidents within the use of force category share the commonality of active military operation. To wit, there is an impact on a target when force is used; blockades, clashes, occupation of territory, all, by the nature of the action, have a direct effect on the receiving state. However, sometimes force may be used against a non-system member, or be covertly disguised, making coding and identification of a target much more difficult. Tables 1 through 3 list and briefly define each of the twenty types of militarized incidents used within the militarized interstate dispute data set that fall within the categories of threat, display, or use of force. Within each category, no effort has been made here to rank their intensity.

When militarized interstate disputes evolve, or escalate, to the point where military combat is sufficiently sustained that it will result in a minimum of 1,000 total battle deaths (Small and Singer, 1982), they become interstate wars. Most MIDs never reach the magnitude and severity of military interaction that characterize an interstate war. For those that do escalate to interstate war, there are two military incident codes: 1) *interstate war* to signify the point at which an interstate war begins, and 2) *join interstate war* to identify the date when a state enters an ongoing war within the context of a MID between the joining state and a state already involved in the war.

Having described the different types of militarized incidents and offered a classification that ranks them based upon different levels of

Table 1
Definitions of Threats of Force

| Action | Definition |
|---|---|
| *Threat to use force* | threat by one state to use its regular armed forces to fire upon the armed forces or violate the territory of another state. |
| *Threat to blockade* | threat by one state to use its ships, airplanes or troops to seal off the territory of another state, so as to prevent either entry or exit. |
| *Threat to occupy territory* | threat by one state to use military force to occupy the whole or part of another state's territory. |
| *Threat to declare war* | threat by one state to issue an official declaration of war against another state. |
| *Threat to use nuclear weapons* | threat by one state to use all or part of its nuclear arsenal against the territory or forces of another state. |

Table 2
Definitions of Displays of Force

| | |
|---|---|
| *Alert* | reported increase in the military readiness of a state's regular armed forces. |
| *Mobilization* | activation by a state of all or part of its previously inactive forces. |
| *Show of troops* | public demonstration by a state of its land based military forces, not involving combat operations (e.g., maneuvers). |
| *Show of ships* | public demonstration by a state of its naval military forces, including a purposeful display of naval forces outside the territorial waters of a targeted state. |
| *Show of planes* | public demonstration by a state of its airborne capabilities (e.g., repeated air space violations). |
| *Fortify border* | explicit attempt to publicly demonstrate control over a border area through the construction or reinforcement of military outposts to defend or claim territory. |
| *Nuclear alert* | increase in military readiness of a state's nuclear forces. |
| *Border violation* | crossing of a recognized land, sea or air boundary for a period of less than twenty-four hours by official forces of one state, without any force being used on the territory (or population) of the targeted state or any significant public demonstration of military force capability. |

hostility, we next turn to how these incidents are grouped into coherent historical episodes that constitute militarized interstate disputes. Before doing so, a cautionary note is in order. Since the new MID data set is not a day-by-day event-data collection in which *every* action by all participants is recorded, but rather a special subset of these actions, our ability to disentangle interaction sequences is limited. That is, since participants' actions are recorded only if they represent an escalation of hostility over their previous actions (in terms of the threat-display-use-war ladder), we do not report repeated exchanges within a given level of hostility nor are there de-escalatory actions in the data set. In other words, the data set tells us only if and when states "ratchet up" the level of hostility in a dispute, as displayed in Table 4.

The top portion of Table 4 contains a hypothetical chronology of incidents in a dispute between states A and B. The classification of events is in accordance with the categories of codable acts; hence, a good part of the story is missing already since any number of non-military actions, some conciliatory in nature, are not included in this basic chronology. The first column indicates the actor, the second the action taken, and the third the target of the action. The fourth

Table 3
Definitions of Uses of Force

| | |
|---|---|
| *Blockade* | use of ships, planes or troops by one state to seal off the territory of another state so as to prevent entry or exit of goods or personnel. Boarding, stopping, or inspection of ships, land vehicles or the confiscation of goods is sufficient evidence for the erection of a blockade. |
| *Occupation of territory* | use of military force by one state to occupy the whole or part of another state's territory for a period of more than twenty-four hours. The immediate occupation after a war by the victorious side's army is not coded as an incident unless provisions of the treaty are violated by the occupying forces or further militarized incidents are undertaken by the state being occupied. |
| *Seizure* | capture of material or personnel of official forces from another state, or the detention of private citizens operating within contested territory. Seizures must last at least twenty-four hours to be included. |
| *Clash* | outbreak of military hostilities between regular armed forces of two or more system members, in which the initiator may or may not be clearly identified. |
| *Raid* | use of regular armed forces of a state to fire upon the armed forces, population, or territory of another state. Within this incident type, the initiator can be clearly identified and its action is not sanctioned by the target. |
| *Declaration of war* | official statement by one state that it is in a state of war with another state. |
| *Use of CBR Weapons* | use of chemical, biological or nuclear weapons from the arsenal of one state employed against the territory or forces of another resulting in less than 1,000 total battle deaths per dispute. |

column gives the hostility level of the action in terms of threat, display, force use, and war, and the fifth indicates whether or not the action would be coded and recorded under the coding rules. The bottom of Table 4 shows how this dispute would look when reconstructed from the dispute data set. It is a highly condensed summary of the evolution of the dispute and not an accurate description of the complete interaction sequence. Consequently, we are limited in what we can say about what happens after an initial threat, display, or use of force is made.

Table 4
Original and Reconstructed Hypothetical Dispute

Original Chronology of Incidents

| Actor | Action | Target | Hostility Level | Coded? |
|---|---|---|---|---|
| A | threatens to use force against | B | Threat | Yes |
| B | goes on alert against | A | Display | Yes |
| A | mobilizes against | B | Display | Yes |
| B | fortifies border with | A | Display | No |
| A | threatens to occupy territory of | B | Threat | No |
| A | threatens to blockade | B | Threat | No |
| B | seizes assets of | A | Use | Yes |
| A | occupies territory of | B | Use | Yes |
| A | blockades | B | Use | No |
| B | clashes with | A | Use | No |
| A | clashes with | B | Use | No |
| A | threatens to declare war on | B | Threat | No |
| B | threatens to declare war on | A | Threat | No |
| A | declares war on | B | Use | No |
| B | declares war on | A | Use | No |

Reconstructed Condensed Dispute Sequence

| Actor | Action | Target |
|---|---|---|
| A | threatens | B |
| B | displays force against | A |
| A | displays force against | B |
| B | uses force against | A |
| A | uses force against | B |

*Aggregating Incidents into Militarized Disputes*

Conceptually, a MID can be viewed as a sequence of militarized incidents, each of which can be said to be potentially an outgrowth of, or a response to, one or more previous incidents. To ensure that each MID is a reflection of a unified and recognized episode of militarized incidents, particular attention was given to continuity of location and issue as well as the interpretations of diplomatic historians. To accomplish this, the militarized interstate dispute data set was created using two sequential coding procedures. The first involved the isolation of militarized incidents from diplomatic and historical sources following the guidelines identified in the previous section. The second defined the aggregation of related incidents into segmented militarized interstate disputes. For the purpose of grouping individual incidents into temporally-bounded disputes, six rules were employed.

1) All incidents must involve the same or an overlapping set of

interstate members. In a dyadic dispute this is not a problem, but coding multi-party dispute involvement is more difficult. To qualify as a multi-party conflict there must be evidence of coordinated action by all states taking militarized actions. When one or more initiators direct the same incident to two or more targets, a multi-party dispute exists unless there is evidence that suggests otherwise. Evidence can primarily be found in joint participation by all states in one or more militarized incidents. That is, the militarized incident involved many states and took place at the same time and place, or within the same communique. Supporting evidence such as frequent consultations or a unified chain of command also indicates the presence of state collaboration and hence a multi-party dispute. However, the mere proximity of actions in space and time without any evidence of coordination with other belligerents does not warrant the grouping of these states together in a multi-party dispute. Likewise, the denial of key battlefield information represents clear evidence that military actions are not being coordinated, and thus no multi-party dispute exists.

2) Each incident must involve the same issue or set of issues, and occur within the same geographic area—unless there was information provided by diplomatic historians that led us to believe that seemingly unconnected issues and locations were linked to one another. The aggregation of incidents into disputes occurs whenever diplomatic historians suggest that the sequence of actions led to a direct response to such actions, even if the militarized events encompassed more than one distinct issue or geographic area. It is occasionally possible for two nations to be engaged in two different disputes at the same time, if the militarized incidents along one front are not countered along the other front and the respective governments clearly kept their diplomatic behavior regarding the disputes separate before, during, and after the conflicts. The existence of two simultaneous militarized disputes can often be determined by the presence of separate negotiations or separate treaties, the text of speeches by official representatives, and by the interpretation of the historian.

3) The start date of a dispute is defined by the initiation of the first militarized incident, but the end date is determined in several ways, depending upon the context of the termination and on whether the dispute escalated to war. In the absence of a formal resolution, cease-fire or mutual troop withdrawal, a sub-war militarized dispute ends when there are no codable incidents for at least six months. Those that cover the same issue/location and occur after a formal resolution of a sub-war militarized dispute are treated as: 1) part of a new dispute only if they begin one month or more after the formal

resolution, or 2) part of the original dispute if some of the incidents occur within one month of the formal resolution.[4] If either a cease-fire or negotiated withdrawal of forces occur, the old dispute ends at the point of the cease-fire or troop withdrawal if no militarized incidents take place in the following three months. Sub-war militarized disputes involving a continuous military action (blockade, seizure, occupation or show of troops/ships/planes) that last longer than six months, end either: 1) six months after the first continuous action occurs in the absence of any other militarized incidents, or 2) six months from the last date in which some other incident of military confrontation takes place. Any militarized incident chronologically following the recognized conclusion of a war, formal or otherwise, constitutes the onset of a new militarized interstate dispute.

4) When a dispute ends up in war, we treat the participants somewhat differently with regard to the aggregation of incidents. When two states go to war, all other ongoing disputes between these two states cease. Any dispute that erupts between a war belligerent and a non-belligerent state is treated as a separate dispute and only merged with the "core" war if the non-belligerent actively joins the war. If the entry into an ongoing war occurs within six months of its onset, then all sub-war militarized actions between a war belligerent and the third party entrant will be considered as part of incidents leading up to the intervention into the war. In cases when war intervention occurs six months or more after the start of the war, a separate militarized interstate dispute exists between the war belligerent and the other state up to its official entry in the ongoing war; thereafter, all actions are coded as part of the ongoing war. A state can be a participant in a war at a lower level of hostility only if its actions are fully coordinated with the war participants and its military combat falls short of the war threshold. The end date for a state's involvement in an interstate war is coded as the last day of the war itself, unless it drops out prior to the termination of the war. It is theoretically possible for a state to exit an ongoing war and: 1) re-enter the war on either side at a later time, or 2) enter into a new militarized interstate dispute with one or more participants in that war.

5) In cases of militarized interstate disputes within the context of a civil war, the side that controls the pre-war capital is said to be in control of the government. When effective control of the capital, and hence the central government, is lost by one side and gained by another faction, a change in government is said to have occurred. A switch in control over the capital during a civil war may either: 1) mark the onset of a militarized dispute between the new government and an

interstate system member which supported the old government, or 2) signal the end of a militarized dispute because the confrontation between the old government and the system member would no longer be between two members of the interstate system. When interstate system members are involved on both sides, the loss of control of the capital will lead to the switching of sides for the civil war state. Lastly, a militarized interstate dispute or war can concurrently exist within the context of a larger internationalized civil war or extra-systemic war if two or more states fight one another to the exclusion of all other combat activity in the immediate region.

6) Wars and sub-war disputes of independence are included in the data only if there are interstate system members on both sides of the dispute. When system membership entry takes place during an ongoing conflict, this date is used as either the start date of the militarized interstate dispute or the ongoing dispute entry date of a newly recognized state. However, when recognition follows the conflict, the case is excluded from the data unless there is at least one system member militarily involved on each side of the conflict. In the latter instance, actions by the non-recognized actors are not included within the data.

7) Unlike the previous version, the new MID data set records the starting and ending dates of each state's involvement in a dispute. In multiparty disputes, a state joins an ongoing dispute at the moment it initiates a militarized action or is the target of a militarized action by one or more states already involved in the MID. A state may exit a multiparty dispute early, provided it meets the above mentioned rules for dispute termination. Thus if a state agrees formally to leave a dispute and no militarized action follows, the end date of state participation is the date of formal agreement. Likewise, if a state undertakes no militarized actions in a multiparty MID for 6 months, then the last date of state participation will be the date of the last recorded incident in which it was involved.

*New Attributes of Militarized Interstate Disputes*

In this section we describe the variables that have been added to this new MID data set. The earlier version identified the participants, start and end dates, fatality totals, and hostility levels. The updated version disaggregates this information for each participant and provides additional information about the a) revisionist state(s), b) type(s) of revision sought, c) outcome, and d) method of settlement for each dispute. In the subsections below, we will detail the coding rules used to collect the information for these new variables.

**Revisionist Character.** There has been some attention within the literature to the relationship between revisionist states and the incidence of interstate war. Borrowing from sociology, several theoretical arguments have emerged linking a state's dissatisfaction with prestige, power, security or rewards, and its propensity to engage in interstate conflict. Scanning the literature, one can find several arguments that cluster around how dissatisfaction with the status quo can encourage a state to attempt to improve its position by all means including force. We, therefore, based our indicator of what constitutes a revisionist state on the prevailing status quo of the issues in dispute prior to the onset of any militarized action and recorded as revisionist the state or states that sought to overturn the status quo ante.

Within the data, the revisionist variable attempts to indicate which states are dissatisfied with the existing status quo prior to the onset of a militarized interstate dispute. Both sides of a dispute can be considered revisionist if they both are dissatisfied with the status quo, but the state that openly attempts to challenge the pre-dispute condition by 1) making claims to territory, 2) attempting to overthrow a regime, or 3) declaring the intention not to abide by another state's policy, was coded as revisionist. For example, British efforts to stop the Brazilian slave trade were coded as an attempt to alter the status quo since the pro-slave trade policy of Brazil existed prior to the onset of the disputes. Likewise, Argentine claims to the Falkland Islands and American attempts to overthrow Fidel Castro make these states revisionist actors in their respective disputes. Great effort was made to distinguish between the initiator of a dispute (the state that takes the first militarized action) and the revisionist state.

In addition to whether or not a state was revisionist, the data set also records, in broad categories, the principal object that the state sought to change. Three categories are employed: territory, policy, and regime. Territory refers to an attempt by the revisionist state to gain control over a piece of turf that it claims but does not effectively possess. Policy denotes an effort by the revisionist state to change the foreign policy behavior of another state. Regime identifies the desire by the revisionist state to change the government of another state. When the objective was ambiguous, the code "unclear" was assigned

**Dispute Outcome.** The search for the relationship between dispute outcomes and the causes and consequences of interstate conflict is an important topic. However, with the exception of Maoz (1983), research on conditions that are thought to produce more peaceful dispute outcomes and work on the effect that one dispute outcome has on subsequent dispute behavior have been virtually non-existent. In an

attempt to fill this void, the Correlates of War project set out to record the outcome of each MID. At first we tried to utilize the outcome coding scheme developed by Maoz, but we found that applying his standard, i.e., the extent to which the operational demands made by each state were achieved, proved difficult because the nature of the demands can change during the course of a dispute or war, and we were sometimes unable to determine the extent to which a state was satisfied after a MID. To help clarify this problem, we chose to restrict the use of operational demands to those made prior to the onset of a MID that were directly related to a challenge of the pre-existing status quo. Dispute outcomes could then be coded based upon a comparison of the challenges made against the status quo and any alteration of the status quo that occurred as a result of actions taken during the dispute. Because the determination of dispute outcomes is directly related to the alteration of the status quo, instead of the degree of operational demand satisfaction, a state can only "win" a dispute when the status quo is changed in its favor. Although a status quo defender may gain tangible benefits from its successful maintenance, dispute outcomes with respect to the status quo were coded as a "stalemate" whenever things remained the same. With this in mind, we determined that a militarized interstate dispute can have the six distinct outcomes shown in Table 5.

**Method of settlement.** Militarized interstate disputes are terminated by different formal and informal procedures, and the method by which a dispute ends should be conceptually distinguished from its substantive outcome. For each dispute, close attention was given to negotiations, formal and informal treaties, protocols and the like, as these all signal attempts to terminate a dispute. However, not all attempts to resolve a dispute are successful; some just end without any explicit agreement to stop or any resolution of the issues. At the other end of the spectrum, some disputes may have multiple agreements, some or all of which may be honored by both sides. We code only those agreements that both nations chose to observe for at least one year, no matter whether they were simple cease-fire agreements or complex resolutions of divisive issues. Finally, some settlement terms are mutually agreed upon while others are forced upon a vanquished state. Therefore, in addition to tracking the means by which states conclude a dispute, a determination also had to be made with regard to whether a settlement was amicably reached or forcibly coerced. The four different methods of dispute settlement are identified in Table 6.

Table 5
Classification of Dispute Outcomes

| |
|---|
| **Victory.** A victory is defined by the favorable alteration of the status quo by one state through the use of militarized action which imposes defeat upon the opponent. It denotes the attainment of a tangible piece of territory, the significant change in an adversary's foreign policy, or the successful downfall of another state's political regime by force. A victory can be identified whenever one or more state(s) are able to secure a favorable change through the application of successful military actions which directly leads to a forced alteration of the pre-dispute status quo. |
| **Yield.** A yield is defined by the coerced submission by one state to the demands made by another state but short of any clear alteration of the status quo directly attributable to the threat, display, or use of military force. Whenever a state offers concessions that alter the status quo in exchange for not being militarily threatened or to stop further military attacks, the "losing" state has yielded to the pressure imposed by the "winning" state. As an outcome of a MID, a yield can be identified whenever one state capitulates by offering concessions which appease the demands of another state before the militarized forces of either state has secured any substantial tactical gains on the battlefield. |
| **Stalemate.** A stalemate is defined by the lack of any decisive changes in the pre-dispute status quo and is identified when the outcome does not favor either side in the dispute. Stalemates usually are produced when there was no alteration of the status quo. However, they can occur even if the status quo has changed so long as net balance results in a draw. |
| **Compromise.** A compromise is defined as a situation in which each side in the dispute agrees to give up some demands or make concessions with regard to the status quo. A compromise is identified whenever actors on both sides of a dispute agree to divide the spoils roughly equally, and hence, redefine the status quo, or agree to amicably settle their differences and accept the current status quo. |
| **Released.** A released outcome is applied only for situations in which a seizure of material or personnel defines the context of the dispute. It is identified whenever the seizure of material or personnel culminates with their release from captivity. |
| **Unclear.** An unclear outcome exists whenever the historical sources provided either conflicting interpretations or ambiguous information about post-dispute status quo. |

*Data Reliability and Validity*

This data set attempts to accurately identify all cases of militarized interstate disputes since the Congress of Vienna. A wide variety of source material was used in the collection of the data, including government documents, historical monographs, case studies, diplo-

Table 6
Methods of Settlement of Disputes

| |
|---|
| **Negotiated.** A negotiated settlement of a MID is defined by the successful attempt to confer, bargain, or discuss an unresolved issue with a view towards reaching an acceptable settlement. It is identified by some type of agreement (formal or informal), the lack of any unconditional surrender or giving up on concessions, and the absence of any attempt of external imposition of a settlement. Examples include the presence of a written agreement signed by official representatives of the state, reached in a situation unfettered by constraints; a joint communique stating their mutually accepted conditions for agreement; the exchange of letters stipulating mutually agreed upon terms; the formal acceptance of a cease-fire; or the existence of a verbal or tacit understanding by official representatives of all protagonists as noted in the historical sources. |
| **None.** A dispute is considered unsettled when none of the pre-conditions that fueled the conflict are resolved nor is there any agreement between the parties that the dispute should be terminated. No settlement is identified when none of the conditions of negotiated settlement are present, there is no evidence of any attempt to impose a resolution of the conflict, and no evidence of any unconditional surrender. Basically no settlement denotes the lack of any formal or informal effort which successfully resolves or terminates the dispute. |
| **Imposed.** An imposed settlement is defined as an agreement that has been forced upon another state by means of overwhelming authority and without invitation. Instances of an imposed settlement can be determined by the presence of an unconditional surrender, the occupation of territory and failure to withdrawal prior to the termination phase of the dispute, or the evidence of being forced into accepting the terms of a termination by one or more protagonists. |
| **Unclear.** An unclear settlement exists when the historical sources present either a conflicting or opaque interpretation of dispute termination. |

matic histories, and newspapers. Whenever possible, coders were assigned to collect chronological data in their regional or language area of expertise. Sources in several languages were consulted, including Russian, Polish, German, Italian, French, Spanish, Portuguese, Turkish, Greek, Arabic, Hebrew, Chinese, Japanese, Korean, and English. To help ensure that the militarized interstate dispute data is as historically accurate as possible, several chronologies of militarized events were independently constructed for each dispute. Upon completion, these overlapping chronologies were checked for inter-coder convergence and then combined to form one chronology after all discrepancies were reconciled. Each MID was formed by aggregating incidents according to the rules laid out above. Before a militarized

dispute was officially accepted, all spatial and temporal characteristics of the dispute were independently verified by two senior coders not involved with the original framing of the militarized dispute. When discrepancies in case formation or characteristics surrounding the dispute appeared, each problem was resolved through further consultation of experts and diplomatic historians. These problem cases were entered into the data set only when there was agreement among the senior coders on all questions. Once all MIDs were collected, each dispute was subjected to internal consistency checks, and a modest sized sample of the universe of cases was independently audited for historical accuracy and consistency.

In an attempt to make the data set a reflection of the actual population of militarized interstate disputes, close attention was paid to time periods and geographic regions that most likely harbored cases that were under-represented in the first version of the data set, with particular efforts to identify overlooked cases in the nineteenth century. While this search yielded some previously "lost" cases, it did not provide an avalanche of "new" disputes. A strategy that proved to be more successful focused strictly on the histories of one system member or one dyad at a time. In some instances the number of cases for minor power dyads doubled in comparison to the earlier version of the data set.

The use of these and other procedures does not in any way suggest that the militarized interstate dispute data set is free of errors. Nor does it argue that we have managed to capture each and every militarized interstate dispute since 1816. Rather, it reflects our attempt to ensure that the data are as reliable as can be, given limited funding and problems associated with historical trace material. Despite our best efforts, we must concede that the accuracy and completeness of the data set diminishes the farther back one goes in history, the lower one goes down in level of development and the less serious (in the minds of historians, journalists, and other observers upon whom we must rely) the dispute. We assume that attentive users of the data will discover "anomalies" that have escaped our notice and inform us about these, so that, with the passage of time, the data set will be further improved

## PATTERNS OF MILITARIZED INTERSTATE CONFLICT

Having described and explained the procedures used to generate the new militarized interstate dispute data set, we now turn to examining some of the patterns that are to be found in the data. More specifically, we will consider regularities in the frequency, duration,

severity, size, level of hostility, settlement, and outcome of the 2,042 disputes.[5]

*Frequency*

Figure 1 displays the observed number of militarized interstate disputes begun throughout the interstate system per year. A number of peaks and valleys are present, and there appears to be an upward trend. The line of "expected" disputes, which lies very close to the observed line, is also shown in Figure 1 and was derived through a number of analytical steps that require some elaboration. Three factors were considered directly relevant to the number of militarized disputes beginning per year: (1) system size, (2) onset year, and (3) previous disputes. Our interest in the first factor stemmed from the assumption that, ceteris paribus, the more states in the interstate system, the greater the opportunities for interstate conflict. The second reflected our interest in the question as to whether or not there is a systematic, long-term trend in disputes. And the third arose from our suspicion that a temporal dependency might exist such that the number of disputes in a given year would be affected by the number of disputes in previous years.[6]

We began by analyzing the temporal dependencies of the dispute series, which included examining partial autocorrelations, inspecting the spectral density function, and conducting Negative Binomial regressions with lags of various lengths.[7]

The principle conclusion emerging from these analyses was that there was a strong, positive first-order temporal dependency, i.e., the more disputes that occur at time t, the higher the number of disputes beginning at time t+1. An examination of the residuals from the Negative Binomial regression of the number of disputes on its lagged value revealed a pronounced tendency for the expected number of disputes to be significantly larger than the observed number at the higher observed values. This suggested that some kind of "ceiling" or "saturation" effect might be present, whereby the contagion factor captured by this serial dependency grows weaker as the number of disputes increases. To capture this effect we added the square of the lagged term to the equation and found, as expected, that its effect was significant and negative. At this point we felt that we had successfully dealt with the temporal dependence present in the dispute series and proceeded to add system size and onset year to our estimation.

Table 7 shows the results of the final Negative Binomial regression model used to generate the expected disputes line in Figure 1.[8] It is noteworthy that after removing the serial dependency, a strong,

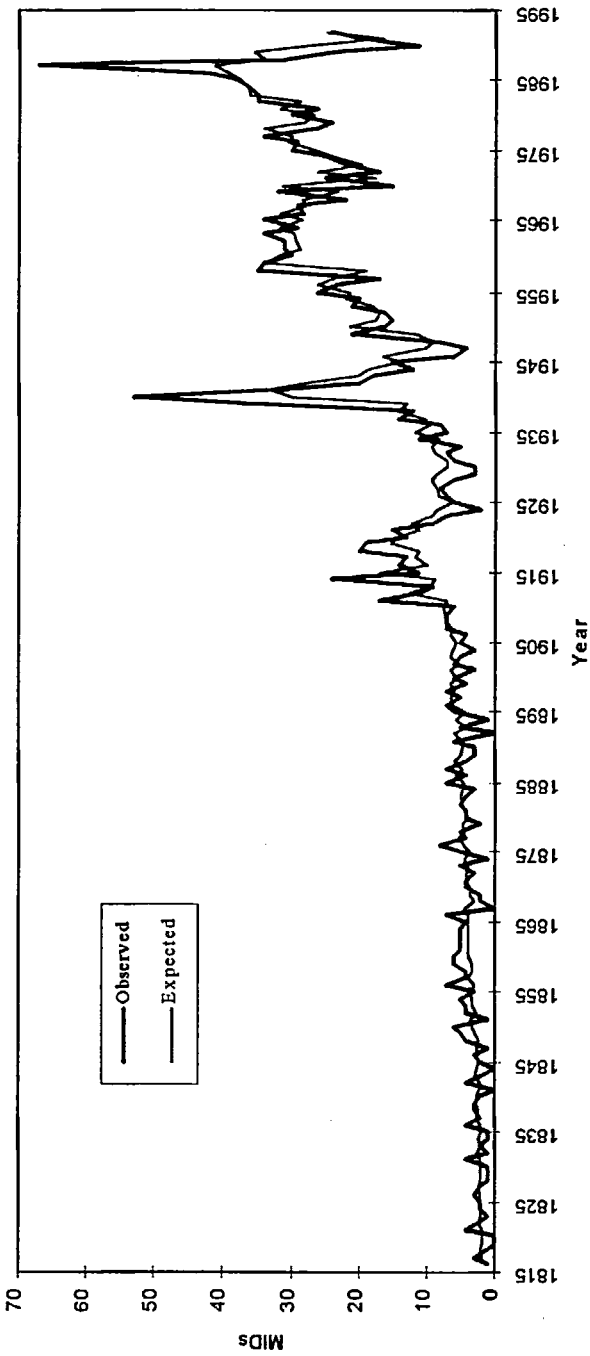



Figure 1
Militarized Interstate Disputes Begun, 1816-1992

significant, positive trend component is found to be present; but when we control for the other factors listed in Table 7, we find that as the number of states increases, the number of disputes tends to *decrease* (although this effect is weak and of marginal statistical significance).The significance of the σ term in this table tells us that there is still a considerable amount of heterogeneity in the dispute series. There are several years—1914, 1939, 1940, 1958, and 1987—in which the observed number of disputes is significantly higher than the expected number, and in a few years—1946, 1970, 1989, and 1990—the reverse is true. Still, a visual inspection of Figure 1 confirms that the fit between observed and expected is rather good. Our principal findings are that, at the system level, (a) there does appear to be some short-term contagion present in dispute behavior, and (b) there is a discernible upward trend in that behavior. Both of these findings require further investigation not only because they are of substantive interest but also because they pose potentially serious methodological problems for system-level studies of disputes.

*Duration*

The beginning and ending dates of the 2,042 disputes in the collection are known at the day level of precision in 1,732 (85%) cases. The beginning day of the dispute could not be determined in 110 (5%) cases, the ending day could not be determined in 60 (3%), and both the beginning and ending days were unidentified in 140 (7%). This lack of information makes it difficult to determine precisely the duration of all disputes in days, the most desirable unit of measurement since many disputes are very short. To deal with this problem, two measures of duration were created reflecting alternate assumptions about the missing information. The minimum duration measure assumes that the beginning and ending dates are as close together in time as possible, while the maximum duration measure assumes the opposite. These measures will differ from one another only when the beginning and/or ending day of a MID is unknown, of course.

Table 7
Negative Binomial Analysis of Disputes Begun

| Variable | Coefficient | Std Error | T-Ratio | Sig(T) |
|---|---|---|---|---|
| Constant | -21.8241 | 3.7823 | -5.77 | <0.0001 |
| N $MID_{t-1}$ | 0.0661 | 0.0155 | 4.26 | <0.0001 |
| N $MID^{2}_{t-1}$ | -0.0007 | 0.0003 | -2.20 | 0.028 |
| Onset Year | 0.0123 | 0.0020 | 6.02 | <0.0001 |
| N States | -0.0032 | 0.0017 | -1.84 | 0.065 |
| σ | 0.0696 | 0.0160 | 4.34 | <0.0001 |

Table 8 presents the relevant descriptive statistics for the two measures, and it is clear that they do not differ by much. The mean and median durations differ by about 7 days across the two measures, and the other descriptive measures are also quite similar. This table also reveals a not unexpected finding, i.e., that the distribution of MID duration, by either measure, is badly skewed. This is clearly indicated by the fact that the median duration is considerably less than the mean duration and the upper quartile value is much less than the maximum value. In other words, most disputes are relatively short (less than 6 months in duration), while a very few are very long.

We can assess how badly skewed the distribution of MID duration is by examining Figure 2, which contains a histogram of the mean of the maximum and minimum duration measures. In this figure we show the observed and expected number of MIDs falling within each duration interval, as well as the expected number if the probability that a dispute will end remains constant over the course of the dispute. Under the latter condition the lengths of disputes should be distributed in accordance with the exponential distribution, and this distribution was used to derive the expected values.[9] Comparing the observed and expected values in Figure 2 reveals clearly that many more MIDs are shorter than expected and a significant number are longer than expected, a pattern of deviance that suggests duration dependence may be present. Duration dependence refers to the condition under which the probability that an event will end is correlated with the time elapsed since the event's onset. The deviations we see in Figure 2 suggest that this correlation is positive, i.e., the longer a dispute continues, the lower its probability of termination.

We can test for and measure duration dependence by fitting a Weibull probability distribution to the duration data (Olkin, Gleser, and Derman, 1994). With this distribution, the proportion of events enduring for more than t units of time (the survival function) is given by

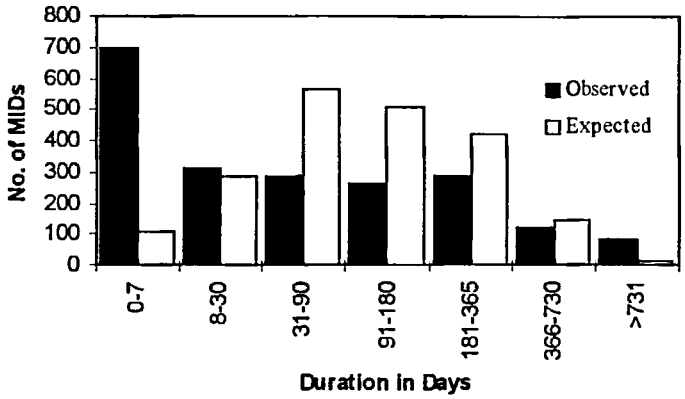
$$e^{-(\lambda t)^{\rho}},$$

where $\lambda$ is a constant reflecting the basic propensity of an event to end, and $\rho$ reflects the degree to which this propensity changes in response to the duration of the event. If $\rho$ is greater than one, the likelihood that

Table 8
Descriptive Statistics of Duration Measures

| Duration in Days | Mean | Median | Min | Max | Lower Quartile | Upper Quartile | Std.Dev. |
|---|---|---|---|---|---|---|---|
| Maximum | 146.7 | 37 | 1 | 4779 | 1 | 173.5 | 319.4 |
| Minimum | 140.3 | 30 | 1 | 4720 | 1 | 158.5 | 318.5 |

Figure 2
Histogram of Mean Dispute Duration




an event will end increases with its duration, while the opposite is true if $\rho$ is less than one. If $\rho$ is equal to one, the Weibull distribution becomes the more familiar exponential distribution discussed above. Applying this type of analysis to the duration of all 2,042 disputes yielded estimated values of $\lambda$ and $\rho$ of 0.0143 and 0.4954, respectively.[10] Since the value of $\rho$ is significantly less than one, we may conclude that, as a whole, disputes appear to exhibit positive duration dependence, i.e., they have a feud-like quality such that the longer they last, the more difficult it is to bring them to a close. However, it should be noted that, in heterogeneous samples, positive duration dependence can appear as a statistical artifact. This arises when two or more subgroups have substantially different basic termination propensities ($\lambda$ values).

While not seeking to settle the question of whether or not disputes exhibit duration dependence here, we can examine some characteristics of the disputes themselves to determine what impact they may have on MID duration. Since this involves controlling for potential sources of heterogeneity, it is possible that one or several of the factors considered may cause the apparent positive duration dependence to disappear. The dispute characteristics that will be considered are:

*Reciprocated* - a reciprocated dispute is one in which at least one state on side B takes a codeable action against at least one state on side A, i.e., a member of side B responds to the initiative from side A.

*Power Status of Participants* - a dispute is Major-Major if there is at least one major power participant on both sides of the dispute, Major-Minor, if at least one major power is a participant on one side of the dispute but not the other, or Minor-Minor, if neither side of the

dispute has a major power participant.
*Hostility Level Reached* - the highest level of hostility (threat, display, use or force, or war) reached during the dispute.
*Onset Year* - the year in which the dispute begins.
*Originators* - the number of states involved in the dispute on the first day of the dispute.
*Joiners* - the number of states that become participants after the first day of the dispute.
In focusing on these characteristics we do not mean to imply that they are the only factors that could account for the differences in dispute duration. On the contrary, we think this is an area that is worthy of much further investigation. To investigate the impact of these factors we once again make use of the Weibull distribution and revise the specification of $\lambda$ such that

$$\lambda = e^{\beta X},$$

that is, the propensity for disputes to end is assumed to be a function of $\beta$ and X, vectors of coefficients and attributes, respectively.

Table 9 shows the results of bivariate survival analysis using the factors listed above as predictors of dispute duration.[11] We show the expected duration in days for the first, second, and third quartiles for the relevant conditions,[12] as well as the Log-Likelihood values of the equations that yielded the coefficients from which these predicted values were derived. Since the duration distribution is so skewed, quartile values are a better indicator of the effect of an independent variable than other measures such as the mean. Turning first to the power status of the participants in a dispute, we see that the larger the role of major powers in a dispute, the longer the dispute is expected to be. Half of the disputes with major powers on both sides have an expected duration of 43 days, while the comparable values for major-minor and minor-minor disputes are 37 and 29 days, respectively.

It is no surprise that disputes in which side B responds to side A's actions are significantly longer, for we fully expected that reciprocated disputes should continue longer than unreciprocated ones as Table 9 shows. Nor are we surprised that escalation to higher levels of hostility is associated with longer disputes. According to the results reported in Table 9, the median expected duration of disputes that only reach the level of a threat is 4 days, and this value rises steadily to 17, 38, and 206 days, respectively, as we move up the display-use-war steps in the escalation ladder.

The number of states involved in a dispute, either at its outset or subsequently, has a positive effect on its expected duration, according to our findings. As the number of originators increases from 2 to 4,[13]

Table 9
Dispute Duration and Dispute Characteristics

| | Expected Duration in Days | | | |
|---|---|---|---|---|
| Condition | First Quartile | Median | Third Quartile | LL (Sig(LL)) |
| Major-Major | 7 | 43 | 173 | -4615.1 (.05) |
| Major-Minor | 6 | 37 | 152 | -4614.9 (.04) |
| Minor-Minor | 5 | 29 | 117 | -4611.7 (.001) |
| Not Reciprocated | 3 | 15 | 54 | -4452.9 (<.0001) |
| Reciprocated | 13 | 70 | 258 | |
| Threat | 1 | 4 | 15 | -4573.2 (<.0001) |
| Display | 3 | 17 | 68 | -4588.1 (<.0001) |
| Use of Force | 6 | 38 | 151 | -4609.3 (<.0001) |
| War | 36 | 206 | 809 | --4570.0 (<.0001) |
| 2 Originators | 6 | 33 | 132 | -4614.5 (<.0001) |
| 3 Originators | 7 | 40 | 160 | |
| 4 Originators | 8 | 48 | 194 | |
| No Joiners | 5 | 30 | 118 | -4570.3 (<.0001) |
| 1 Joiner | 8 | 45 | 176 | |
| 2 Joiners | 12 | 67 | 261 | |
| 3 Joiners | 18 | 99 | 389 | |
| 4 Joiners | 26 | 148 | 579 | |

LL = Log-Likelihood, Sig(LL) = significance of Log-Likelihood value
The Log-Likelihood for the null or restricted model was -4617, with an N of 2,042.

the expected median duration increases by about two weeks. The effect of states joining a dispute after it has begun is much stronger, however. The general tendency is that half of the disputes with no joiners endure less than 30 days, and this expectation increases by an increasing amount with each additional joining state.

Finally, we consider the interesting question of whether or not there has been any long-term trend in the duration of disputes. Figure 3 reveals that the pattern is for disputes to become shorter as we approach the present. The expected median duration of disputes at the beginning of the period under consideration was 83 days, while the comparable value at the end of the period is 23 days. This may turn out to be a very significant effect, and one that deserves further study.

Since we knew that some of the dispute characteristics considered in these bivariate analyses are related to others, a multivariate analysis was undertaken that included all of the factors considered above.[14] The multivariate results were generally the same as the bivariate ones, except, as expected, the effects of each factor are somewhat attenuated.[15] The single substantively important change had to do with the

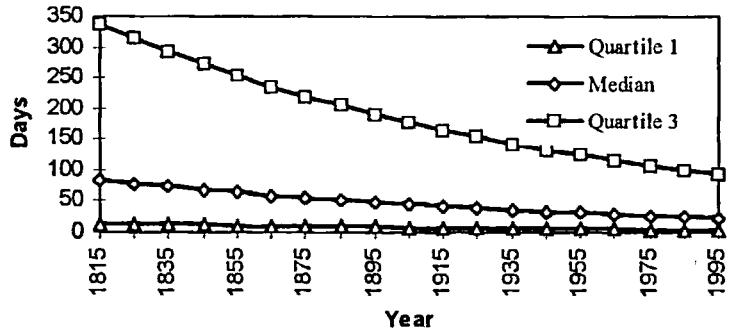
power status of the participants. Controlling for the other characteristics reveals that Major-Major disputes tend to be shorter and major-minor disputes longer, with the duration of minor-minor disputes falling between these two values. It should be noted that in the multivariate and all bivariate analyses the value of $\rho$, the duration dependence parameter, remained significantly less than one, indicating that positive dependence duration remains. The existence of this "feud-like" quality of disputes may be our most important finding about their duration.

*Fatalities*

As Table 10 shows, more than two-thirds of the militarized interstate disputes in the new collection resulted in no deaths. With one apparent exception, the distribution of deaths is as expected, i.e., the higher the level of deaths, the lower its frequency; that exception is the category of greater than 999 deaths, but this exception may be more apparent than real. We are dealing with categories of fatalities rather than the exact number, and if the underlying continuous distribution were highly skewed, as we believe it to be, then the last category, containing as it does the "tail" of that distribution, would be large, proportionately speaking. In 12 percent of the cases it was not possible to establish the fatality level, although it may be reasonable to assume that these are cases of no or low deaths rather than instances of higher deaths, given the greater likelihood that higher deaths are more likely to have been recorded in sources than lower deaths.

In order to determine how fatality levels may be associated with other dispute characteristics, a number of bivariate ordered logit analyses were conducted.[16] Table 11 summarizes the substantively important results of those analyses. In constructing this table the

Figure 3
Expected Dispute Duration and Onset Year



estimated equations were used to compute the predicted probabilities that a dispute would have no deaths, some deaths (>0 but <1000), or many deaths (≥1000), depending upon the values of other dispute characteristics, and it is these predicted probabilities that are shown in Table 11, along with log-likelihood information that reflects the statistical fit of the estimated equation used.

The first three rows in Table 11 reveal that the power status of the participants does have some impact on the fatality levels of disputes. Disputes between minor powers have slightly higher probabilities of more deaths, while major-minor disputes exhibit the opposite tendency. And although we might expect disputes between major powers to have higher levels of deaths, Table 11 suggests that this is not so, as reflected in the lack of significance of the associated log-likelihood value. The next rows in Table 11 reveal that, not surprisingly, whether or not a dispute is reciprocated has a major impact on the expected level of deaths. If the target of an initial militarized action does not respond in a militarized way, the likelihood of fatalities is very low. The next rows show the impact of different numbers of originators on expected fatality levels, and here the results are not as one might expect. It appears that the number of original participants in a dispute has very little, if any, impact on the ultimate fatality level a dispute attains. The same cannot be said for the number of states joining an ongoing dispute, however. The likelihood that higher levels of deaths will be reached in a dispute is highly dependent upon the number of joining states, according to Table 11. We do not know at this time whether disputes achieve higher deaths because states join them or whether states tend to join disputes that have already generated higher death levels. Both tendencies may be present, and sorting out this relationship is, we think, an interesting and challenging subject for future research. The final dispute characteristic considered in Table 11 is the year of dispute onset. The relevant log-likelihood value reveals that there is very little relationship between this factor and expected fatality levels, and a comparison of the predicated probabilities associated with 1816 and 1991 shown in Table 11 hints that only a very slight long-term, upward trend in deaths is present.

To check the results shown in Table 11 a multivariate ordered logit

Table 10
Distribution of Disputes by Level of Fatalities

| Fatalities | No. of Disputes |
|---|---|
| Missing | 255 (12%) |
| None | 1437 (70%) |
| 1-25 | 152 (7%) |
| 26-100 | 69 (3%) |
| 101-250 | 37 (2%) |
| 251-500 | 8 (<1%) |
| 501-999 | 3 (<1%) |
| > 999 | 81 (4%) |

analysis of fatality level was carried out which included all of the factors listed in that table as independent variables. With one exception, the results were not substantially different from those reported above. That exception was that disputes with major powers on both sides were found to have a significantly lower probability of higher deaths. Combined with our finding concerning major-minor disputes, this indicates that the involvement of major powers in disputes leads to slightly lower expected fatality levels. This finding is not consistent with the view that the involvement of major powers in disputes increases the damage that those disputes will inflict.

*Size*

As used here the "size" of a dispute refers to the number of states that participate in the dispute, and Table 12 shows the size distribution of the 2,042 disputes in terms of three roles—participants, originators, and joiners—that states may play. Participants are all those states that become involved in a dispute according to the coding rules discussed above. Originators are those states that are involved in a dispute from the very first day of the dispute, while Joiners are those that become participants at some subsequent time. The left panel of this table shows the number and percentage of disputes having the listed number

Table 11
Dispute Fatalities and Dispute Characteristics

| | Predicted Probabilites | | | |
|---|---|---|---|---|
| Condition | None | 1-999 | >999 | LL (Sig(LL)) |
| Major-Major | 0.786 | 0.163 | 0.050 | -1368.7 (0.53) |
| Major-Minor | 0.858 | 0.111 | 0.031 | -1358.3 (<0.00001) |
| Minor-Minor | 0.769 | 0.176 | 0.055 | -1360.8 (<0.00001) |
| Not Reciprocated | 0.990 | 0.008 | 0.002 | -1076.3 (<0.00001) |
| Reciprocated | 0.565 | 0.333 | 0.101 | |
| 2 Originators | 0.803 | 0.151 | 0.046 | -1368.8 (0.68) |
| 3 Originators | 0.811 | 0.145 | 0.043 | |
| 4 Originators | 0.819 | 0.139 | 0.041 | |
| No Joiners | 0.823 | 0.141 | 0.036 | -1321.7 (<0.00001) |
| 1 Joiner | 0.725 | 0.214 | 0.061 | |
| 2 Joiners | 0.600 | 0.297 | 0.103 | |
| 3 Joiners | 0.461 | 0.412 | 0.167 | |
| 4 Joiners | 0.327 | 0.412 | 0.261 | |
| 1816 Onset | 0.823 | 0.137 | 0.040 | -1368.7 (<0.00001) |
| 1991 Onset | 0.798 | 0.155 | 0.047 | |

LL = Log-Likelihood, Sig(LL) = significance of Log-Likelihood value
The Log-Likelihood for the null or restricted model was -1368.9, with an N of 1,787.

of participants, and it reveals that a very high proportion (84%) of disputes start and end as one-on-one affairs. This distribution is skewed significantly due to the presence of several large disputes that became wars: World War II (33 participants), the Persian Gulf war (29 participants), the Korean War (17 participants), and World War I (15 participants).

The center panel of Table 12 shows the number of disputes beginning with different numbers of originator states, and the two-party propensity is even stronger here. A very large proportion (93%) of disputes begin as one-on-one confrontations, and less than two percent initially involve four or more states. This suggests that the ultimate size of a dispute is somewhat more determined by the subsequent actions of joiners (including the action of not joining) than by the initial actions in the dispute. The right panel on Table 12 sheds some light on this by showing the number of disputes with various numbers of joining states. As expected, most disputes (90%) do not grow in size after the first day, and as a general rule it appears that the more joining states, the lower the likelihood of occurrence. Still, the skewness of the distribution suggests that some contagion might be present, i.e., one state joining a dispute increases the likelihood that another state will join. But this hypothesis must be subjected to more extensive analysis before such a conclusion is justified.

Has there been a fundamental change in the size of disputes over the 177 year period? To investigate this question a series of Negative Binomial regresssion analyses were undertaken in which the number of total participants, participants on side A (the initiating side), participants on side B (the target side), originators, and joiners were each regressed on the year of dispute onset. The results were quite consistent, for we found a significant downward trend in all of the size indicators. Accross the whole period under investigation the probability that *only* two states will be involved in a dispute grows from 0.28 to 0.68. Part of the explanation for this trend is found when we examine the number of states on each side over time. In 1816 the estimated probability that the initiating side will have *only* one state is 0.51, and this probability grows to about 0.91 by 1991. A similar but much weaker trend is present for side B, where the comparable shift in probability is 0.77 to 0.85. When we look at the number of originators and joiners, similar patterns emerge. The likelihood that *only* two states will be involved in a dispute on the first day, which is estimated to be 0.33 in 1816, grows to 0.91 by 1991. And the probability that no states will join a dispute rises from 0.61 to 0.83 over the 1816-1991 period. These results suggest that there is now a greater tendency for

Table 12
Distribution of Disputes by Number of Participants, Originators, and Joiners

| No. of Participants | No. of Disputes | No. of Originators | No. of Disputes | No. of Joiners | No. of Disputes |
|---|---|---|---|---|---|
| 2 | 1712 (84%) | 2 | 1894 (93%) | 0 | 1839 (90%) |
| 3 | 179 (9%) | 3 | 99 (5%) | 1 | 109 (5%) |
| 4 | 74 (4%) | 4 | 32 (2%) | 2 | 40 (2%) |
| 5 | 29 (1%) | 5 | 6 (<1%) | 3 | 20 (1%) |
| 6 | 18 (1%) | 6 | 6 (<1%) | 4 | 12 (<1%) |
| 7 | 10 (<1%) | 7 | 1 (<1%) | 5 | 6 (<1%) |
| 8 | 7 (<1%) | 8 | 2 (<1%) | 6 | 6 (<1%) |
| 9 | 7 (<1%) | 9 | 2 (<1%) | 7 | 4 (<1%) |
| 11 | 2 (<1%) | | | 9 | 2 (<1%) |
| 15 | 1 (<1%) | | | 13 | 1 (<1%) |
| 17 | 1 (<1%) | | | 15 | 1 (<1%) |
| 29 | 1 (<1%) | | | 27 | 1 (<1%) |
| 33 | 1 (<1%) | | | 31 | 1 (<1%) |

disputes to begin as one-on-one affairs, and remain so, than in the past. We believe that this is due to the dramatic increase in the number of minor powers beginning after World War I and accelerating after World War II, as well as the clear historical fact that minor power disputes rarely engage more than the original participants.

One additional aspect of dispute size that is of interest to us is the balance of state participation across the two sides of disputes. Table 13 displays the number of disputes corresponding to various numbers of states on Side A, the initiating side, and Side B, the target side, as well as the expected number of disputes if the sizes of the two sides were unrelated to one another. The $\chi^2$ statistic comparing the observed and expected frequencies in this table is large (58.3) and significant at beyond the 0.001 level, suggesting that there is more symmetry in side size than we would expect by chance. Hence, there is more evidence of balancing than bandwagoning behavior in these findings.

*Escalation*

For the reasons discussed above, the MID data collection does not quite give us a full account of the interactions that occurred during these conflict episodes, but it does allow us to gather some insights into the process of conflict escalation. One common conception of the escalation process is that it proceeds through stages, from less violent to more violent actions. Applied to militarized disputes, this would lead one to expect that they should begin with threats and move on to

displays and uses of force as escalation occurs. Unfortunately, the data do not support such a logically compelling supposition, for we find that only 13 percent of disputes begin with threats of force, while 38 percent begin with displays of force and the remaining 49 percent begin as uses of force. Among those disputes that begin with a use of force, somewhat less than one-half are raids, and seizures constitute another one-fourth. Shows of troops and border violations are the most frequent display of force among the initial acts, while only threats to use force are used with any frequency in those MIDs that begin with a threat. All these results suggest that the first action recorded in a militarized dispute is more violent than a ladder-like escalation model would suggest.

The next stage in the escalation process is what we have referred to above as reciprocation; i.e., one or more states on side B react in a militarized manner to the challenge received from side A. A tabulation revealed that reciprocation occurred in about 50 percent of the cases, which does not mean that the members of side B did nothing in response to side A's actions, for they may have reacted in ways not captured by the data set. But if we are correct that these non-coded actions are less conflictual or hostile than those that were coded, then it would appear that initial de-escalatory moves by side B are as common in disputes as initial escalatory moves.

From the escalatory perspective, one might expect that the more hostile the initial act, the greater the probability of reciprocation. According to the data, however, this is not quite so. The likelihood of reciprocation when the initial act is a threat is 0.47, while the comparable probabilities for displays and uses of force are 0.59 and 0.43, respectively. Tests of significance of the latter two proportions confirm that these are much higher and much lower, respectively, than one would expect by chance. Continuing the investigation a little further, we found substantial differences in reciprocation when we considered the specific type of initial act. Disputes that began with

Table 13
Expected and Observed Size of Sides

| | Side B | | |
|---|---|---|---|
| Side A | 1 | 2 | ≥3 |
| 1 | 1712 (1687.6) | 110 (121.3) | 55 (68.0) |
| 2 | 69 (81.8) | 14 (5.9) | 8 (3.3) |
| ≥3 | 55 (66.5) | 8 (4.8) | 11 (2.7) |

Expected frequencies are shown in parentheses. The $\chi^2$ statistic for the test of no difference between observed and expected values is 53.8, which is significant at beyond the 0.001 level of significance

shows of troops, mobilizations, or border violations were significantly more likely to lead to reciprocation,[17] while seizures, raids, and declarations of war were significantly less likely to prompt a militarized response. Taken together these results suggest that the first stages in the escalation process, as captured by the MID data, are a good deal more complicated than a simple tit-for-tat or conflict spiral model would suggest.

This conclusion is reinforced if we look at the end of the escalation process—again, in this very limited context—and consider the highest level of hostility reached in the disputes (shown in Table 14). This distribution does not fit the classic stages of escalation model in which the higher the protagonists go up the ladder, the less likely it is that they will move up to the next stage. If this were the case, we would expect to see decreasing frequencies as we look down the rows of Table 14. What we see instead is almost the opposite. That is, with the obvious exception of war, the higher the hostility level, the higher the likelihood of escalation. The evidence for this conclusion is somewhat deceptive, however, for, as we saw, disputes do not have to begin at a lower rung of this crude escalation ladder, and quite often the highest level of hostility reached is the same as the initial level of hostility because of non-reciprocation. Clearly a good deal of work needs to be done to clarify the escalation patterns found in disputes.

While a full exploration of what factors might account for these different levels of hostility is clearly beyond the scope of this largely descriptive paper, we can report the results of a limited set of analyses that reveal how escalation relates to a few other dispute characteristics, namely, the power status of participants, the number of originators and joiners, the duration of the dispute, and its year of onset. Under the assumption that the four escalation levels constitute an ordered scale of hostility, we used ordered logit analysis in obtaining the results reported below. This technique assumes that the dependent variable indicates membership in ordered, mutually exclusive groups, and, by means of maximum likelihood methods, it produces an equation that yields predicted probabilities that a given case will "belong" to each of the groups. We can, therefore, assess the impact of a factor by examining how these predicted probabilities change as the factor varies in intensity.

Table 15 shows some of the results obtained when we consider only bivariate relationships. Those concerned with the power status of the participants occupy the top part of this table, and to obtain them each dispute was designated as either Major-Major (at least one major

power on each side), Major-Minor (at least one major power on one side only), or Minor-Minor (no major power involvement).[18] Although none of the three ordered logit analyses yielded significant results, a pattern does seem to be present; i.e., the lower the level of major power involvement in a dispute, the higher the probability that it will escalate to higher levels of hostility. This suggests that major powers may have a moderating impact on interstate conflicts rather than an exacerbating one. Still, due to the weakness of the power status relationships shown in Table 15, we must be careful not to over-interpret their meaning and significance.

The next set of results shown in Table 15 concerns the number of states involved in a dispute on its first day, or number of originators. The significance level of the Log-Likelihood value tells us that this factor does have a noticeable effect on the escalation level, and a perusal of the predicted probabilities yielded by the estimated equation reveals a clear pattern, to wit, the greater the number of states involved at the onset of a dispute, the lower the likelihood that the dispute will reach higher levels of hostility.[19] These shifts in probability are admittedly not earthshaking, but they do appear to be real.

The last section of Table 15 deals with the relationship between states joining disputes and escalation level. What we discover is that as the number of joining states increases, higher levels of hostility become significantly more likely. We must be careful here about causal inference, however, since we do not know at this aggregate level whether disputes escalate as a consequence of more states becoming involved (joining precedes escalation) or escalated disputes attract more joiners (escalation precedes joining). Both effects might be present, of course, and, if so, untangling their separate effects will be a challenging future task. It is interesting to note the opposite nature of the originator and joiner results. If more states are involved on the first day of a dispute, the likelihood that force will actually be used is lower, but if more states become involved after that point in time, that likelihood is higher.

Table 14
Distribution of Disputes
by Level of Hostility Reached

| Hostility Level | No. of Disputes |
|---|---|
| Threat of Force | 98 (5%) |
| Display of Force | 447 (22%) |
| Use of Force | 1418 (69%) |
| Interstate War | 79 (4%) |

What is the relationship between dispute duration and escalation? Figure 4 gives us an interesting answer to this question, for we see that the longer a dispute continues, the higher the probability that higher levels of hostility will be reached.[20] More specifically, the likelihoods

that a dispute will end at the threat or display levels both decline steadily as the dispute continues and the likelihood that it will become a war rises steadily, while the chances that a dispute will remain at the use of force level seems to peak at about two years. In our judgment, the driving relationship here is between war and duration, and once again we must be cautious about causal inferences. We cannot determine whether the likelihood of war increases with each additional day that a dispute continues or whether disputes that become wars are inherently longer than those that do not become wars. Both relationships would yield the results shown in Figure 4, and both could be operative.

Our inferential ground is a bit more secure with respect to escalation level and year of dispute onset shown in Figure 5.[21] Modest trends are clearly evident in this figure. The likelihood that a dispute will end at the threat level declines steadily from about 0.08 to 0.04 over the 1816-1992 period. A similar decline, 0.30 to 0.19, is found with respect to displays of force. Escalation to the use of force becomes more likely (0.60 and 0.72 at the start and end of the period, respectively), and the chances of war double (0.025 to 0.05) over the period. These results suggest that there has been a shift towards higher levels of hostility in recent times.

Since we suspected that some of the dispute characteristics considered in these analyses were not independent of the others, a multivariate ordered logit analysis was done incorporating all of them.[22] Although not shown here, the multivariate results were

Table 15
Hostility Level Reached and Dispute Characteristics

| | Predicted Probabilities | | | | |
|---|---|---|---|---|---|
| Condition | Threat | Display | Force Use | War | LL (Sig(LL)) |
| Major-Major | 0.057 | 0.248 | 0.663 | 0.032 | -1749.8 (.18) |
| Major-Minor | 0.050 | 0.225 | 0.688 | 0.037 | -1750.5 (.49) |
| Minor-Minor | 0.045 | 0.209 | 0.705 | 0.041 | -1749.6 (.14) |
| 2 Originators | 0.046 | 0.215 | 0.699 | 0.039 | -1747.3 (.009) |
| 3 Originators | 0.058 | 0.252 | 0.658 | 0.031 | |
| 4 Originators | 0.073 | 0.291 | 0.611 | 0.025 | |
| No Joiners | 0.051 | 0.230 | 0.690 | 0.030 | -1708.7 (<.0001) |
| 1 Joiner | 0.031 | 0.159 | 0.761 | 0.048 | |
| 2 Joiners | 0.019 | 0.105 | 0.798 | 0.078 | |
| 3 Joiners | 0.012 | 0.067 | 0.798 | 0.123 | |
| 4 Joiners | 0.007 | 0.042 | 0.762 | 0.189 | |

LL = Log-Likelihood, Sig(LL) = significance of Log-Likelihood value
The Log-Likelihood value for the null or restricted model was -1750.7, and the set of 2,042 cases was used in the analyses.

essentially the same as the bivariate effects discussed above.

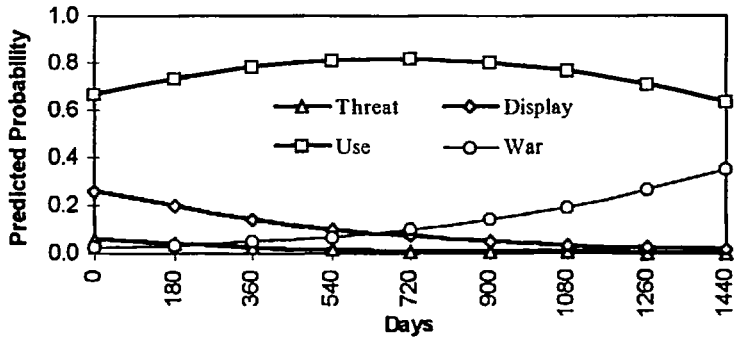
*Settlement*

Four types of dispute settlement are distinguished in the data collection, and the distribution of these across all 2,042 cases is shown in Table 16. In about three-quarters of the disputes, no settlement was reached, while the second most numerous type of settlement, negotiated, constitutes about one-sixth of the cases. Imposed settlements appear to be infrequent, relatively speaking, and the number of cases in which the type of settlement was unclear is relatively small.

Are there certain types of disputes in which specific types of settlement are more or less likely? To answer this question a series of bivariate multinomial logit analyses were done focusing upon the 1,992 cases where the type of settlement is clear (i.e., negotiated, imposed, or none). Multinomial logit analysis estimates an equation that assigns "group" membership probabilities as a function of the values of the independent variables. In this instance the "groups" are the three types of settlement, and the independent variables measure the power status of the participants, the degree of escalation in the dispute, the size of the dispute, the duration of the dispute, and the beginning year of the dispute. The estimated coefficients of multinomial logit analyses are difficult to interpret directly in a substantive way (Greene, 1990). Consequently, in Table 17 we show the predicted probabilities that emerge from the estimated equations and the associated Log-Likelihood values (which tell us something about the overall fit of the individual equations).[23]

Focusing first on the power status of dispute participants, we see from Table 17 that major-major disputes have a somewhat higher expected probability of a negotiated settlement and a marginally lower probability of an imposed one, although the relationship is statistically

Figure 4
Hostility Level Reached and Dispute Duration

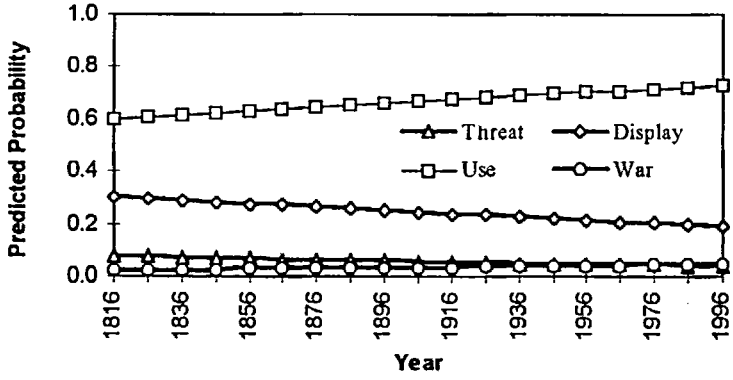


quite weak. A similar pattern is discernible with respect to minor-minor power disputes, with the addition of a slight shift towards no settlement. In contrast, major-minor disputes show a marked tendency to end in imposed settlements, a result that implies that the power discrepancy entailed in a major-minor confrontation may allow the stronger side to impose its will more frequently. However, we cannot draw this conclusion with any confidence from these analyses because we have not considered which side prevails.

Turning to our indicators of escalation, we see from Table 17 that disputes in which members of the target side do not respond militarily have a lower expected probability of settlement. When we look across the four levels of hostility, we see a fairly clear pattern, i.e., the higher the level of hostility reached, the higher the probability of settlement, which suggests that more decisive settlements are a side-product of higher hostility levels. This effect is most clear at the war level where Table 17 shows that a very strong association between the escalation to war and type of settlement. Disputes that reach this stage are very unlikely to remain unsettled, and the probabilities of a negotiated or an imposed settlement are both quite high (approximately .4 and .58, respectively) in wars.

Table 17 also tells us that as the number of originators increases, the probability of an imposed settlement also increases and the probabilities of a negotiated or no settlement decrease. It also shows that the number of states joining a dispute is associated with a significant decline in the likelihood of no settlement and a dramatic increase in the likelihood of negotiated and imposed settlements. According to these estimates, with six or fewer joiners the probability of a negotiated settlement is greater than the probability of an imposed one, but this

Figure 5
Hostility Level and Onset Year



relationship is reversed when more than six states join. The Log-Likelihood values indicate that the "joiner effect" is significantly stronger than the "originator effect."

Table 16
Distribution of Disputes by Type of Settlement

| Settlement Type | No. of Disputes |
|---|---|
| Negotiated | 342 (17%) |
| Imposed | 143 (7%) |
| None | 1507 (74%) |
| Unclear | 50 (2%) |

On a variety of grounds, it could be argued that disputes that entail losses of life may tend towards different settlements than those that do not, e.g., negotiated settlements become less likely due to hardened positions that seem to accompany fatalities. The last rows of Table 17 contain the results of the bivariate analysis of fatalities, measured here simply as zero or greater than zero, and settlement type. It would appear that if deaths are incurred in the course of a dispute, a slight decrease in the probability of a negotiated settlement and a slight increase in the probability of an imposed settlement are to be expected. On the whole, however, this relationship is rather weak, statistically speaking.

It would seem reasonable to suppose that the likelihoods of the settlement options considered here would not remain constant over the course of a dispute. For example, one might postulate that, with the passage of time, disputing states become less conciliatory as their "sunk costs" rise and as a consequence the probability of a negotiated settlement declines. Or one might speculate that the longer a dispute goes on, the greater the likelihood that the two sides are stalemated since neither side can or will bring the dispute to a close. In these instances it might be expected that the probability of no settlement will increase. Figure 6 addresses this question and gives a rather clear answer.[24] The longer a dispute goes on, the higher the probability that it will be settled, either by negotiation or imposition. When we look at the likelihoods of the latter, an interesting pattern emerges. The probability of an imposed settlement rises continuously over the life-span of a dispute, while the probability of a negotiated settlement peaks at about seven years. Since the vast majority of the disputes in the data set are shorter than this, however, we must be cautious in interpreting this finding, for the number of cases upon which it is based is rather small. We do have confidence in the overall finding that the longer a dispute lasts, the higher the probability that it will be settled.

Is there a trend in the way in which disputes are settled over the 177 year period under consideration? Figure 7 presents evidence that this is clearly so.[25] It appears that the likelihood of no settlement rises

steadily over the time span and the probabilities that imposed or negotiated settlements obtain both decline rather dramatically as we approach the present. Various potential explanations for why this trend toward no settlement exists can be put forth, but evaluating these lies beyond the scope of this paper. Suffice it to say that this is a puzzle worthy of further investigation.

In the previously discussed bivariate analyses of settlement patterns, thirteen dispute characteristics were considered. Multivariate multinomial logit analysis of all these factors together revealed a subset of five that consistently showed themselves to be highly associated with settlement type. These were: War/No War, Reciprocated/ Not Reciprocated, Major-Minor/Not Major-Minor, Duration, and Onset Year. A multivariate multinomial logit of these factors yielded a Log-Likelihood value of -1156.6, which is significantly different from the null model at well beyond the .0001 level of significance. The

Table 17
Settlement Type and Dispute Characteristics

| | Predicted Probabilities | | | |
|---|---|---|---|---|
| Condition | Negotiated | Imposed | None | LL (Sig(LL)) |
| Major-Major | 0.198 | 0.058 | 0.744 | -1399.0 (.45) |
| Major-Minor | 0.155 | 0.108 | 0.737 | -1387.5(<.0001) |
| Minor-Minor | 0.179 | 0.048 | 0.773 | -1390.3 (<.0001) |
| Not Reciprocated | 0.115 | 0.044 | 0.841 | -1360.5 (<.0001) |
| Reciprocated | 0.228 | 0.100 | 0.672 | |
| Threat | 0.102 | 0.000 | 0.898 | -1389.6 (<.0001) |
| Display | 0.179 | 0.023 | 0.798 | -1389.6 (<.0001) |
| Use of Force | 0.162 | 0.064 | 0.774 | -1396.0 (.02) |
| War | 0.395 | 0.579 | 0.026 | -1282.2 (<.0001) |
| 2 Originators | 0.175 | 0.069 | 0.756 | -1396.7 (.04) |
| 3 Originators | 0.145 | 0.090 | 0.765 | |
| 4 Originators | 0.118 | 0.116 | 0.766 | |
| 5 Originators | 0.095 | 0.148 | 0.756 | |
| No Joiners | 0.165 | 0.063 | 0.771 | -1374.9 (<.0001) |
| 1 Joiner | 0.200 | 0.089 | 0.711 | |
| 2 Joiners | 0.237 | 0.123 | 0.640 | |
| 3 Joiners | 0.273 | 0.166 | 0.562 | |
| 4 Joiners | 0.305 | 0.216 | 0.479 | |
| No Deaths | 0.167 | 0.068 | 0.765 | -1172.9* (.02) |
| Deaths | 0.127 | 0.097 | 0.776 | |

LL = Log-Likelihood, Sig(LL) = significance of Log-Likelihood value
* This Log-Likelihood value is not directly comparable to the others because it is based on the smaller sample of 1,746 cases with known fatalities.

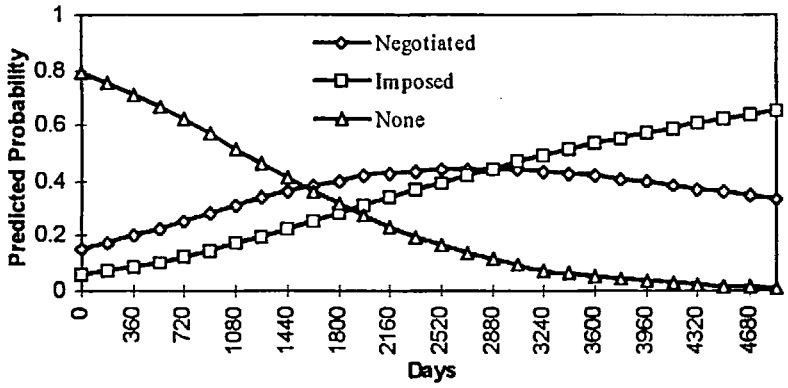
coefficients and predicted probabilities[26] for four of these factors (War/No War, Reciprocated/Not Reciprocated, Major-Minor/Not Major-Minor, Onset Year) were remarkably similar to those obtained in the bivariate analyses and shown in Table 17. The effect of dispute duration on settlement type is somewhat different in the multivariate analysis, for when we control for the effects of the other four factors we find that the rise in the probability of settlement (or decline in the probability of no settlement) is less dramatic, as is the rise in the probability of an imposed settlement. And throughout the course of a dispute, the probability of a negotiated settlement is higher than the probability of an imposed one in these more refined estimates.

*Outcome*

Within the data set eight dispute outcomes are differentiated, and these, along with their relative frequencies, are listed in Table 18. As discussed earlier, Victory and Yield are more decisive outcomes in that a winner and a loser are more evident at the conclusion of the dispute. Stalemate, and perhaps Compromise, are less decisive outcomes. The Released category is a rather special one since it applies principally to a particular class of disputes, namely, seizures of things or people. The last category, Unclear, is reserved for cases where the sources were ambiguous or gave conflicting interpretations of the outcome. Table 18 shows clearly that Stalemate has been the preponderant outcome in most disputes, accounting as it does for about two-thirds of the cases. Victory and Yield each constitute about nine percent of the 2,042 cases, and Compromise is found to be a relatively rare dispute outcome. It would appear, then, that most disputes do not end with a decisive outcome, i.e., with a clearly defined winner and loser.

A question of interest here is whether or not disputes with

Figure 6
Settlement Type and Dispute Duration

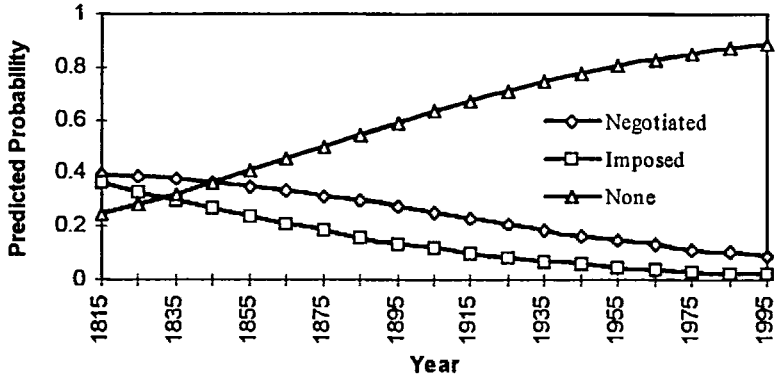


different characteristics exhibit significantly different outcome propensities, and Table 19 provides a largely affirmative answer to this query. In this table we show the results of bivariate multinomial logit analyses which focus on the first six types of outcome listed above that together comprise 1,779 cases[27], and to summarize the effects of the various dispute characteristics we once again show the predicted probabilities and Log-Likelihood values that emerged from the analyses[28].

Examining first the power status of the participants, we find that having a major power on both sides of a dispute does not significantly affect the outcome type of a dispute. The same is not true for major-minor and minor-minor confrontations, however. In the former, the more decisive outcomes, Victory and Yield, are significantly more likely, and in the latter they are significantly less likely. This is perhaps to be expected given that major-minor confrontations tend to be lopsided ones, but we must be careful in our interpretation of these results since we do not know from these analyses whether or not it was the major power side that tended to prevail more in victory and the minor power side to yield more in defeat; the pattern we have found is consistent with this interpretation but does not confirm it. And we should not overlook the fact that stalemate is still the most prevalent outcome in major-minor disputes. Minor-minor disputes, in contrast to major-minor disputes, have a lower likelihood of ending with a decisive outcome and a higher likelihood of stalemate or compromise outcomes.

The next set of characteristics considered in Table 19 relates to the degree of escalation that disputes achieve and the likelihood of various outcomes. Although significant associations are present for all

Figure 7
Settlement Type and Dispute Onset Year



four indicators, no simple pattern emerges from the results. Reciprocated disputes are more likely to end in victory or compromise and less likely to end in stalemate or one side yielding to the other. An explanation for this pattern is not readily self-evident. The situation is a little clearer for our indicators of the highest level of hostility reached in a dispute—Threat, Display, Use of force, and War—which, in theory, constitute a crude ladder of escalation. Looking across these four stages of escalation we note that the probability of victory steadily increases, while the likelihood of the other three outcomes declines. The strongest and most dramatic increase in the probability of victory is associated with the war stage of escalation, a finding that confirms the speculation that, whatever their shortcomings as conflict resolution mechanisms, wars do have the advantage of producing unambiguous winners and losers rather frequently.

What happens to the likelihood of various outcomes as a dispute becomes larger? As we saw above, most disputes (93%) begin as one-on-one confrontations and almost all (>99%) have four or fewer participants involved on the first day. Therefore, the variance in the Originator variable shown in Table 19 is rather constrained. An effect is nevertheless present, and this is that disputes with more originating states are more likely to have more decisive outcomes (Victory or Yield) and less likely to end in stalemate or compromise. The overall effect of this variable is one of the weakest found, however. The number of states that join a dispute after the first day has a much stronger impact on the outcome of a dispute.[29] Table 19 shows that disputes that expand in size through joining have a substantially lower probability of ending in stalemate and a significantly higher probability of ending in victory for one side or the other. Compromise is slightly more likely in expanded disputes, while the odds of one side yielding to the other seem unaffected by joining behavior. Together these findings suggest that larger disputes are more likely to have a victorious outcome and less likely to end in stalemate.

Table 18
Distribution of Disputes
by Type of Outcome

| Outcome Type | No. of Disputes |
|---|---|
| Victory for side A | 117 (6%) |
| Victory for side B | 55 (3%) |
| Yield by side A | 58 (3%) |
| Yield by side B | 129 (6%) |
| Stalemate | 1297 (64%) |
| Compromise | 123 (6%) |
| Released | 170 (8%) |
| Unclear | 93 (5%) |

One might expect that there is a systematic difference between the outcomes of disputes in which deaths occur and those without any fatalities. Table 19 confirms this, although the effect is weaker than

others found in these analyses. Disputes with deaths tend to have a lower likelihood of ending in victory or yield, and these declines are mostly balanced by an increase in the probability of a stalemate. In short, incurring fatalities does not seem to enhance the chances of a decisive outcome for either side of a dispute; on the contrary, it appears to increase the likelihood that the dispute will remain unresolved.

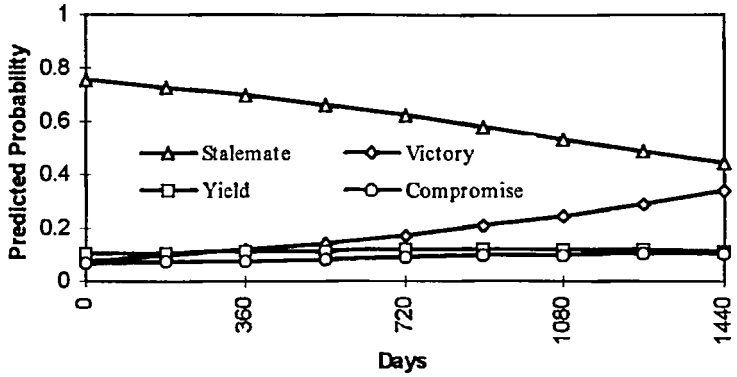
Figure 8 displays the relationship between the mean duration of disputes and outcome likelihoods that the multinomial logit analysis uncovers.[30] Since 99 percent of disputes are less than 1,440 days (approximately four years) in duration, we use this as the maximum value in this graph. The main conclusion that emerges from an examination of this graph is unambiguous; to wit, the longer a dispute lasts, the higher the probability that it will end in a victory for one side or the other and the lower the probability of a stalemate. The chances

Table 19
Outcome Type and Dispute Characteristics

| Condition | Predicted Probabilities | | | | LL (Sig(LL)) |
|---|---|---|---|---|---|
| | Victory | Yield | Stale-mate | Compro-mise | |
| Major-Major | 0.102 | 0.130 | 0.695 | 0.073 | -1560.8 (.68) |
| Major-Minor | 0.134 | 0.164 | 0.654 | 0.048 | -1531.7 (<.0001) |
| Minor-Minor | 0.071 | 0.061 | 0.786 | 0.082 | -1527.9 (<.0001) |
| Not Reciprocated | 0.040 | 0.127 | 0.789 | 0.044 | -1516.6 (<.0001) |
| Reciprocated | 0.150 | 0.085 | 0.674 | 0.092 | |
| Threat | 0.000 | 0.153 | 0.837 | 0.010 | -1546.0 (<.0001) |
| Display | 0.009 | 0.168 | 0.731 | 0.092 | -1516.1 (<.0001) |
| Use of Force | 0.091 | 0.083 | 0.757 | 0.069 | -1551.4 (<.0001) |
| War | 0.816 | 0.026 | 0.145 | 0.013 | -1440.3 (<.0001) |
| 2 Originators | 0.094 | 0.101 | 0.736 | 0.0695 | -1556.4 (.02) |
| 3 Originators | 0.116 | 0.133 | 0.683 | 0.0674 | |
| 4 Originators | 0.142 | 0.172 | 0.622 | 0.0640 | |
| No Joiners | 0.086 | 0.106 | 0.741 | 0.068 | -1540.5 (<.0001) |
| 1 Joiner | 0.118 | 0.107 | 0.698 | 0.077 | |
| 2 Joiners | 0.160 | 0.106 | 0.647 | 0.086 | |
| 3 Joiners | 0.213 | 0.104 | 0.589 | 0.095 | |
| 4 Joiners | 0.277 | 0.099 | 0.523 | 0.102 | |
| No Deaths | 0.085 | 0.115 | 0.738 | 0.062 | -1293.7* (.006) |
| Deaths | 0.035 | 0.056 | 0.826 | 0.083 | |

LL = Log-Likelihood, Sig(LL) = significance of Log-Likelihood value
* This Log-Likelihood value is not directly comparable to the others because it is based on the smaller sample of 1,550 cases with known fatalities.

Figure 8
Outcome Type and Dispute Duration

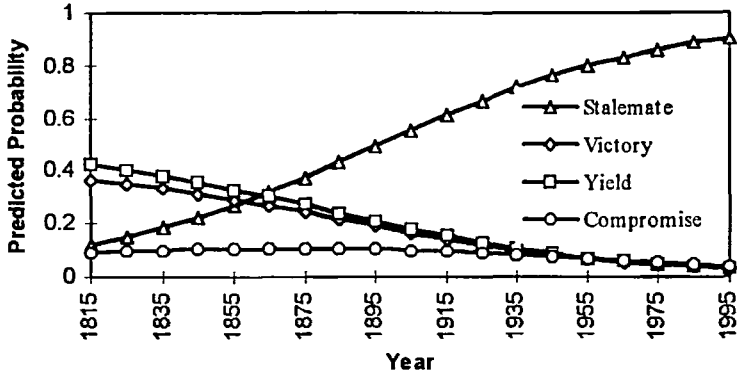



of a compromise solution or one side yielding to the other remain approximately constant over the "life-span" of a dispute. Together these findings suggest that the longer parties are involved in a dispute, the more hardened their positions become, and the less willing they are to accept outcomes other than victory.

The last factor to be considered here that may affect dispute outcomes is year of onset. Figure 9 shows the predicted probabilities of the four possible outcomes derived from the multinomial logit analysis with onset year as the independent variable.[31] Again, the pattern is dramatically clear; the more recent the onset of a dispute, the higher the probability that it will end in stalemate. And, throughout the period, the more decisive outcomes, victory and yield, steadily decline in likelihood. We do not have a ready explanation for this finding, but among other factors that may have contributed to the increase in stalemates are: a) the increase over time in minor power disputes that have a greater tendency to end in stalemate, b) the intervention of the former colonial powers since decolonization in their still recognizable spheres of influence and imposition by them of temporary and indecisive solutions to conflicts arising there, c) the increased involvement of regional and international organizations in disputes that brings them to an end before any resolution of the issues is achieved. The implications of this finding are potentially profound; it suggests that while threats, displays, and uses of force may have "resolved" conflicts in the more distant past, they have not been very successful in doing so in the more recent past and are even less likely to be successful in the future.

Given that the dispute characteristics we have examined here are related to one another, it was advisable to conduct a multivariate

Figure 9
Outcome Type and Onset Year




analysis so that we could better see the "true" impact of the individual factors. Several such analyses were carried out, the most informative of which included most of the factors listed in Table 19.[32] An examination of the predicted probabilities generated by the estimated multivariate multinomial equation revealed that weaker versions of the results reported in Table 19 were generally obtained. That is, the direction of the effects remained unchanged, but their magnitudes were reduced. The relationship between dispute duration and outcome was, in particular, substantially attenuated, with the result that the curves shown in Figure 8 are much flatter in the multivariate case. A similar, although less dramatic, difference was obtained with respect to the relationship between dispute outcome and onset year. The probability of a stalemate still increases steadily over time when other dispute characteristics are controlled for, and the probabilities of victory and yield as outcomes still steadily decline. And the probability of a compromise outcome, which showed a slight peakedness in the bivariate analysis, has a more pronounced peak in the multivariate results. But the overall conclusion derived from the bivariate analysis remains; i.e., more decisive outcomes are significantly less likely now than in the past.

## CONCLUSION

In a data collection as large and rich as the MID data set is, there are clearly many more patterns to be found. Different states, for example, show markedly different tendencies to become involved in militarized disputes, and particular pairs of states exhibit a greatly disproportionate proclivity to threaten, display, and use force in their relations. We reluctantly leave these and a host of other interesting

questions to future study and invite the scientific community to use the data set to advance our understanding of militarized interstate conflict. Our principal aim in this paper has been a more modest one, i.e., to lay the groundwork for this much-needed research by describing the contents of the new MID data set, explaining the procedures used to generate it, and exploring some of the patterns and puzzles that it contains. We hope that other researchers will find the data set as useful as we believe it to be and that, with it, those who are or soon will be engaged in the scientific study of international conflict will be better able to identify the causes of war and conditions of peace.

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In addition to the present authors, numerous faculty and students at the University of Michigan and elsewhere participated in the update and expansion of the data. Both Phil Schafer and Paul Hensel helped to sharpen coding rules and define new variables as well as assist in the collection of disputes. At Michigan a large number of students helped to code the data, including Ricardo Rodriguez, Robert Packer, Scott Symington, Rose Varga, Andrew Haber, Heide Ilgenfritz, Susan Im, Madalena Nowak, Lara Hayes, Yaping Guo, Laura Shinozaki, and Frank Krajecki. Zeev Maoz and students at the University of Haifa provided a preliminary list of "new" disputes since 1976. Frank Wayman helped to create and clarify the outcome and method of settlement coding, while Paul Huth did the same for the identification of the revisionist state and the type of revision. Finally, none of this would have been possible without the efforts of Glenn Palmer, Andrew Enterline, Peter Partell, Paul Senese, and Ali Carkoglu at the State University of New York at Binghamton who helped to bring the data set to completion.

## NOTES

1. For a recent review of the state of our knowledge in this area see Bremer and Cusack, 1996.
2 The earliest editions of the data set were based to a great extent on the dissertation designs of Charles Gochman, Michael Mihalka, and Zeev Maoz.
3. For a slightly different categorization see Siverson and Tennefoss, 1982.
4. The end date in such instances would then be the last "post resolution" incident prior to a six month gap of no militarized behavior in the absence of any other agreement to end the dispute.
5. The results reported here are based on version 2.0 of the data set. Since minor adjustments to the data set will continue and extensions may be made, subsequent versions may contain more or fewer cases.

6. These three independent variables pose some troublesome methodological problems because of their actual and potential interrelationships. There is, for example, a clear upward trend in the size of the system over time; hence, system size and onset year should be and are significantly correlated. Similarly, a positive time dependency can and often does produce the appearance of a trend. And, of course, the presence of serial dependency undermines the basis for significance assessments due to the loss of independent observations. In addition, we need to take into consideration that the dependent variable, number of disputes, is a "count" variable, since it cannot be less than zero and may only take on integer values.
7. The Negative Binomial regression model is the most appropriate of the techniques used because it assumes that the dependent variable is a "count" variable but does not assume, as Poisson regression does, the basic rate of dispute generation is constant over all years.
8. The Log-Likelihood for this equation was -464.7, which makes it significantly different from the null or restricted model at well beyond the .0001 level of significance.
9. The exponential distribution tells us what proportion of events, having a constant and uniform termination rate of l, will be longer than t time units by solving the equation $e^{-\lambda t}$. From this cumulative distribution we can compute the number of MIDs that should fall within various ranges of duration. The value of l used here was 1/143.5, the reciprocal of the mean duration value (see Olkin, Gleser, and Derman, 1994).
10. In the duration analyses reported in this section the SURVIVAL procedure in LIMDEP 6.0 was used which generates maximum likelihood parameter estimates.
11. The power status, reciprocation, and hostility level variables were introduced as binary (dummy) variables.
12. The first and third quartiles mark, of course, the points where 25% and 75% of the disputes are expected to be shorter than these durations, respectively, while the second quartile (or median) indicates the duration threshold below which half of the disputes are expected to fall.
13. The range of 2 to 4 originators encompasses 99% of the disputes, as does the range of 0 to 4 joiners.
14. The Minor-Minor and Threat variables were excluded and implicitly incorporated in the constant term, since both of these are members of mutually exclusive sets of binary (dummy) variables.
15. The Log-Likelihood value for the multivariate equation was -4378.2, significant at well beyond the .0001 level.
16. Orded logit analysis is appropriate when the values of the dependent variable are ranked categories. In this instance no deaths was assigned the category value zero (the lowest rank), 1-25 deaths the value one, and so on, with the highest category, six, reserved for those disputes with 1,000 or more deaths. The independent variables were measured in the same manner as described above in the duration analyses. The highest level of hostility reached was not included in these analyses because virtually all

disputes with deaths are in the use of force or war categories. Hence, little is to be learned about fatality levels from this dispute characteristic.
17. Reciprocation was almost always present in clashes because by definition a clash involves forces from both sides.
18. These conditions were coded as separate binary variables in these analyses.
19. The 2 to 4 originators range encompasses 99% of the cases, as does the 0 to 4 joiners range, which is why these were used to compute the predicted probabilities shown in the table.
20. The Log-Likelihood for the equation used to construct this figure was -1676.9, which is significantly different from the null (restricted) model at well beyond the .0001 level. This value indicates that it is the strongest of the bivariate associations considered here.
21. The associated Log-Likelihood of the estimated equation upon which this figure is based was -17435.1, significant at beyond the .0001 level.
22. Since the three power status binary variables are mutually exclusive, one of them, Major-Major, was omitted from the analysis and implicitly captured in the constant term. The Log-Likelihood value was -1640.5, significant at well beyond the .0001 level.
23. The Log-Likelihood value for the "null" or "restricted" model in all these analyses is -1399.8, except where Deaths/No Deaths is the independent variable, when the value is -1176.8. The significance levels reported in Table 17 refer to the difference between these values and the indicated value.
24. The Log-Likelihood value for the estimated equation used to generate this figure was -1372.9 (significance <.0001).
25. With a Log-Likelihood value of -1294.3 (significance <.0001), this factor was second only to War/No War in its importance.
26. The predicted probabilities for each factor were derived by setting the other factors at their means.
27. The outcome "Released" was omitted from the analyses because it mainly applies to only a specific subclass of disputes, and "Unclear" cases were not considered for obvious reasons.
28. The Log-Likelihood value for the "null" or "restricted" model in all these analyses is -1561.6, except where Deaths/No Deaths is the independent variable when the value is -1299.9. These different values arise because the latter analysis is based on the 1,550 observations that remain after cases with missing fatalities are removed from the sample. The significance levels reported in Table 17 refer to the difference between these values and the indicated value.
29. The range of this variable is also rather constrained since about 99% of disputes have four or fewer joiners.
30. The Log-Likelihood for the equation used to generate this figure was -1536.3, significantly different from the null model at well beyond the .0001 level.

31. The Log-Likelihood value for this analysis was -1398.3, making it the strongest and most significant association found.
32. The equation included Major-Minor, Minor-Minor, Reciprocation, Use, War, Originators, Joiners, Duration, and Onset Year. Major-Major and Threat were dropped because they are members of mutually exclusive sets and therefore must be part of the constants. Display was dropped (i.e., merged with the constant) because it substantially raised the standard errors of the Use and War coefficients and added nothing to the overall fit. The Deaths variable was not included in the final equation because it contributed nothing to the fit of the model and, due to missing fatality values, including it reduced the N and increased the standard errors of the other coefficients. The N and Log-Likelihood for this equation were 1,779 and -1206.6, respectively, the latter being significant at well beyond the .0001 level.

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