

## 4 The Polarity of the System and International Stability: An Empirical Analysis

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The declining influence of the superpowers and the continuing but gradual transformation of the international system away from a rigid bipolarity have renewed interest in the important theoretical question of the relative stability of bipolar and multipolar systems. This question has generated considerable debate in the literature. The most widely-shared view, which many regard as a conventional wisdom,<sup>1</sup> is that multipolar systems are more stable than bipolar systems. A variety of theoretical explanations are advanced in support of this generalization. Balance of power theorists refer to the greater number of possible coalitions that might form against any potential aggressor.<sup>2</sup> In addition, the uncertainty concerning these potential defensive coalitions--which increases with an increasing number of actors--itself contributes to the stability of multipolar systems.<sup>3</sup> A further argument derived from balance of power theory is that multipolar systems are more stable because they incorporate the role of a "balancer," a perpetually unaligned state which helps to deter war by constantly threatening to shift its decisive political and military support to the weaker coalition.<sup>4</sup> Deutsch and Singer advance a different set of arguments for the stability of multipolar systems: the increased number of interaction opportunities in multipolar systems generate pluralist cross-cutting pressures which reduce the likelihood of mutually reinforcing antagonisms; the level of attention allocated to any single state in multipolarity is reduced, increasing the stability of the system because some minimal level of attention is a prerequisite for conflict; and arms races escalate more slowly in multipolar systems.<sup>5</sup>

A dissenting view is presented by Waltz, who argues that bipolarity is more stable than multipolarity. Bipolar systems are characterized by the following: fewer sources of conflict; the absence

of peripheries which invite national expansion; a well-defined status quo, greater predictability of international behavior, and consequently a diminished likelihood of a war by miscalculation; persistent crises which result in the vigilant maintenance of the status quo; and the inconsequential impact of the actions of third states.<sup>6</sup> Rosecrance counters that motivations for expansion may be increased rather than decreased in bipolar systems. Bipolarity may encourage the perception of a zero-sum game, where minor shifts in power on the periphery of international politics may acquire a disproportionate significance because of their symbolic value. Rosecrance rejects Waltz's argument that recurrent crises are stabilizing, argues that the reduced intensity or significance of wars in a multipolar system compensates for their increased frequency, and speculates that a combined "bi-multipolarity" may be the most stable system.<sup>7</sup>

As the above generalizations suggest, most of the debate concerning the relative stability of bipolar and multipolar systems is conducted at the theoretical-explanatory level rather than the descriptive-empirical level. It is only recently that these theoretical arguments have been subjected to systematic empirical test.<sup>8</sup> At first, the theoretical concern with why the relationship ought to be true distracted attention from the empirical question of whether in fact it is true. Of course, all empirical analysis must be guided by theory. But theoretical analysis of the polarity/stability question has now advanced to the point that an adequate framework now exists for an empirical analysis to resolve, or at least redefine and redirect, the theoretical debate. It is to this question of the empirical relationship between polarity and stability that this paper is directed.

## RESEARCH DESIGN

### The Empirical System

The few efforts to test empirically the hypotheses relating polarity and stability generally rely on the data set generated by Singer and Small.<sup>9</sup> While this compilation is quite useful for the empirical analysis of many theoretical questions, it is of limited utility for the question under consideration here. A major shortcoming is that the data is restricted to the period 1815-1980, and a brief survey will suggest that the international system has been multipolar for all but the last three decades of the post-Napoleonic

period. This precludes a sufficient number of cases or adequate controls over (or randomization of) background variables which is necessary to provide a reasonable assurance that any observed associations between polarity and stability are not spurious.<sup>10</sup> This is particularly serious since the single period of bipolarity coincides with the development of nuclear weapons and other revolutionary changes in the postwar period, which preclude an analysis of the independent causal effects of polarity and nuclear technology. For these reasons the 1816-1965 period does not constitute an adequate empirical base for the testing of hypotheses concerning the relationship between polarity and stability, and it is necessary to extend the temporal domain of the system in order to incorporate a richer body of historical data, a larger number of cases, and greater variation in the relevant variables.

The question now is how far back the temporal domain can be extended without incurring the loss of theoretical relevance. Since the central assumption underlying both the hypotheses on polarity and stability and the implicit balance of power theory from which many of them are derived is the existence of a decentralized system of sovereign territorial states,<sup>11</sup> we can begin no earlier than the origins of the modern state system.<sup>12</sup> These origins are often traced to the Treaty of Westphalia in 1648. This is excessively legalistic, however, for states were interacting and practicing "balance of power politics" long before the formal codification of international law at Westphalia. In order to incorporate a rich body of historical data (including the classic bipolarity of the Hapsburg/Valois period of the early 16th century), our temporal domain will be extended back to the beginning of the territorial system in the late 15th century. More precise temporal boundaries are required for the purposes of an aggregate data analysis, however, so the year 1495 shall be taken as the origin of the system. It is this date that marks the fusion of several separate historical processes: the internal centralization of power within the major territorial states of Europe, the decline of the universal secular authority of the Pope and Holy Roman Emperor, the coalescence of these states into an interdependent system of power relations, and the emergence of a global economy centered in Europe and sustained by sea power.<sup>13</sup>

### The Dependent Variable

Having identified the period 1495-1975 as the temporal realm over which the empirical analysis is to

be conducted, the task now is to operationalize and measure the key theoretical concepts. "Stability" is one of the more ambiguous concepts in the international relations literature. It seems to have two distinct and not fully compatible meanings: the maintenance of the status quo and the relative absence of war in the system.<sup>14</sup> Most of the bipolarity/multipolarity debate, however, conceives of stability as the relative absence of war. The amount of war is the criterion used by Rosecrance, Haas, and Ostrom and Aldrich,<sup>15</sup> and is central to the definition used by Deutsch and Singer.<sup>16</sup> Furthermore, even conceptions of stability in terms of the status quo cannot entirely escape from the notion of war, for war is generally the primary means by which fundamental changes in the status quo are effected.<sup>17</sup> Thus, stability will be conceptualized here as the relative absence of war.<sup>18</sup>

Not all wars are considered "destabilizing," however. Deutsch and Singer, for example, refer only to "large-scale war," as noted above. (This is linked, of course, to the conceptualization of stability as the maintenance of the status quo, for it is generally only "large-scale war" which generates fundamental system change.) Since wars between smaller states are generally less destructive and have little bearing on what is conventionally thought of as the stability of the system, only wars involving Great Powers shall be considered in this analysis.<sup>19</sup> Civil wars shall also be excluded, unless they become internationalized by the intervention of an outside state in support of the insurgents against the existing regime. Nor will imperial or colonial war on the periphery of the system be included; while these wars may lead to instability (e.g., as suggested by a Marxist-Leninist analysis), they do not by themselves constitute instability.<sup>20</sup>

Since only wars involving Great Powers are to be considered here, the Great Powers must be defined and identified. A Great Power can be defined generally as a state which plays a major role in international politics with respect to security-related issues, defined operationally in terms of the following criteria: possession of a high level of military capabilities, providing for reasonable self-sufficiency in security matters and permitting the conduct of offensive as well as defensive military operations; participation in international congresses and conferences; de facto identification as a Great Power by an international conference or organization; admission to a formal or informal organization of Powers, e.g., the Concert of Europe; participation in Great Power guarantees, territorial compensations, or

partitions; and generally treatment as a relative equal by other Great Powers (e.g., protocol, alliances, negotiations, etc.).<sup>21</sup> The modern Great Power system defined by the application of these criteria to the historical literature is as follows: France, 1495-1975; England/Great Britain, 1495-1975; Austrian Hapsburgs/Austria/Austria-Hungary, 1495-1519, 1556-1918; Spain, 1495-1519, 1556-1808; Ottoman Empire, 1495-1699; United Hapsburgs, 1519-1556; the Netherlands, 1609-1713; Sweden, 1617-1721; Russia/Soviet Union, 1721-1975; Prussia/Germany/West Germany, 1740-1975; Italy, 1861-1943; United States, 1898-1975; Japan, 1905-1945; China, 1949-1975.<sup>22</sup>

#### The Wars: Criteria of Inclusion and Exclusion

There is no existing compilation of international wars fully satisfactory for our purposes here. Existing compilations are either too limited in temporal scope, or else they fail to identify explicitly the operational criteria by which wars are included or excluded. In order to compensate for the deficiencies in each of these compilations, a combination of the Wright, Sorokin, Woods and Baltzly, and Singer and Small data sets will be used to identify all interstate wars involving the Great Powers. For the 1495 to 1815 period, the Wright, Sorokin, and Woods and Baltzly compilations will be used; only wars involving a Great Power included in at least two of these three will be included here. From the resulting list, civil wars and imperial wars are excluded. In addition, the Singer-Small battle death criterion is used to eliminate all wars not involving over 1,000 battle deaths among the Great Powers (or an annual average of 1,000), in order to distinguish between wars and lesser incidents such as border clashes. For the period after 1815, the Singer-Small compilation is used with only minor modifications. The resulting compilation of interstate wars involving the Great Powers, along with an elaboration of the procedures by which they were generated, can be found in my War in the Modern Great Power System, 1495-1975.<sup>23</sup>

This compilation serves as the data base from which the stability of the system at any point in time can be determined. In addition, certain subsets of this compilation can be utilized to reflect different levels of stability. It might be suggested, for example, that an alternate measure of stability would be the amount of war between the Great Powers, or Great Power war, rather than the amount of war involving one or more Powers.

### Measurement of War Indicators

War is a multidimensional concept, and these various dimensions reflect different dimensions of the stability of the system. One measure of stability is the number of Great Powers participating in the war, defined as the extent of war. The duration of war refers to its total elapsed time, and is measured in years.<sup>24</sup> The magnitude of war, reflecting a joint spatial and temporal dimension and combining the extent and duration indicators, is the total nation-years of war for all participating powers. The human destructiveness or severity of war is measured by the number of battle-connected deaths. Whereas the severity of war refers to the losses of life in absolute terms, the intensity of war reflects the human destructiveness in relative terms, and is the ratio of battle deaths to population.<sup>25</sup> The concentration of war in space and time is the ratio of battle deaths to nation-years of war.

Another important dimension of war is its frequency, or number of wars in a given period. The concept of the frequency of war has a different conceptual status than the other dimensions, however. Whereas the other dimensions refer to the properties of the wars themselves, frequency is a property of time. In fact, the other indicators can be aggregated over time to generate a set of measures of the amount of war per unit of time (e.g., number of battle deaths per 10-year period). Thus, for each dimension of war, we have two distinct units of analysis: war and time. We can compare different "states" of polarity either in terms of their average yearly amount of war or the characteristics of the average war in that state. Neither unit of analysis or set of indicators is inherently less meaningful than the other, but they have slightly different theoretical interpretations.<sup>26</sup>

In addition, some theoretical discussions of the polarity/stability issue seem to refer not to these average amounts of war, but to the relative number of years each system is at peace. Thus we can calculate the percentage of years in which war is underway (both wars involving the Powers and Great Power wars) for each "state" of system polarity. One further measure of stability that is of some theoretical interest is the frequency of "general wars" (or hegemonic wars), operationally defined as those involving the leading power in the system, an opposing coalition of other great powers, the overall involvement of at least  $(n+1)/2n$  of the  $n$  Great Powers in the system, and an intensity of over 1,000 battle deaths per million European population.<sup>27</sup> The various dimensions of

each of the 119 wars since 1945 are then measured. The resulting compilation of war data has been published elsewhere.<sup>28</sup>

### The Independent Variable

Having defined, operationalized, and measured the concept of the stability of the system, let us turn now to the independent variable. A brief survey of international history suggests that the conventional conceptualization of polarity as a dichotomy is inadequate, for it fails to deal with the phenomenon of a single dominant power. It is necessary to conceive of unipolarity as well as bipolarity and multipolarity. Here polarity is conceptualized in terms of the distribution of military power, and essentially constitutes a trichotomous categorization of the distribution of power in the system. If a single state, unmatched by any other, attains a position of hegemony or dominance over the system, then the system is said to be characterized by unipolarity (e.g., Napoleonic Europe). If military capabilities are concentrated primarily in the hands of two states, separated by a considerable gap from all other states, then the system is defined as bipolar (e.g., the Cold War period). And if military capabilities are more widely distributed among a larger number of states, with no significant gap separating some Great Powers from others, then the system is defined as multipolar (e.g., 18th century Europe).

It should be emphasized that the polarity of the system is not operationally equivalent to the number of Great Powers. The number of Powers defines the size of the Great Power system; it says nothing, however, about the distribution of military power among the Powers. Polarity is a measure of the power configuration of the Great Powers, and is relatively independent of the number of Powers in the system (Kendall's tau-b = .13).<sup>29</sup>

The concept of the polarity of the system must also be analytically distinguished from the concept of the polarization of the alliance structure. Polarization refers to the pattern of alliance bonds in the system, which is independent of the number of centers of military power. A highly polarized alliance structure is one in which there exist two well-defined clusters of states, with many alliance bonds within each cluster but no bonds across clusters. This can occur in either a bipolar system (e.g., after World War II) or in a multipolar system (e.g., prior to World War I). The blurring of this conceptual distinction by defining polarity in terms of properties of alliance clusters<sup>30</sup> results in a

serious loss of analytical power. The consequent identification, for example, of both the pre-World War I and post-World War II as "bipolar," because both are characterized by polarized alliance structures, is to ignore a fundamental structural difference between the two periods.<sup>31</sup> The pre-World War I situation is characterized by a multipolar distribution of power capabilities and a polarized alliance structure, while the Cold War period is characterized by a "polarized bipolarity." To take another case, the European alliance configuration of 1756 was clearly polarized, but few would claim that the mid-18th century--often referred to as the "golden age" of the balance of power--was characterized by bipolarity. Thus, the conceptualization of polarity in terms of capability distribution rather than alliance clusters is more in accordance with the theoretical literature.<sup>32</sup> In addition, the treatment of polarity and polarization as two analytically distinct variables permits the analysis (in a subsequent study) of their individual as well as their interactive effects, thus enhancing explanatory power.

There is an additional conceptual problem underlying some of the confusion in the literature regarding the categorization of historical systems--is polarity conceived in global or continental terms? Some would argue, for example, that the post-World War II system was unipolar, given the U.S. atomic monopoly. But the U.S.S.R. at this time was the dominant continental Power, and it was the U.S.S.R., not the U.S., who was the target of a European military alliance. Given the fact that the European continent has historically been (and continues to be) the strategic center of the Great Power system, that global power is often evaluated in terms of its ultimate contribution to security from continental threats, and that noncontinental concentrations of military capabilities are most often not perceived as the primary threat by continental Powers (e.g., 19th century Britain or the United States immediately after World War II), a system will be classified as unipolar only if a leading global power also achieves hegemony on the European continent. If there exists, however, a noncontinental Power of sufficient strength to prevent (by its own actions or in combination with others) the leading continental Power from achieving a distinctly dominant position in Europe, the system cannot be classified as unipolar.<sup>33</sup>

The preceding discussion provides an analytical framework to guide an historical analysis of the polarity of the system over time. The resulting categorization is given in Table 4.1.<sup>34</sup>

TABLE 4.1  
Polarity of the modern great power system,  
1495-1975

Period	Polarity
1495-1556	Bipolarity
1556-1588	Unipolarity
1588-1659	Multipolarity
1659-1713	Unipolarity
1713-1797	Multipolarity
1797-1815	Unipolarity
1815-1945	Multipolarity
1945-1975	Bipolarity

## DATA ANALYSIS

Having operationally defined and measured the concepts of polarity and stability, we can now investigate the empirical relationship between them. For each of the historical periods identified in Table 4.1, the total amount of interstate war involving the Great Powers is computed, in terms of the dimensions defined previously. The amount of Great Power war along each of these dimensions is also computed, and the incidence of general war is determined. These data are then aggregated, over all periods of similar polarity and over all wars within each category of polarity. For each level of war, the average yearly amounts of war and the characteristics of the average war for each "state" of the system are then computed. These results are presented in Tables 4.2 and 4.3, respectively. In addition to these average amounts of war, the percentage of years that war is underway during each "state" of polarity is computed for both levels of war. Since the relatively continuous war involvement of the Ottoman Empire during the first two centuries of the Great Power system might introduce a bias into the analysis, the data are reanalyzed with the wars of Turkey excluded. These results are presented in Table 4.4.

It is clear from Tables 4.2 and 4.3 that the historical relationship between polarity and stability has not been congruent across all levels, dimensions, and units of analysis of war.<sup>35</sup> In terms of the frequency of war, multipolarity has tended to be slightly more stable or less war-prone. In terms of the extent, duration, and magnitude of war, it appears that multipolar periods have been more stable while the wars that do occur during those periods tend to be more serious. Wars have been particularly long and large in magnitude for unipolar states of the system. In terms of the severity of war, bipolar periods have been considerably more stable. Multipolar periods have generally been the least stable in terms of the severity, intensity, and concentration of war, particularly at the Great Power level. General wars have occurred most frequently during unipolar periods and never during bipolar periods. Bipolarity and multipolarity have been equally stable in terms of the relative number of years at peace, whereas unipolar systems have been more often characterized by war. Fewer Great Powers tend to be involved in war in a given time in bipolar periods than in the others. These findings demonstrate that the relationship between polarity and stability (or war-proneness) varies across the various empirical indicators of stability, and that the use of any single measure of stability would be extremely misleading.

TABLE 4.2  
Yearly amounts of war in unipolar,  
bipolar, and multipolar systems

War Indicator*	Polarity		
	Unipolarity	Bipolarity	Multipolarity
Years of system in each "state"	104	91	285
Interstate wars involving the Great Powers			
Frequency	.27	.32	.22
Extent	.62	.63	.49
Duration	1.6	1.0	.90
Magnitude	4.0	2.0	2.2
Severity	47,000	17,000	94,000
Great Power Wars			
Frequency	.17	.19	.10
Extent	.52	.46	.36
Duration	1.3	.72	.52
Magnitude	3.7	1.6	1.7
Severity	46,000	16,000	91,000
General Wars			
Frequency (per 100 years)	3.8	0	2.1

\*The frequency of war is measured in terms of incidence per year; extent is measured in number of nation-wars per year; duration is measured in number of years of war beginning in the average one-year period; magnitude is measured in nation-years of war per year; severity is measured in battle deaths per year.

TABLE 4.3  
Characteristics of the average war in unipolar,  
bipolar, and multipolar systems

War Indicator*	Polarity		
	Unipolarity	Bipolarity	Multipolarity
Interstate wars involving the Great Powers	(28 wars)	(29 wars)	(62 wars)
Extent	2.3	2.0	2.3
Duration	6.0	3.2	4.1
Magnitude	15.0	6.2	9.9
Severity - mean	175,000	54,000	430,000
- median	24,000	13,000	16,000
Intensity - mean	1,700	500	3,300
- median	310	140	170
Concentration - mean	5,800	8,500	29,000
- median	3,000	3,000	4,300
Great Power Wars	(18 wars)	(17 wars)	(29 wars)
Extent	3.0	2.5	3.5
Duration	7.7	3.9	5.1
Magnitude	21.0	8.8	17.0
Severity - mean	270,000	86,000	890,000
- median	48,000	28,000	88,000
Intensity - mean	2,600	800	6,800
- median	590	380	840
Concentration - mean	7,000	8,700	43,000
- median	3,700	3,400	8,200

\*Dimensions: extent - number of participating Powers  
duration - years  
magnitude - nation-years  
severity - battle deaths  
intensity - battle deaths/million European  
population  
concentration - battle deaths/nation-year

TABLE 4.4  
Percentage years of war for unipolar,  
bipolar, and multipolar systems

War Indicator*	Polarity		
	Unipolarity	Bipolarity	Multipolarity
(Years of the system in each "state")	104	92*	285
All wars			
% years of war involving the Powers	97%	80%	64%
% years of Great Power war	92%	59%	48%
yearly average number of Powers at war	4.2	2.2	2.3
Excluding wars of Turkey			
% years of war involving the Powers	71%	65%	61%
% years of Great Power war	63%	42%	46%
yearly average number of Powers at war	3.1	1.5	2.1

\*In examining the years of the system rather than the elapsed time, we get 481 years total; the year 1556 is selected to fall in the period of bipolarity.



TABLE 4.6  
The least stable system as a function  
of the various war indicators

	Wars Involving the Powers		Great Power Wars	
	Average Period	Average War	Average Period	Average War
Dimensions				
Frequency	bipolarity	=	=	
Extent	=	=	=	multi- polarity*
Duration	unipolarity*	unipolarity*	unipolarity	unipolarity*
Magnitude	unipolarity*	unipolarity*	unipolarity*	unipolarity*
Severity	multi- polarity*	uni- polarity* @	multi- polarity*	multi- polarity*
Intensity		unipolarity*		multi- polarity*
Concen- tration		multi- polarity*		multi- polarity*

Frequency of general wars                      unipolarity\*

Percentage of years of peace  
(excluding wars of Turkey)

Wars involving Powers                      =

Great Power wars                      unipolarity

Yearly average number  
of Powers at war                      unipolarity\*

\*Indicates difference between categories of more than 50%.  
@For the median statistic; if the mean is used, bipolarity is much  
more stable.

=Means equal for all three classes of polarity.

TABLE 4.7  
Bipolarity and multipolarity: system  
of greater historical stability

	Wars Involving the Powers		Great Power Wars	
	Average Period	Average War	Average Period	Average War
Dimensions				
Frequency	multipolarity	bipolarity	multipolarity*	bipolarity
Extent	multipolarity	bipolarity	multipolarity	bipolarity
Duration	=	bipolarity	multipolarity	bipolarity
Magnitude	=	bipolarity*	=	bipolarity*
Severity	bipolarity*	=@	bipolarity*	bipolarity*
Intensity		=@		bipolarity*
Concen- tration		bipolarity*		bipolarity*

Frequency of general wars                      bipolarity\*

Percentage of years of peace  
(excluding wars of Turkey)

Wars involving Powers                      =

Great Power wars                      =

Yearly average number of  
Powers at war                      bipolarity\*

\*Indicates differences between categories of more than 50%.  
@For the median statistic; if the mean is used, bipolarity is  
much more stable.

These empirical findings run contrary to the theoretical arguments of Deutsch and Singer, Morgenthau, Gulick, et al., that multipolar systems are more stable than bipolar systems. Instead, they provide some empirical support for the opposing argument advanced by Waltz and Haas that bipolar systems are more pacific than multipolar systems. However, Haas' more specific claims that wars in bipolar systems are less frequent, more localized (in terms of the number of participating states), but longer<sup>38</sup> as compared to wars in multipolar systems are not supported by the evidence presented in this study. In addition, the related hypothesis that wars in multipolar systems tend to be relatively frequent but limited, whereas wars in bipolar systems are less frequent but more destructive in nature, draws no support from this study. If anything, the converse argument appears to be more consistent with the data generated here.<sup>39</sup>

With regard to unipolarity, an examination of Tables 4.4 and 4.5 reveals that for none of the 26 war indicators have unipolar "states" of the system been the most stable, while they have been the least stable or most war-prone in terms of most (i.e., 13 of the indicators). The greater apparent instability of unipolar as compared to multipolar systems is supported by a direct dyadic comparison (the severity dimension being a notable exception). It should be noted that this empirical finding contradicts the conclusions of Haas, who suggests that unipolar systems are the "most pacific."<sup>40</sup>

#### CONCLUSIONS

We have found that in terms of most of the key indicators of large-scale war, bipolar systems have historically been more stable than multipolar systems, while unipolar systems have been the least stable. It is true that wars, and even Great Power wars, have been least frequent in multipolar systems, but those wars on the average have been more serious than wars in bipolar systems. These findings contradict the popular balance of power hypothesis that multipolar systems are more stable than bipolar systems. They also contradict the related hypothesis that wars in multipolar systems tend to be frequent but limited, while those in bipolar systems tend to be infrequent but more serious. The finding that unipolarity has historically been unstable is consistent with a central proposition of balance of power theory--that the threat of any actor to achieve a dominant position in the system will generate an opposing military

coalition and a period of intensive warfare in order to block the bid for hegemony and restore equilibrium.

These results also are suggestive in terms of their broader implications for the theoretical question of the relationship between the distribution of power capabilities and the stability of the system. A number of balance of power theorists argue that the greater the distribution or dispersion of power capabilities in the system, the greater the stability of the system, while a concentration of power is destabilizing.<sup>41</sup> The logical implications of this proposition are that multipolar systems are the most stable while unipolar systems are the least stable, since polarity may be taken as an ordinal-level indicator of the distribution of power in the system (i.e., changes in polarity from unipolarity to bipolarity to multipolarity reflect an increasing dispersion of power in the system). The empirical evidence presented here does not support this proposition. It suggests, rather, a nonlinear relationship between the distribution of power and stability, with stability being relatively low at the unipolar and multipolar ends of the power distribution continuum, and higher in the middle bipolar range.<sup>42</sup> This analysis is only suggestive, of course, and does not deal with the important question of the relationship between the distribution of power and stability within each of the categories of polarity.

#### NOTES

1. For example, Kenneth N. Waltz, Theory of International Politics (Reading, MA: Addison-Wesley, 1977), pp. 163-164. Deutsch and Singer write that the greater stability (i.e., lower war-proneness) of multipolar systems "has seemed so intuitively reasonable that a few historical illustrations have been accepted as sufficient." Karl W. Deutsch and J. David Singer, "Multipolar Systems and International Stability," in James N. Rosenau (ed.), International Politics and Foreign Policy, rev. ed. (New York: Free Press, 1969), p. 315.

2. Hans J. Morgenthau, Politics Among Nations, 4th ed. (New York: Knopf, 1967), pp. 332-335; Morton A. Kaplan, System and Process in International Politics (New York: Wiley, 1957), p. 34; Edward Vose Gullick, Europe's Classical Balance of Power (New York: W. W. Norton, 1955), pp. 94-95; Quincy Wright, A Study of War, 2nd ed. (Chicago: University of Chicago Press, 1965), p. 755.

3. Morgenthau, Politics Among Nations, p. 335; J. David Singer, Stuart A. Bremer and John Stuckey, "Capability Distribution, Uncertainty, and Major Power War, 1820-1965," in Bruce M. Russett (ed.), Peace, War, and Numbers (Beverly Hills, CA: Sage, 1972), pp. 23-24; Bruce Bueno de Mesquita, "Measuring Systemic Polarity," Journal of Conflict Resolution, 19 (June 1975), p. 190. Rosecrance argues, however, that this uncertainty may be destabilizing because it may lead to a war by miscalculation. Richard N. Rosecrance, "Bipolarity, Multipolarity, and the Future," in Rosenau (ed.), International Politics and Foreign Policy, pp. 329-330. See also Jack S. Levy, "Misperception and the Causes of War," World Politics, 36 (October 1983), pp. 76-99.

4. Morgenthau, Politics Among Nations, pp. 337-338; Inis L. Claude, Jr., Power and International Relations (New York: Random House, 1962), p. 48.

5. Deutsch and Singer, "Multipolar Systems and International Stability," pp. 317-322. It is not clear, however, that some minimal level of "attention" is a prerequisite for conflict, or that the attention directed toward a given actor is less in a multipolar as compared to a bipolar system. See Raymond F. Hopkins and Richard W. Mansbach, Structure and Process in International Politics (New York: Harper & Row, 1973), p. 120. Nor is it clear that arms races escalate more slowly in multipolar systems. In fact, the opposite may be true, given the perceived necessity of matching the armaments of more than one rival (as illustrated by Britain's two-power naval standard at the turn of the century).

6. Kenneth N. Waltz, "The Stability of a Bipolar World," Daedalus, 93 (Summer 1964), pp. 882-886.

7. Rosecrance, "Bipolarity, Multipolarity, and the Future," pp. 326-327, 331-333.

8. Recent empirical studies on polarity (defined broadly) include J. David Singer and Melvin Small, "Alliance Aggregation and the Onset of War, 1815-1945," in J. David Singer (ed.), Quantitative International Politics (New York: Free Press, 1967), pp. 247-286; Michael Haas, "International Subsystems: Stability and Polarity," American Political Science Review, 64 (March 1970), pp. 98-123; Singer, Bremer and Stuckey, "Capability Distribution"; Michael Wallace, "Alliance Polarization, Cross-Cutting, and International War, 1815-1964," Journal of Conflict Resolution, 17 (December 1973), pp. 575-604; Bruce Bueno de Mesquita, "Measuring Systemic Polarity," Journal of Conflict Resolution, 19 (June 1975), pp. 187-216; David P. Rapkin and William R. Thompson, with Jon A. Christopherson, "Bipolarity and Bipolarization in the Cold War Era," Journal of Conflict Resolution, 23 (June 1979), pp. 261-295; Frank Whelon Wayman,

"Bipolarity and War: The Role of Capability Concentration and Alliance Patterns Among Major Powers, 1816-1965," Journal of Peace Research, 21 (1984). Two other studies, which focus more on the size of the system than its polarity per se, are Charles W. Ostrom, Jr. and John H. Aldrich, "The Relationship Between Size and Stability in the Major Power International System," American Journal of Political Science, 22 (November 1978), pp. 743-771; and Jack S. Levy, "Size and Stability in the Modern Great Power System," International Interactions, 10 (1984), pp. 341-358.

9. J. David Singer and Melvin Small, The Wages of War (New York: Wiley, 1972); Melvin Small and J. David Singer, Resort to Arms (Beverly Hills: Sage, 1982).

10. For a discussion of the utility of historical analysis in achieving scientific controls, see J. David Singer, "The Historical Experiment as a Research Strategy in the Study of World Politics," Political Inquiry, 2 (1974), pp. 30-32.

11. Cf. Waltz, Theory of International Politics, p. 121. Other conditions traditionally referred to as "assumptions" of balance of power theory, e.g., existence of "rational actors," should be interpreted instead as variables determining the optimal functioning of the system.

12. An earlier case of bipolarity is ancient Greece, but that case cannot easily be incorporated into a systematic aggregate data analysis of the modern system.

13. For a more thorough theoretical and historical analysis of the beginning of the modern system, see my War in the Modern Great Power System, 1495-1975 (Lexington: University Press of Kentucky, 1983), Ch. 2.

14. See Dina A. Zinnes, "An Analytic Study of the Balance of Power Theories," Journal of Peace Research, 3 (1967), p. 271.

15. Rosecrance, "Bipolarity, Multipolarity, and the Future," pp. 325-335. Haas defines stability in terms of "rates of incidence of warfare" in "International Subsystems," p. 99. Ostrom and Aldrich refer to a low probability of war in "The Relationship Between Size and Stability," p. 747. This is a rather limited conception of peace or stability, however, for peace and war are multidimensional concepts.

16. Deutsch and Singer define stability as "the probability that the system retains all of its essential characteristics; that no single nation becomes dominant; that most of its members continue to survive; and that large-scale war does not occur" in "Multipolar Systems and International Stability," p. 315. One dissenting view is that of Hopkins and

Mansbach. They object to the definition of stability in terms of the relative absence of war, and instead define it as the "maintenance of international structure with no changes sufficient to alter the basic pattern of emergent properties--concentration of influence, nature of goal conflict, number of participants, and interdependence ...." See their Structure and Process in International Politics, pp. 123-124. To define stability in terms of pattern maintenance rather than war is not very useful, however. The fundamental changes in the international economic system in the early 1970s, for example, appear to disrupt the "emergent properties" of the system, yet this period is not generally thought of as particularly unstable, and certainly not by those who use stability in the bipolarity/multipolarity context.

17. Robert Gilpin, War and Change in World Politics (Cambridge: Cambridge University Press, 1981).

18. Definitions of stability in terms of the maintenance of the system may be useful for other theoretical questions, but most of the literature on the bipolarity/multipolarity question refers to the amount of war as the dependent variable. It is perhaps unfortunate that this theoretical debate has been conducted with reference to stability rather than war-proneness, which might be more technically correct; but since this analysis is an attempt to provide an empirical test of the existing theoretical arguments, and thus is a part of that continuing tradition, I have continued to refer to the stability of the system as the dependent variable.

19. The restriction of this analysis to the Great Powers can be justified on other grounds as well. The Great Powers traditionally have been considered--by international law as well as by scholars and statesmen--as a group distinct from other states, and in many respects more important for international politics. They define their interests more broadly than do other states, and pursue these interests through a broader set of instrumentalities. They participate more frequently and intensely in international alliance, wars, conferences, and peace settlements, and are generally more sensitive to the symbolic dimensions of international politics. In addition, many of our theories of international politics, including balance of power theory, are essentially theories of Great Power behavior.

20. That is, the presence or absence of colonial or imperial war may be an independent variable in a causal relationship predicting to stability; it is not in itself definitionally equivalent to stability. Thus, Bismarckian Europe is generally considered stable, despite the rather large number of imperial

conflicts. This same argument may be made with regard to civil wars (i.e., civil wars may cause instability in the international system, but do not themselves define instability).

21. The element of circularity in some of these criteria is useful for the purposes of analysis. Certain states whose Great Power status is not in doubt (e.g., Britain and France throughout much of the period) can be used as definitional "anchors" to aid in the identification of other members of the system through an iterative process.

22. A more thorough definition of the Great Power concept, and the details of this analytical historical study of the Great Powers (together with a discussion of some of the conceptual and methodological problems involved in the determination of the dates of entry into and departure from the Great Power system), can be found in Levy, War in the Modern Great Power System, 1495-1975, Ch. 2.

23. Levy, War in the Modern Great Power System, 1495-1975, pp. 88-91.

24. Note that temporary interruptions in war are not subtracted from the elapsed time, as they are in the Singer-Small data. For a discussion of the rationale behind this procedure, plus a discussion of the criteria demarcating the onset and termination of war, see Levy, War in the Modern Great Power System, 1495-1975, Ch. 4.

25. Since population data for all of the Great Powers over the last five centuries has yet to be compiled, we will use instead the aggregate population of Europe as a benchmark for comparison. See Levy, War in the Modern Great Power System, 1495-1975, Ch. 4.

26. The intensity and concentration measures are meaningful only in the context of the average war, and will not be used as indicators of yearly amounts of war. The frequency measure is relevant only for yearly averages, while the extent, duration, magnitude, and severity indicators will be used for both units of analysis.

27. These include the War of Dutch Independence/Spanish Armada, Thirty Years' War (aggregated), Dutch War of Louis XIV, the War of the League of Augsburg, War of the Spanish Succession, War of the Austrian Succession, Seven Years' War, French Revolutionary and Napoleonic Wars (combined), and World War I and World War II. The number of cases here is too limited, of course, to permit statistical generalizations, but the results may be suggestive. For a more thorough analysis of the concept of general or hegemonic war, see my "The Definition and Identification of Hegemonic War," paper presented at the Annual Meeting of the International Studies Association, Atlanta, GA, March 29-31, 1984.

28. Levy, War in the Modern Great Power System, 1495-1975, Ch. 4.

29. This finding is based on the polarity data generated in this study.

30. Haas, for example, defined polarity in terms of "militarily significant cluster(s) of units within an international arena" in his "International Subsystems," p. 99. See also J. David Singer and Melvin Small, "Alliance Aggregation and the Onset of War"; Bueno de Mesquita, "Measuring Systemic Polarity," p. 188; and Bruce Russett and Harvey Starr, World Politics (San Francisco: Freeman, 1981), pp. 99-100.

31. Haas characterizes both the 1891-1918 and 1946-1965 European subsystems by "tight bipolarity"; see his "International Subsystems," p. 103. Rosecrance identifies the 1890-1918 period as bipolar and the 1945-1960 period as tripolar in Action and Reaction in World Politics (Boston: Little, Brown, 1963), Ch. 11. Hopkins and Mansbach define the periods 1891-1914 and 1956-1962 as "loose bipolar" and the period 1946-1956 as "tight bipolar" in Structure and Process in International Politics, pp. 126-127.

32. This is consistent with Waltz, Theory of International Politics, pp. 167-169, and Glenn H. Snyder and Paul Diesing, Conflict Among Nations (Princeton: Princeton University Press, 1967), p. 420. This analytical distinction is also recognized by Richard P. Y. Li and William Thompson, "The Stochastic Process of Alliance Formation Behavior," American Political Science Review, 72 (December 1978), pp. 1288-1303; Bueno de Mesquita, "Measuring Systemic Polarity," pp. 187-216; Jeffrey Hart, "Symmetry and Polarization in the European International System, 1870-1879," Journal of Peace Research, 11 (1976), pp. 229-244; David P. Rapkin, William R. Thompson, and Jon A. Christopherson, "Bipolarity and Bipolarization in the Cold War Era," Journal of Conflict Resolution, 23 (June 1979), pp. 261-295; William D. Jackson, "Polarity in International Systems: A Conceptual Note," International Interactions, 4 (1977), pp. 87-96; and Wayman, "Bipolarity and War." For a comparison of different definitions of polarity, see Frank W. Wayman, "Alliances and the Concept of Polarity," paper presented at the Annual Meeting of the International Studies Association, Atlanta, GA, March 29-31, 1984.

33. Thus, Napoleonic Europe is classified as unipolar, for Britain's naval power was not sufficient, even when allied with all other Great Powers, to prevent French hegemony in Europe for over a decade. To classify this system as bipolar would render the concept of unipolarity meaningless and historically nonexistent, for when else in modern

times has one state achieved such a position of dominance? Certainly not during the Bismarckian period, as Haas, "International Subsystems," p. 103; Rosecrance, Action and Reaction, Ch. 11; and Hopkins and Mansbach, Structure and Process in International Politics, pp. 126-127, would want us to believe. Germany was in no sense a global power and hardly a match for Britain, and was not distinctly superior in military capabilities to other continental powers; France was diplomatically isolated but not militarily weak. See the quantitative assessment of relative power capabilities in Stuart A. Bremer, "National Capabilities and War Proneness," in J. David Singer (ed.), The Correlates of War - II (New York: Free Press, 1980), pp. 64-65. Germany did not begin to achieve the degree of penetration of other political systems that characterized Napoleonic Europe, and was not even perceived as such a serious threat as to generate an opposing military coalition. For further analysis of the relative priority of continental versus global interests for the Great Powers, see my "The Definition and Identification of Hegemonic War."

34. The historical evidence from which these conclusions are derived, together with a more thorough discussion of the conceptual and methodological problems involved can be found in my Military Power, Alliances, and Technology: An Analysis of Some Structural Determinants of International War Among the Great Powers, Ph.D. Dissertation, University of Wisconsin, 1976, Ch. 6.

35. Here we will not use conventional tests of statistical significance. Significance tests are based on a comparison of a computed test statistic with a sampling distribution of that statistic. Since we deal here with the entire "population" of interstate wars involving the Great Power, rather than a sample from that population, there is no sample, no sampling error, no sampling distribution, no grounds for making inferences from a sample to a population, and therefore no basis for an interpretation of any test statistics that might be computed. Furthermore, the highly skewed nature of the distributions of many of the war indicators would undermine some critical assumptions upon which these significance tests are based. For these reasons, tests of statistical significance would be inappropriate. Instead, the values of the indicators for each category of polarity can be compared on the basis of the estimated measurement error for each indicator. The measurement errors are estimated as follows: frequency, 10 percent; extent, 10 percent; duration, 10 percent; magnitude, 15 percent; severity, 20-25 percent; intensity, 25 percent; concentration, 30 percent. (See Levy, War in the Modern Great Power System,

1495-1975, Ch. 4.) If the size of the differences between categories does not exceed the measurement error, it is not treated as "significant" (not to be equated with statistical significance) or substantively meaningful; borderline cases are treated as insignificant differences. Differences exceeding 50 percent (for all indicators) are taken as particularly significant.

36. A rejection of such general conclusions on the grounds that the relationship is not consistent over all indicators of stability, and an insistence that we speak only in terms of specific empirical indicators rather than the more general theoretical concept of stability, would constitute a narrow operationist posture unsuited to the basic theoretical purposes of social scientific inquiry. See Carl Hempel, "A Logical Appraisal of Operationism," in C. Hempel, Aspects of Scientific Explanation (New York: Free Press, 1965), pp. 123-133.

37. The identity of any two "equal" "states" of polarity indicated on Table 4.5 can be inferred from the corresponding cell in Table 4.6, and vice versa.

38. Haas, "International Subsystems," p. 121.

39. A more thorough analysis of the specific question of the relationship between the frequency and the seriousness of war might be based on a data set which included imperial as well as interstate wars involving the Great Powers.

40. Haas, "International Subsystems," p. 121. Haas' categorization of historical systems is open to question, however, as suggested previously. His only cases of unipolarity besides the questionable 1872-1890 European system are the Hawaiian subsystems, 1796-1898, providing little basis for generalization to the Great Power system of international politics as a whole.

41. Morgenthau, Politics Among Nations, p. 163; Gulick, Europe's Classical Balance of Power, p. 4; Wright, A Study of War, p. 755.

42. It should be emphasized that these findings are tied to a conception of polarity based on a Eurocentric Great Power system. If the system were conceived in global terms, the definition and measurement of polarity would be different, and so might the results. William R. Thompson, for example, defines power in terms of global naval capabilities, and finds that periods of high power concentration are the most stable. See his "Cycles, Capabilities, and War," in Thompson (ed.), World System Analysis, pp. 141-163.