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The Structure of the International System and the Relationship Between the Frequency and Seriousness of War

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NOTICE

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The belief that the seriousness of war is inversely related to its frequency of occurrence has been incorporated into numerous theories of international politics. It has been used to describe the nature of warfare under various sets of theoretical conditions and in particular historical eras, and it is also a basic assumption underlying several important policy-relevant propositions. In an earlier article (Levy and Morgan 1984), we empirically tested this hypothesis at the systemic level of analysis, and found that over the last five centuries there has been a moderate inverse relationship between the frequency of wars that occur in a given period and their seriousness. No effort was made, however, to test alternative theoretical explanations for the observed empirical generalization. The purpose of this study is to determine the extent to which two system-level variables, the polarity of the system and the availability of outlets for expansionist activity, can account for the observed relationship between the frequency and seriousness of war. It has been argued that these variables affect both the frequency and the seriousness of wars by determining whether the great powers fight among themselves in a few cataclysmic wars or fight a large number of extrasystemic wars interspersed by a few minor great power wars. Although there are plausible theoretical arguments predicting that this relationship should also exist at the nation-state level of analysis, that has yet to be confirmed empirically, and this chapter will be restricted to international structural explanations for the observed systemic-level

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relationship. After discussing the theoretical arguments and specifying the research hypotheses, we will test the hypotheses over the modern great power system since 1500.

THEORETICAL CONSIDERATIONS

One of the structural variables most widely believed to have an impact on the nature of war is the polarity of the system.¹ The primary impetus for much of the work linking polarity to war came from the familiar debate between Waltz (1964) and Deutsch and Singer (1964) over whether bipolar or multipolar systems are more "stable."² Others have joined this debate, and in the process have generated arguments bearing on the relationship between the frequency and seriousness of war. Rosecrance (1966), for example, has argued that wars may be more frequent in multipolar systems because there are more opportunities for war to break out, but that this is compensated for by the fact that the wars that do occur are less serious. His analysis and that of others have been limited, however, by the absence of an adequate conceptualization of polarity.

Recent studies, particularly quantitative ones, have given more attention to the meaning of polarity (Buono de Mesquita 1975; Noguee 1975; Jackson 1977; Rapkin et al. 1979; Wayman 1984). Rather than defining polarity as the number of independent centers of political power comprising either single powerful states or tightly aligned groups of states (Haas 1970; p. 99), it is now more common to use polarity to refer to the distribution of military capabilities in the system (Snyder and Diesing 1977, p. 420; Li and Thompson 1978, p. 1292; Waltz 1979, pp. 167-69; Levy 1985b). Although the concept of polarity will be operationally defined below, a brief definition would be useful at this point. For the purposes of this study, we will consider polarity to be a trichotomy: If a single state, unmatched by any other, attains a position of dominance in the system, then the system is unipolar (for example, Napoleonic Europe). If military capabilities are concentrated primarily in the hands of two "superpowers," separated by a considerable gap from all other states, then the system is defined as bipolar (for example, the Cold War period). Finally, if military capabilities are more widely distributed among a larger number of states, with no significant gap separating one or two great powers from others, the system is defined as multipolar (for example, eighteenth-century Europe).³

Our general hypothesis is that wars should be most frequent but least serious in a multipolar system, least frequent and most serious in a

unipolar system, and of moderate frequency and seriousness in a bipolar system. First consider unipolarity. The concentration of military capabilities in the hands of a single dominant power poses an unambiguous threat to other powers and one that no single state can handle alone. Consequently, a general coalition will form against the leading power. Thus, we would expect there to be a single war, or a series of major wars, that involves all or nearly all of the great powers (Claude 1962, ch. 2; Dehio 1962; Morgenthau 1967).

In a multipolar system, we would expect there to be a large number of relatively minor wars. This results both from the increased number of opportunities for war deriving from the increased number of states and from the fact that the more powerful states have historically had a greater proclivity toward war (Wright 1965; Singer and Small 1972; Levy 1983, chs. 1-2). Since there are several states of roughly equal strength, however, an increase in power for one poses relatively little direct threat to any other single power. States should thus be less apt to intervene in an ongoing war, so that those that do occur are fairly minor. Since wars between a great power and a minor power or wars between two great powers are less likely to escalate than in a bipolar system and since no great power is threatened with elimination by any other single actor, there are few disincentives for engaging in minor wars. Therefore, a multipolar system should be characterized by a relatively large number of minor wars.

The two leading states in a bipolar system have roughly equal capabilities and can generally hold each other in check. Consequently, a coalition of all other states is rarely necessary to defeat an aggressor, and there is no reason to expect a general war involving all of the great powers. The great powers will be relatively free to fight among themselves and with minor actors. Furthermore, each of the two leading great powers may be able to add peripheral territories to its sphere of influence without increasing its capabilities to such an extent that it threatens the other superpower. Thus, we would expect more wars than in a unipolar system, and these wars should generally be fairly mild. There are limits to this, however, and the potential for a major conflagration is higher than in a multipolar system. Since a dramatic increase in either superpower's capabilities would enable it to become dominant, each must be prepared to block the other's attempts at establishing hegemony. In fact, since small changes in the status quo can have symbolic consequences affecting actors' perceptions regarding the relationship between the superpowers, each of the two leading powers must direct a sizable proportion of its resources to defending itself against the other, and each may have to resist (if it is unable to compensate for) even small increases

in the other's capability. Thus, the superpowers (and their allies) can come into direct confrontation that can lead to a general war. This prospect serves to moderate the number of minor wars in which the great powers engage. Therefore, we would expect there to be a few more wars in a bipolar system than in a unipolar system. Although most would be fairly minor, the potential for a serious war is high; thus, these wars should be, on the average, more severe than in multipolar systems.

Another variable that should affect the frequency and seriousness of war is the relative availability of outlets for expansionist activity. If great powers can satiate their expansionist desires only at the expense of other great powers, a few serious wars among great powers are likely. On the other hand, if outlets for "cheap" expansion are available, each great power can engage in wars with minor powers or peripheral actors without posing a direct threat to the interests of other great powers. These wars would be relatively mild and fairly numerous. Balance-of-power theorists and many historians have traditionally equated this variable with the "openness" of the "colonial frontier," which is generally defined as being inversely related to the degree to which the European great powers have partitioned the rest of the globe into their respective spheres of influence (Morgenthau 1967, pp. 340-43; Hoffmann 1968; Thompson 1962, ch. 20). It is argued that in systems characterized by an open colonial frontier, wars are frequent but limited, since imperial expansion and minor conflicts on the periphery serve as a "safety valve" for the system. They divert competition for power from the core to the periphery, where it does not involve the vital interests of the great powers and where it can more easily be moderated (Morgenthau 1967, pp. 341-42; Hoffmann 1968). When the territory on the periphery has been completely partitioned among the great powers, however, the situation becomes a zero-sum game. Low-risk and low-cost expansion on the periphery is no longer possible, and further expansion by any single power can occur only at the expense of another great power (Lenin 1939, ch. 6; Chatterjee 1975, pp. 150-51).⁴ In terms of the framework suggested by Choucri and North (1975), increases in "lateral pressure" generate an increase in the "intensity of intersections" and consequently in the likelihood of war between the great powers.⁵ This increases the costs and risks of expansion, so that attempts at expansion become less frequent. Those expansionist moves that do occur, however, are perceived to affect the vital interests of the great powers, and the likelihood of war between them rises accordingly. Thus, the frequent but limited wars of an open colonial frontier give way to the less frequent but more serious great power wars of a system with closed peripheries. Since the availability of territory for imperial conquest has historically served as the outlet for relatively low-

cost great power expansion, we will treat the "openness of the colonial frontier" as equivalent to the "availability of outlets for expansionist activity" for the purpose of our empirical analysis. This does not preclude the possibility that some other mechanism (for example, space colonies or seabed mineral rights) could serve a similar function in the future.

There is another path by which colonial expansion may affect the likelihood of wars between the great powers. Although this expansion into the periphery may introduce new conflicts between some great powers, it may also create issues over which other great powers share similar interests. If these patterns of conflict and cooperation in the periphery are not congruent with those in the core, the resulting cross-cutting pressures among the great powers will generally reduce the likelihood of war between them. It has been argued, for example, that the colonial expansion of the late nineteenth century actually reduced the likelihood of a major European war by generating cross-cutting pressures (Britain versus France in Africa and Britain versus Russia in Asia, for example, which cut across the rivalries in Europe), and these helped delay the rigid polarization of opposing alliance systems (Thompson 1962, p. 473). If the patterns of colonial rivalry are congruent with existing rivalries, however, conflicts between the great powers are reinforced and the likelihood of war increases. In the absence of a detailed picture of the interests of each of the great powers, it is impossible to predict whether colonial rivalries are cross-cutting or reinforcing. In addition, more work would be necessary to determine exactly how the impact of these cross-cutting or reinforcing pressures is affected by the open or closed nature of the colonial frontier. For these reasons, we have not attempted to incorporate these relationships into our model.

It is particularly interesting to speculate how these variables might interact to affect the frequency and seriousness of war. It is likely that the variables are not equally important, and that under some conditions the nature of war may be determined almost entirely by one dominant variable. When the system is unipolar, for example, it should not matter whether the colonial frontier is open or closed since the attention of all would be directed at defeating the hegemon. Thus, if the system is unipolar, we would expect a single, extremely serious war regardless of the openness of the colonial frontier. On the other hand, when the system is bipolar or multipolar, the openness of the colonial frontier will be more important in determining the nature of war.

In a bipolar system with an open frontier, we would expect a moderate number of, on the average, moderately severe wars. The open frontier would allow each of the leading great powers to extend its sphere of influence without directly threatening the other. Each could compen-

sate for the other's gains by pursuing its own colonial policies, making war between the great powers less necessary and presumably less likely. Since only the great powers would have sufficient resources to seek colonies aggressively, there should be relatively few colonial wars.⁶ The great powers' colonial policies would occasionally bring them into direct conflict, however, either because they both seek the same territory or because one fears that the other may be gaining too much of an advantage. In this case, a fairly severe war between the leading great powers may occur. Thus, wars in a bipolar system with an open frontier may be moderately frequent and moderately severe, on average.

In a bipolar system with a closed frontier, wars should be fairly infrequent and fairly severe. Conflicts in the periphery would be more likely to assume a zero-sum character, where any potential gain for one great power is perceived as a potential loss for another. This would enormously increase the symbolic dimensions of any colonial rivalry. Perceptions of any dyadic shifts in national strength in the eyes of allies and potential allies would be particularly important. For these reasons, it is very likely that any move by one leading great power would be resisted by the other. The potential seriousness of any resulting conflict, however, should contribute to deterrence and hence reduce their frequency. Because the leading powers in a bipolar system are roughly equal in strength, the danger of hegemony is far less than in a unipolar system, and other great powers are far less likely to intervene. Thus, major wars in bipolar systems should be less serious than those in unipolar systems. In addition, the lower likelihood of intervention by other great powers tends to remove some deterrent effects, so that the frequency of these wars in bipolar systems should be greater than that in multipolar systems.

In a multipolar system with open colonial frontiers, we would expect there to be a large number of relatively mild wars. There would exist several great powers capable of pursuing colonies, and the openness of the colonial frontier would enable them to extend their influence without threatening other powers. We would thus expect a large number of small colonial wars. Any war that did erupt between two great powers over a colonial issue would probably remain localized and therefore relatively mild. If the colonial frontier were closed, on the other hand, we would expect fewer, more serious wars. The great powers would be coming into direct conflict more often, making wars that do occur fairly serious and potentially very serious, which should in turn reduce their frequency.

Alternative Causal Models

It is important to distinguish the two possible patterns of casual linkages involving polarity, the colonial frontier, and the frequency and

seriousness of war that are inherent in these arguments. First, the frequency and seriousness of war in a given period may individually and simultaneously be determined by the system-level variables. It may be, for example, that in a multipolar system wars are numerous because there are a greater number of interaction opportunities and relatively mild because the proportion of the military resources available to the warring parties is fairly low. In a bipolar world, however, there are fewer opportunities for war, and thus fewer wars; but those that do occur involve a substantial proportion of the world's military might and are perceived to threaten the very existence of the combatants and thus are relatively serious. This implies that the observed correlation between the frequency and seriousness of war is due to these causal linkages and can be fully explained by the system-level variables, and that any inference regarding a casual link between the frequency and seriousness of war would be spurious. This pattern of linkages is presented in Figure 3.1a, where the solid arrows represent causal links and the dashed line indicates an observed correlation due to these causal links.

Alternatively, the structure of the international system may determine seriousness of war, which in turn determines the frequency of war. That is, the system determines whether a war occurring in a given period is likely to be a colonial war, great power war, or hegemonic war. The

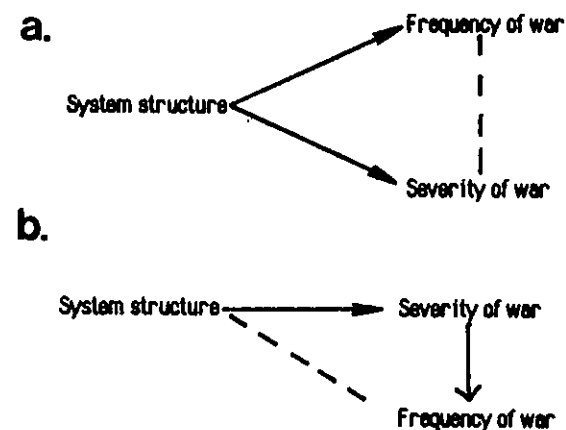


FIGURE 3.1. a: The linkages among the variables if system structure determines the frequency and severity of war. b: The linkages among the variables if system structure determines the severity of war, which in turn determines the frequency of war. Solid arrows indicate causal links; dashed lines indicate correlations.

likely severity of those wars that might occur in turn affects the frequency with which they actually occur through some mechanism that affects the decision-making processes of national leaders. One such mechanism is the cost-benefit calculations of decision makers: The perception that war is likely to be serious results in fewer cases in which the expected costs exceed the expected gains, and hence a diminished frequency of war. It may also be that the expectation of serious war means that it is possible to fight fewer wars with fixed natural resources, also leading to a diminished frequency of war. This pattern of relationships is depicted in Figure 3.1b. In this case, the structure of the system is a direct cause of the severity of war and an indirect cause of the frequency of war (through the intervening variable, severity), but it does not really explain the observed inverse relationship. The task of this study is to determine which of these models, if either, accurately characterizes the relationship between the structure of the international system and the nature of war.

RESEARCH DESIGN

Because of the slow rate at which our system-level variables change and because of the desirability of maximizing the variance in the variables of interest as well as the randomization of extraneous influences, it is advantageous to extend the temporal domain of the study as far as possible. Since the literature on polarity defines the concept—whether explicitly or implicitly—in terms of the distribution of capabilities among the great powers, and because colonial expansion has been primarily the behavior of the great powers,⁷ our focus will be restricted to the great powers. Our temporal domain will extend to the origins of the great power system at the end of the fifteenth century (Levy 1983), which is consistent with Wallerstein (1974), Modelski (1978), Thompson (1983), and others on the origins of the modern system.⁸ The great powers have been defined elsewhere (Levy 1983, ch. 2) and include the following: France, 1500–1975; England/Great Britain, 1500–1975; Austrian Hapsburgs/Austria/Austria-Hungary, 1500–19, 1556–1918; Spain, 1500–19, 1556–1808; Ottoman Empire, 1500–1699; United Hapsburgs, 1519–56; 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, 1905–45; China, 1945–75.

Definition and Measurement of the Variables

The conceptualization of the frequency of war involves two major questions: (1) What classes of wars should be included? (2) What is the

minimum threshold of violence, if any, for inclusion? Since the hypotheses involve small wars and since imperial wars are explicitly included in some of the hypotheses, imperial as well as interstate wars must be included in analysis. However, the hypotheses generally speak in terms of “wars,” so that border disputes and other uses of force short of war should not be included. This leaves the more difficult question of the minimum threshold defining a war. We cannot rely exclusively on the Singer/Small 1,000 battle deaths criteria (1972), because it is too high for imperial wars. Since any lower threshold involves problems of data accuracy and availability, we have relied on multiple sources to determine whether a conflict excluded by the Singer/Small criterion went beyond minor skirmishing to open warfare. Existing compilations of war data are not adequate for our purposes, so a new data set of international wars involving the great powers has been generated. A discussion of our data-generating procedures can be found in Levy (1983) and Levy and Morgan (1984).

The best and most widely used indicator of the seriousness of war is its “severity” in terms of battle deaths (Richardson 1960; Singer and Small 1972, p. 130; Levy 1983). Since the “seriousness” of war is to be related to its frequency in a given period, the concern must be not with the severity of a single war but instead with some aggregate measure of the severity of all wars in a given period. While the total number of battle deaths in a period is a good measure of the total severity of war, it must be supplemented with other indicators because it is partially dependent upon the number of wars occurring (which is the variable with which it is to be correlated). The average number of battle deaths per war is perhaps the best measure of the seriousness of the wars occurring in a given period and is also used. This indicator does not discriminate, however, between a period characterized by several large wars and a period with one enormously destructive war and many smaller wars. This distinction can be tapped by the frequency of wars above a certain threshold. The number of wars between great powers (“great power wars”) that exceed 50,000 battle deaths is a fairly discriminating measure of severity, including only about 10 percent of all cases in this study. An even more discriminating indicator is the number of “general” or “hegemonic” wars occurring in a period. These are history’s most serious wars, involving nearly all the great powers and enormous casualties. For our purposes, a general war is defined as one in which the decisive victory of at least one side is both a reasonable possibility and one that would be likely to result in the leadership or dominance by a single state over the system, or at least in the overthrow of an existing leadership or hegemony (Levy 1985a).⁹

We thus have four indicators of the seriousness of war in a given

period: the total number of battle deaths, the average number of battle deaths per war, the number of great power wars exceeding 50,000 fatalities, and the number of general wars. These indicators cover a range of seriousness, which is useful given the inherent ambiguity in the meaning of the concept in the literature. The consistency of results across this range of indicators will increase our confidence in the validity of the findings.

The battle death data are taken from Levy (1983), whose data are based on the Singer and Small data (1972) for the post-1815 period and on the Sorokin data (1937) for the earlier period. Given our focus on the great power system, only the fatalities of the great powers are included in the severity indicator. Because fatality estimates for imperial wars are often unavailable or unreliable, and also because these make a marginal contribution to total fatalities as compared with interstate wars involving the great powers, only fatalities from the latter are used to approximate the severity indicator. From this list of all international wars involving the great powers, the four indicators of the seriousness of war can easily be constructed.

The availability of outlets for expansionist activity is defined as the "openness" of the colonial frontier, which refers to the availability of territories on the periphery of the international system. When there exist vast amounts of territory available for colonization by the great powers, the frontier is open. Conversely, when the great powers can extend their influence only at the direct expense of other system members, the frontier is considered to be closed. Measuring the relative openness of the colonial frontier over nearly five centuries is an exceedingly difficult task. In the absence of a more direct indicator, we have relied on a surrogate measure: the amount of colonial activity. The "safety valve" hypothesis implies that the establishment of new colonies is critical to the avoidance of a major war among core powers, so that the number of colonies established in a given period is one indirect measure of the openness of the colonial frontier in that period. The assumption is that when a large section of territory becomes accessible, and therefore open to colonization, a flurry of colonial activity will follow.¹⁰ The data on this colonial activity indicator are taken from Bergesen and Schoenberg's compilation (1980) of the number of colonies established and terminated each year from 1415 to 1969. Their compilation is based on Henige's list (1970) of colonial governors for that period.

Let us now turn to polarity, which was defined earlier in terms of the distribution of military capabilities in the system. In the absence of interval-level data on the military capabilities of all of the great powers during the last 500 years, it is necessary to use an alternative mea-

surement procedure for polarity. Standard historical sources are used to generate a trichotomous classification of the distribution of power in the system for each year since 1500, reflecting unipolarity, bipolarity, and multipolarity. The resulting classification, together with further discussion of some difficult analytical problems, can be found in Levy (1985b).

For the purposes of this analysis, the data on the frequency and seriousness of war, the openness of the colonial frontier, and polarity have been aggregated by 20-year periods.¹¹ In our previous article, the majority of the analysis was performed using 25-year periods of aggregation; however, the analyses were replicated with similar results using 20-year periods. The 20-year periods are used in this study in order to increase the number of data points.

Methods of Analysis

Our first task will be to determine the effect the systemic variables taken singly have on the nature of war. First, we must determine whether the predictor variables correlate in the expected direction with each of the war variables. If the hypotheses are correct, (1) the number of colonies established should be positively correlated with the frequency of war and inversely related to the severity of war, and (2) the polarity of the system should be positively correlated with the frequency of war and inversely related to the severity of war. These hypotheses will be tested using bivariate correlation analysis.

The bivariate correlational analysis, however, will not answer the primary question of how the relationship between the frequency and seriousness of war changes according to the value of the predictor variable. To answer this question, we must use causal modeling techniques designed to test for spurious relationships (Blalock 1968). This will be accomplished by determining how the regression estimators relating the frequency of war to the severity of war are altered when the predictor variables are introduced into the equation as controls. We can perform this type of analysis statistically by using analysis of covariance for the nonmetric predictor variable polarity. The effects on the severity/frequency relationship brought about by the metric indicator of the openness of the colonial frontier can be examined in a similar fashion using multiple-regression techniques. Finally, an analysis of covariance will be performed in which we introduce both system-level variables as controls and determine an adjusted regression coefficient associating the frequency and seriousness of war. If these systemic variables do explain the relationship between the frequency and seriousness of war, then the

regression coefficients relating the frequency of wars in 20-year periods to their severity should be substantially reduced in magnitude and significance when we statistically control for the effects of polarity and the openness of the colonial frontiers.¹²

We can also analyze the partial correlation coefficients associating the frequency and severity indicators when the system variables are introduced as controls. Partial correlation coefficients provide the correlations between two variables once the effects of some other variable, or variables, have been partialled out. If, for example, the partial correlation coefficient between the frequency and seriousness of war is substantially reduced when a systemic variable is introduced as a statistical control, we could conclude that the observed frequency/seriousness correlation is spurious. This analysis provides essentially the same information as that provided by the regression techniques and it has the advantage of being more easily interpreted in terms of the question in which we are interested. Recall from the discussion of Figure 3.1 that our general question involves the determination of which, if any, pair of variables is correlated only because both variables are associated with the third. If the system variables determine both the frequency and the severity of war, the correlation between them would actually be due to these relationships and not because of some causal link between them. On the other hand, if the structure of the system determines the severity of war, which in turn determines the frequency of war, the correlation between the system variables and the frequency of war would be substantially reduced. This analysis can thus be used to determine whether the frequency and seriousness of war are "spuriously" correlated or the severity of war is an intervening variable through which the structure of the system indirectly affects the frequency of war.

DATA ANALYSIS

The first set of hypotheses to be tested are those dealing with the predicted correlations between the variables describing the structure of the international system and those reflecting the nature of war. Recall that the polarity and colonial frontier variables are expected to be positively correlated with the frequency of war and inversely correlated with the severity of war. The product/moment correlation coefficients indicating the association between the variables are provided in Table 3.1. The coefficients in the first row of the table reflect the inverse relationship between the frequency and the severity of war that we are attempting to explain. Regardless of the indicator of severity chosen, there is a moderate inverse correlation that is highly significant.¹³

TABLE 3.1
Simple correlations (r) between systemic variables and war*

	Number of Wars	Log (Battle Deaths)	Log (Average Battle Deaths)	Great Power War > 50,000 Battle Deaths	General Wars
Number of wars	—	-0.53 (0.005)	-0.70 (0.001)	-0.34 (0.056)	-0.53 (0.004)
Polarity	0.20 (0.185)	-0.14 (0.264)	-0.15 (0.247)	-0.22 (0.156)	-0.14 (0.264)
Colonies established	0.57 (0.002)	-0.25 (0.123)	-0.33 (0.060)	-0.30 (0.081)	-0.10 (0.327)

*The p values are given in parentheses.

The coefficients relating the polarity indicator to the war indicators are all in the predicted direction, but they are relatively weak and none is statistically significant. One possible explanation for the weakness of these coefficients is that one of the assumptions underlying the statistical technique is violated by the nonmetric character of the polarity variable. The results of other tests are fully consistent with these, however. When the tau-b correlation coefficient is used, the results are nearly identical, and a one-way analysis of variance shows that the polarity indicator accounts for only a very small proportion of the variance in the war indicators. The indicator of the openness of the colonial frontier also correlates in the predicted direction with the war indicators.¹⁴ It is significantly associated with the frequency of war and moderately associated with three of the severity indicators.

In order to answer fully the question of why an inverse relationship between the frequency and severity of war exists, it is necessary to determine how the severity and frequency of war are statistically related when we control for the effects of the system variables. We will examine the effects of the polarity and colonial frontier variables through analysis of covariance and multiple-regression techniques, respectively. Given the plausibility of theoretical arguments suggesting that the frequency of war is a function of their expected seriousness, the frequency indicator will be used as the dependent variable in the regression equations. The resulting regression coefficients and their significance levels for these models are presented in Table 3.2.

The first row in the table provides the regression coefficients for the frequency of war when regressed only on the severity indicators. These coefficients will provide a useful standard of comparison by which to judge the effects of the system variables. The standard errors for these

TABLE 3.2
Regression coefficients relating the frequency of war to the severity indicators controlling for the system variables

Control Variable	Severity Indicator				
	Log (Battle Deaths)	Log (Average Battle Deaths)	General War	Great Power War > 50,000 Battle Deaths	
[None]	β	-3.30	-3.75	-5.29	-2.33
	SE	1.15	0.82	1.83	1.41
	p value	(0.009)	(0.000)	(0.009)	(0.112)
Colonies established	β	-2.57	-3.09	-4.78	-1.27
	p value	(0.021)	(0.001)	(0.004)	(0.335)
Polarity	β	-3.20	-3.72	-6.30*	-2.22
	p value	(0.016)	(0.001)	(0.008)	(0.155)
Polarity + colonies established	β	-2.51	-3.07	-5.56	-1.39
	p value	(0.003)	(0.002)	(0.001)	(0.319)

simple regression coefficients have also been provided, as have the significance levels. The standard errors will provide a useful "unit" by which to compare changes in the regression coefficients when the system variables are introduced as controls.

Rows two and three show the coefficients associating the severity of war with the frequency of war when the system variables are introduced into the equation singly. While seven of the eight coefficients are lesser in magnitude than those found when no controls are used, none of these is more than 0.8 standard error below the simple regression coefficient. Notice also that when both system variables are simultaneously included as control variables, the results are virtually the same. Since the system variables are correlated in the predicted direction with the nature of war variables, we would expect there to be some reduction in the coefficients even if the system variables do not account for the frequency/severity relationship. Given the weakness of these findings, we cannot conclude that the openness of the colonial frontier or the polarity of the international system is an important determinant of the frequency/severity relationship. Regardless of which indicator of severity is used, the relationship between the frequency and seriousness of war remains substantially constant regardless of the structure of the international system.

The same conclusion can be drawn by examining the partial correlation coefficients between the frequency of war and the severity indicators when the structure of the system is introduced as a control variable. These coefficients are presented in Table 3.3 where the simple correlation coefficients are also provided for the purposes of comparison. Notice that in no case does the introduction of a system variable as a control substantially reduce the correlation between the war variables. In the case of the general war indicator, the correlation actually increases when the number of colonies established serves as a control, suggesting that this aspect of the frequency/seriousness relationship is actually somewhat masked by the structure of the system. The only severity variable for which the introduction of a control brings about even a moderate reduction in the coefficient is the number of great power wars having over 50,000 battle fatalities. This correlation is relatively weak to begin with (and not statistically significant at the 0.05 level), however, and the maximum reduction is only from -0.34 to -0.22 . These results provide fairly strong support for the argument that the inverse relationship between the frequency and severity of war is not a statistical artifact produced by the variables' association with the structure of the international system.

We may also use this technique to determine if the other hypothesized set of causal linkages presented in Figure 3.1 is a more

TABLE 3.3
Correlations (r) between frequency of war and severity of war, controlling for the systemic variables

	Log (Battle Deaths)	Log (Average Battle Deaths)	General War	Great Power War > 50,000 Battle Deaths
Frequency	-0.53	-0.70	-0.53	-0.34
Control for colonies established	-0.49	-0.67	-0.58	-0.22
Control for polarity	-0.52	-0.70	-0.52	-0.31
Control for both	-0.49	-0.67	-0.59	-0.22

TABLE 3.4
Correlations (r) between frequency of war and systemic variables,
controlling for severity

	Colonies Established	Polarity
Frequency	0.57	0.20
Control for log (battle deaths)	0.53	0.15
Control for log (average battle deaths)	0.51	0.13
Control for general war	0.61	0.15
Control for great power war > 50,000 battle deaths	0.52	0.13

appropriate characterization of the relationship among these variables.¹⁵ The partial correlation coefficients between the frequency of war and the system variables when the severity of war is introduced as a control are presented in Table 3.4. If these coefficients are substantially reduced when the controls are included, we could conclude that the severity of war acts as an intervening variable between the frequency of war and the structure of the system. As can be seen in the table, this is not the case. Once again, the introduction of the control variables brings about little reduction in the correlation coefficients. We are thus led to the conclusion that neither of the possible patterns of causal linkages pictured in Figure 3.1 is correct.

These results suggest that the pattern of causal linkages among these variables corresponds with neither of the hypotheses represented in Figure 3.1. Two logical possibilities remain: Either none of the correlations is spurious or the correlation between the system variables and the severity of war is due to these variables' association with the frequency of war. The results obtained thus far would be consistent with either possibility, but there is some evidence to suggest that the latter hypothesis may be correct. In particular, recall from Table 3.1 that the correlations between the system variables and the frequency of war were stronger than those linking the system variables to the severity indicators. It may be that the structure of the international system affects the frequency of war and is spuriously correlated with the severity of war. We can determine if this is the case by calculating the partial correlation coefficients linking the structure of the system with the severity of war after the frequency of war has been introduced as a control variable. If these coefficients are substantially less than uncontrolled coefficients, we could conclude that the system structure/severity of war association is a product of these variables' relationship with the frequency of war. The results of this analysis are presented in Table 3.5.

TABLE 3.5
Correlations (r) between severity of war and the systemic variables, controlling for the frequency of war

	Log (Battle Deaths)	Log (Average Battle Deaths)	General War	Great Power War > 50,000 Battle Deaths
Polarity	-0.14	-0.15	-0.14	-0.22
Control for frequency	-0.04	-0.02	-0.04	-0.17
Colonies established	-0.25	-0.33	-0.10	-0.30
Control for frequency	0.07	0.13	0.30	-0.14

The results presented in this table suggest that the relationship between the system variables and the severity of war is, in fact, due to the association between these variables and the frequency of war. The associations between polarity and all but one of the severity of war indicators virtually disappear when the frequency of war is introduced as a control variable. The correlations between the severity indicators and the number of colonies established (again with the one exception) actually reverse signs when the control is included. In each case, the coefficient associating the system variable with the number of great power wars of over 50,000 battle fatalities is anomalous. The initial correlation is modestly reduced, but the results are not consistent with those for the other severity indicators. The most obvious explanation for this anomaly is that the severity of war is a multidimensional concept, and that variables other than those included in this study are more closely associated with the severity of war once war begins.

Since these findings conform to none of the theoretical arguments advanced earlier, they require some degree of explanation. These results would be consistent with two patterns of causal linkages. It may be that the system variables affect the frequency of war, which in turn influences the severity of wars. Conversely, it is possible that the system variables and the severity of war (which is determined by factors not included in this study) independently influence the frequency of war. Unfortunately, we are unable to perform a critical test within the bounds of this study that would determine which of these explanations better fits the data.

For theoretical reasons, however, we prefer the latter explanation. We have suggested several reasons why both the structure of the system and the severity of war should affect the frequency of war. It is more difficult to explain how the frequency of war in a given period should causally affect the severity of those wars. It may be true that resource limitations force states to keep their wars limited if they engage in war frequently, but the reverse link would be equally plausible: After engaging in a large war, states have few resources for numerous other wars. The same logic holds for the functionalist argument that the equilibrium of the system can be maintained by either a major adjustment through a major war or a series of minor adjustments effected by more limited wars. Although the frequency of war would affect its seriousness, the effect of the seriousness of war on its frequency should be equally great. In cost/benefit terms, however, it is much more plausible that the expected costs of war will affect decision makers' proclivities for war than the frequency of war somehow affecting its seriousness. Thus, our tentative conclusion is that both systemic structure and the seriousness of war in a given period moderately affect the frequency of war in that period.

CONCLUSION

The purpose of this study has been to attempt to explain the observed inverse relationship between the frequency and seriousness of wars. We have restricted this research to explanatory variables characterizing the polarity of the international system and the availability of outlets for expansionist activity. It has been argued that a few severe wars among the great powers are more likely to occur in periods when the system structure is such that the vital interests of the great powers are threatened. When the polarity of the system is such that one power is perceived to threaten hegemony, or when no outlet for expansionism exists, bringing the great powers into direct conflict, major wars should occur. Conversely, if no great power poses an overwhelming threat to the existence of the others and the extension of one power's influence does not necessarily come at the direct expense of another great power, wars may be frequently but mild as the great powers fight primarily with minor states or nonstate groups. The results of our statistical analyses, however, indicate that these variables do not account for the observed relationship.

It is important to note that our failure to explain the frequency/seriousness relationship is not the product of an absence of relationships among the variables included in this study. To the contrary, there appears to be a consistent pattern of relationships among these variables that serves to disconfirm the hypotheses guiding our study. The failure to account for the observed relationship is thus probably due to the fact that the models we have tested are incompletely specified. We know, for example, that the "seriousness" of war is a multidimensional concept. On the one hand, wars between great powers are more "serious" in terms of their political effects and their potential for escalation than are wars between a great power and a nongreat power. On the other hand, long wars involving many battle deaths are more "serious" than shorter, less destructive wars, regardless of the status of the belligerents. The theoretical arguments guiding this study suggest that the variables we have considered should influence the former type of severity. The frequency/seriousness linkage may be better explained by variables that determine whether wars that do occur will expand and escalate. These include not only systemic variables such as alliance configurations and the nature of military technology, but also such national-level variables as ideological fervor, public opinion, bureaucratic politics, and the idiosyncracies of individual decision makers (Iklé 1971; Smoke 1977). Furthermore, the theoretical arguments linking the severity of war to the frequency of war often cut across levels of analysis; that is, the inverse correlation observed at the systemic level may be at least partially a

product of factors operating at the nation-state level of analysis. In short, a complete explanation of the frequency/seriousness relationship will require further analysis incorporating a number of other variables at all levels of analysis.

Clearly, the overwhelming conclusion is that we are a long way from fully understanding the relationship between the frequency and seriousness of war. As we pointed out in our previous study (Levy and Morgan 1984), this question has policy relevance in that it bears on the oft-repeated claim that we must be prepared to fight small wars now to avoid more serious wars later. One aspect of the argument in the preceding paragraph is undoubtedly correct—we do not yet know why the relationship between the frequency and seriousness of war exists, and thus we cannot totally predict when a small war may turn into the big war it is supposed to avoid. Considering this, until the severity/frequency relationship is more clearly understood, we should be quite circumspect about policy prescriptions advocating small wars.

NOTES

1. Since nearly all the literature on polarity implicitly adopts a traditional realist perspective, which incorporates a Eurocentric, great power bias, the concept of "the system" will refer to the modern great power system in which military/security interests are central (Levy 1983).

2. Although stability has been conceptualized in terms of both the maintenance of the status quo and the relative absence of war in the system (Zinnes 1967), most of the theoretical literature on the polarity/stability question defines stability in terms of war proneness, conceived as some combination of the frequency of occurrence of wars and their seriousness (Levy 1985b).

3. This follows Levy's conceptualization of polarity (1985b).

4. Thompson (1962), Craig and George (1983, p.46), and others make this argument explicitly with respect to the pre-World War I period. Thompson states: "It was when the world's resources of such 'cheap compensations' were exhausted, in the decade after 1904, that European tensions reached breaking point. [This period] brought a limit to the expansion of the world's colonial frontiers in general and forced the powers back upon their more dangerous rivalries in Europe where no freedom of maneuver remained" (pp. 473-74).

5. Note that the "safety valve" effect operating at lower levels of lateral pressure or colonial expansion is not incorporated into the dynamic model of conflict created by Choucri and North (1975).

6. Colonial wars (which we shall also refer to as imperial wars) are defined as those involving a great power against a smaller entity on the periphery of the system. They are historically equivalent to Singer and Small's category (1972, pp. 31-32) of extrasystemic wars involving a great power for the 1816-1980 period (Levy 1983, pp. 61-63).

7. Portugal for many centuries is one obvious exception.

8. For purposes of convenient temporal partitioning, we use the year 1500 rather than Levy's 1495 as the starting point for our analysis.

9. The list of general wars is as follows: War of Dutch Independence/Spanish Armada, 1585-1609; Thirty Years' War, 1618-48; Dutch War of Louis XIV, 1672-78; War of the League of Augsburg, 1688-97; War of the Spanish Succession, 1701-13; War of Jenkins' Ear/Austrian Succession, 1739-48, Seven Years' War, 1755-63; French Revolutionary and Napoleonic Wars, 1792-1815; World War I, 1914-18; World War II, 1939-45 (Levy 1985a). In this study, the French Revolutionary and Napoleonic Wars have been treated as two distinct general wars (1792-1800, 1803-15), since they overlap into two temporal periods and since each of the two main phases of the wars individually satisfies the criteria for a general war. In addition, because the Thirty Years' War satisfies our criteria only after 1625, it will be treated as such only in that period.

10. We have also performed the analyses below using an alternative measure of the openness of the colonial frontier: the sum of the number of colonies established and terminated in each period. If the results were stronger for the alternative indicator, it would suggest that the openness of the colonial frontier affects the nature of war by drawing attention away from disputes at the core of the system rather than by creating an outlet for expansionist activity. As one would expect, the indicators are moderately correlated ($r = 0.56$, $p = 0.03$), but this correlation is sufficiently low to suggest that they are measuring different concepts.

11. Any temporal aggregation of this kind raises a question regarding the measurement of polarity. Since the analysis is to be performed on 20-year periods of aggregation, each period must be categorized according to its polarity. In 17 of the 23 periods, this presents no problem because the polarity of the system remained unchanged throughout the 20 years. A change in polarity occurred during the other six periods, however, making the classification of these periods more difficult. There are several possible ways in which this problem can be handled.

One means would be to categorize a period according to the value of polarity it took on during the majority of its years. This would classify the periods on the basis of the polarity that presumably would have had the longest influence. Another strategy would be to classify the entire period as the polarity at which it began. This could be reasonable since the effects on the nature of war brought about by a change in polarity could be felt only after a lag. Furthermore, if changes in polarity are often coincident with a major war, that war should be attributable to the polarity under which it began. Thus, the warfare occurring in a given period could be most closely associated with the polarity when the period began. This argument is less valid if the change in polarity occurs within the first year or two of a period, however. A third prospect represents a synthesis of the previous two. We can categorize a period as being the polarity at which it began, unless the change occurs within five years of its onset. In four of the six cases in question, all three methods provide the same coding. In categorizing the other two periods, we have relied on the third method. In both cases, the other methods provided different answers, so this scheme served as something of a "tiebreaker."

12. Conversely, if the adjusted regression coefficients are higher when the system variables are included as controls, we could conclude that our predictor variables actually serve to mask the strength of the frequency/seriousness relationship. If the coefficients show little change, it would indicate that the system variables have no bearing on the relationship.

13. These results are consistent across indicators, whether 20- or 25-year periods are used, and when the partitioning of the data is shifted by beginning the analysis in years other than 1500 (Levy and Morgan 1984).

14. Performing this, and the remaining, analysis using our alternative measure of the openness of the colonial frontier provides results that are fully consistent with those presented here. The results are somewhat weaker, however, suggesting that the openness of the frontier affects the nature of war by providing an outlet for expansion.

15. The analysis based on the regression equations actually provides a more appropriate test of the hypotheses than does the partial correlation analysis (Blalock 1968, p. 176). In addition, none of the statistical assumptions of the analysis of covariance test are violated by the nonmetric indicator of polarity as are those underlying the partial correlation analysis. Throughout the remainder of this study, we will focus our attention on the partial correlation coefficients, however, because these are easier to present and interpret in light of our hypotheses. We have performed the regression analyses for each of the remaining tests with identical substantive results; therefore, our confidence in our findings remains high.

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