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The Frequency and Seriousness of War

AN INVERSE RELATIONSHIP?

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The hypothesis that the frequency of war in a given period is inversely related to its seriousness is operationalized and tested for the modern great power system beginning in 1500. All imperial wars, as well as interstate wars since 1500, are identified and several indicators of the seriousness of war are constructed. It is found that the correlations between the frequency and seriousness of wars are consistently in the predicted direction, of moderate strength, often statistically significant, stable over time, and consistent for a variety of temporal partitions, thus confirming the hypothesis.

It is often said that the seriousness of war is inversely related to its frequency of occurrence. That is, the more often wars occur in a given period, the less serious they are, and the more serious, the less frequently they occur. This generalization 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 an assumption underlying several important policy-relevant propositions.

In spite of the importance of this generalization, it has yet to be analyzed theoretically or tested empirically. The aim of this study is to construct several alternative theoretical explanations for this hypothesized inverse relationship between the frequency and seriousness of war and to test this hypothesis over the last five centuries of the modern

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international system. Not only will this determine the validity of the hypothesis as a descriptive empirical generalization, but it will also have considerable relevance for the broader theories under which the hypothesis is subsumed.

THEORETICAL PERSPECTIVES

References to this hypothesis positing an inverse relationship between the frequency of wars and their seriousness are widely dispersed throughout the literature on international conflict and are associated with a variety of theoretical perspectives. The hypothesis is often tied to certain structural conditions in the international system. Rosecrance (1969: 329-333), in a view that is widely shared, argues that it is "highly probable that a multipolar world order will increase the number of international conflicts, though it may possibly reduce their significance," while under bipolarity conflicts should be infrequent but more violent.¹ Others make more general references to war in balance-of-power systems. Hoffmann (1968) is typical in arguing that the balance of power does not eliminate wars but tends to moderate them by tempering both ends and means. One particularly important structural variable is the relative openness of the "colonial frontier," which is inversely related to the degree to which core powers have already partitioned the periphery. Balance-of-power theorists and many traditional diplomatic historians argue that in systems characterized by an open colonial frontier wars are frequent but limited, as 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 be moderated (Morgenthau, 1967: 341-342; 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

1. The few empirical studies bearing on this specific proposition have had somewhat mixed results. Haas (1970: 121) finds that wars in bipolar systems are less frequent but longer, but that they also involve fewer participants. Elsewhere we have found a very slight tendency for wars to be more frequent but *less* serious in systems characterized by either a bipolar power structure or a small number of great powers; the reverse is true for systems of multipolarity or a larger number of powers (Levy, 1984a, 1984b).

another great power (Lenin, 1939: chap. 6; Chatterjee, 1975: 150-151).² 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 powers, and the likelihood of war between the great powers 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.

A similar but more general theoretical explanation for the existence of an inverse relationship between the frequency and seriousness of war is based on the functional consequences of war for the international system. The changing distribution of power among states generates a disequilibrium between the governance of the system (including the distribution of economic, legal, and political benefits) and the new distribution of power (Gilpin, 1981; Thompson, 1983). This disequilibrium can be corrected by a single cataclysmic general (or hegemonic) war or by a series of more limited wars (Levy, 1984c). The occurrence of the former makes the latter unnecessary, and vice versa. A slight variation on this hypothesis is Toynbee's (1954: 251-256) notion that a general war does not alone restore stability to a system but requires a subsequent set of more limited wars. An interval of "general war" in Toynbee's cyclical theory is immediately followed by a "breathing space" of peace and then a "burst" of short and relatively mild "supplemental wars" that settle the unresolved issues, implying that a period of infrequent but serious wars is followed by a period of frequent but limited wars.³

2. Thompson (1962), Craig and George (1983: 46), and others make this argument explicitly with respect to the pre-World War I period. Thompson (1962: 473-474) 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."

3. An alternative explanation for this phenomenon is provided by Toynbee's "war-weariness" hypothesis, which is a form of negative war contagion. It would be possible in principle to construct from war-contagion hypotheses a more general theoretical explanation for the hypothesized inverse relationship between the frequency and seriousness of war. Most war-contagion hypotheses, however, focus primarily on the incidence of war and relate the occurrence of one war to the outbreak of subsequent wars (Davis et al., 1978; Most and Starr, 1980). For contagion hypotheses to be relevant to the hypothesized relationship between the frequency and seriousness of war, they would have to be differentiated between these independent dimensions of war.

To say that war impedes (or begets) subsequent war is not relevant here unless it is specified whether it is one major war or a group of small wars that is most contagious and

An inverse relationship between the frequency and seriousness of war is also implied by the patterns many have observed in historical trends in war. Wright (1965: 248) concludes that during the last four centuries war has become "less frequent . . . [but] more intense, more extended, and costly." Beer (1981: 38-49) also finds that the frequency of war has been diminishing while its seriousness has been increasing.⁴ This relationship may be a causal one, with the increasing destructiveness of war being a major reason for its declining frequency. Many have suggested that this is particularly true for the nuclear age, where the incomparable destructiveness of modern technology renders a major war very unlikely and perhaps obsolete (Knorr, 1966). Many have adopted Snyder's (1961) conceptual distinction between deterrence and defense and recognize the trade-off between minimizing the likelihood of war and minimizing the destructiveness of those wars that do occur. Bull (1961: 148) suggests that nuclear proliferation may make wars "less likely . . . [but] at the cost of rendering these wars, if they did break out, nuclear ones."

In addition to these theoretical generalizations, one can find numerous statements regarding the relationship between the frequency and seriousness of war in particular historical eras. Warfare in the Middle Ages, for example, has been depicted as a "continuous but small-scale activity" (Osgood, 1967: 43). Preston and Wise (1979: chap. 9) characterize eighteenth-century warfare as frequent but limited. Similarly, Claude (1962: 71) refers to the "frequent" but "localized and limited" wars of the nineteenth century. Others make the same point in a less explicit manner. Kissinger (1969: 122) notes that in the nineteenth century, wars occurred but were "limited . . . to disputes within a given framework." He also seems to imply that this pattern is more general in historical scope: "In the history of warfare limited wars between major powers have been a frequent occurrence" (Kissinger, 1969: 119).

All of the above generalizations are systemic-level propositions, relating the aggregate frequency of war in the international system to its

whether the impact is on the frequency of war or its seriousness. It would also be necessary to distinguish carefully between national and systemic-level contagion hypotheses. The war-weariness hypothesis refers to national-level behavior, and it is not clear how one state's war behavior would create war weariness in another state. For one attempt to examine the contagion effects of other dimensions of war besides their incidence, see Levy (1982a).

4. Studies of historical trends in war are not all consistent on this point and are quite sensitive to the particular operational indicators employed (Levy, 1982b: 279-280).

overall seriousness. While this is the primary focus of this study, one can also find similar national-level propositions relating the frequency of war for an individual state to the seriousness of those wars. While national-level relationships are not necessarily valid at the systemic level (Robinson, 1950; Singer, 1961),⁵ there is good reason for believing that in this case national-level propositions may help explain the existence of a systemic-level relationship between the frequency and seriousness of war,⁶ particularly for the great power system that will serve as the focus of this study.

First, to the extent that decisions for war are based on rational utility calculations, any factors that increase the destructiveness of war increase its costs and thereby reduce its frequency of occurrence. Similarly, the lower the costs of war, the fewer the constraints against its initiation and hence the greater its frequency, everything else being equal.⁷ Because of technological diffusion and the roughly comparable economic levels of the great powers, the potential destructiveness of war is essentially a systemic-level variable that affects all of the great powers equally, or at least in the same direction.⁸ Thus any technological or other systemic-level changes affecting the potential destructiveness of war would affect the incentives for war for all the powers in the system. On the basis of this theoretical explanation, if the hypothesized inverse relationship exists on one level, it should also exist on the other level.

Second, the seriousness of war will be defined in terms of casualties, and a significant fraction of all casualties from international war are generated by a small number of wars involving most of the great powers (Wright, 1965). Consequently, periods in which war is particularly

5. That is, it is statistically possible that two variables may be positively correlated at one level but negatively correlated at the other level.

6. These national-level propositions are also important in and of themselves, of course. It would be vital for decision makers to know, for example, if they could avoid big wars by fighting small ones.

7. The destructiveness of war also affects its frequency through the intervening variable of social and cultural norms. Cultural norms regarding the acceptability of war as an instrument of policy are determined in part by the destructiveness of war, and the greater the social acceptability of war in a particular culture, the greater the probability and hence the frequency of war (Lebow, 1981: 247-254).

8. Other variables affecting the destructiveness of war may also operate at the level of the great power system rather than at a nation-specific level. In terms of Osgood's (1967) concepts, the rationalization, centralization, professionalization, and modernization of force generally affect all of the great powers at roughly the same time; and this is only slightly less true for the commercialization and popularization of force (Levy, 1982b: 292-297). Moreover, the cultural norms restraining war are as much systemic as national in origin (Nef, 1968).

destructive for one power are usually also quite destructive for each of the other powers in the system (Levy, 1983: chaps. 4-5), so that the seriousness of war for one great power should be a good predictor of the seriousness of war for the system as a whole. Similarly, if there is a serious war in the system, it probably involves most of the powers.⁹ Thus any correlation observed at one level will probably hold at the other level.

It can be concluded that there is considerable overlap between the theoretical explanations for the frequency/seriousness relationship at the two distinct levels of analysis. One can find in the literature numerous national-level propositions regarding the frequency and seriousness of war. It is often argued, for example, that in a balance-of-power system it may be necessary to fight frequent small wars in order to avoid having to fight big ones. Many interpretations of British policy in the recent Anglo-Argentine War make precisely this point. Historian Trevor-Roper (1982) has suggested that the aim of British policy (in the 1770 Falklands crisis with Spain as well as the recent one with Argentina) was "to limit the conflict and, by a merely local war, to preserve the general peace." The *Economist* has repeatedly made a similar point: To shrink from "tiny" challenges today would only encourage "bigger losses in the future" (April 10, 1982); "only by being willing to shed some blood can a lot of it be left unshed" (June 19, 1982). This notion is central to theories of deterrence and coercive diplomacy and is an important assumption underlying American doctrines of containment, intervention, and limited war. Many argue that limited wars serve as a substitute for all-out war between the superpowers in the nuclear age. Osgood (1957: chap. 1), for example, argues that only a strategy of limited war would allow the United States to avoid the alternatives of total war, surrender, and ineffective resistance. Arguments of this kind were used repeatedly in debates regarding American intervention in the Vietnam war.

Given the numerous causal explanations for the hypothesized inverse relationship, however, and given the fact that these have not been fully developed in the literature, extreme caution must be used in making inferences from systemic-level findings to national-level behavior. The preceding national-level propositions must ultimately be subject to independent empirical testing.

9. For the set of all interstate wars involving the great powers since 1495, the rank-order correlation between the severity of war (battle deaths) and the number of participating powers is $\tau_b = .46$ (Levy, 1983: 105).

In spite of the numerous plausible theoretical explanations for the proposition that the frequency of war in the system is inversely related to its aggregate seriousness, and in spite of its potential importance for policy as well as for theory, this proposition has yet to be tested empirically. It is often simply accepted as an empirical law. Yet one can identify particular historical eras during which the proposition appears to be invalid: the early nineteenth century, when wars were neither frequent nor serious, and the late seventeenth century, when they were both frequent and serious. These impressions may be incorrect, however, or they may be exceptions to the common pattern. This can be determined only by a systematic empirical test. Such a test will not only determine the validity of the proposition as a descriptive empirical generalization regarding patterns of warfare in the international system, it will also have important implications for some of the theories and policy-relevant hypotheses that subsume that generalization. Since several of these substantive hypotheses either assume or imply an inverse relationship between the frequency and seriousness of war, the empirical invalidation of this relationship would undermine the hypothesis in question. For example, many arguments for the stability of multipolar systems or of balance-of-power systems in general would collapse if it were demonstrated that the frequent occurrence of wars in no way muted their destructiveness.

Given that the various theoretical explanations for this relationship suggest different directions of causality, but all posit an empirical correlation, there will be no attempt to examine the causal question in the following empirical analysis.

RESEARCH DESIGN

The general systemic-level hypothesis under consideration is as follows:

The frequency of wars in a given period is inversely related to their seriousness.¹⁰

10. Note that the focus is on the relationship between the frequency and seriousness of war *in a given period*. This is distinct from the question of whether wars small in magnitude or severity occur more frequently than more serious wars (they do). The latter question focuses on the distribution of all wars rather than on those occurring in a given period and has received considerable attention in the literature (Richardson, 1960; Singer and Small, 1972; Wilkinson, 1980: chap. 3; Zinnes, 1976: 184-190).

This hypothesis is not fully operational in its present form, however, in that its central concepts need to be further refined. Does the frequency of war refer to all wars, or does it exclude civil wars or colonial wars? Does it include even military conflicts short of war? Does the concept of "serious war" refer to the number of wars exceeding a certain threshold, the aggregate number of casualties (or some other indicator), or the characteristics of the average war? We might also ask whether the relationship is a truly general one or whether it has varied over time. Let us now attempt to transform the hypothesis into operational form and suggest a research design for testing it.

THE EMPIRICAL SYSTEM

Because of the general bias in the international conflict literature toward the great powers, because the powers account for a large proportion of the destructiveness of war on the systemic level, and because several of the theoretical explanations for the hypothesis in question refer basically to the great powers,¹¹ the hypothesis will be tested over the modern great power system. Wars involving the powers against smaller states or other peripheral actors are included in this system. Wars involving only secondary actors are external to this system and are not relevant to many variations of the basic hypothesis, and therefore will be excluded.¹²

The modern great power system originated at the end of the fifteenth century. This marks the fusion of several distinct historical processes: the internal centralization of power within territorial states, the decline of the universal secular authority of the Pope and Holy Roman Emperor, the coalescence of the major territorial states of Europe into an interdependent system of power relations, and the emergence of a world economy centered in Europe and sustained by sea power.¹³ This Eurocentric system evolved into a truly global system by the twentieth century. By beginning the analysis in the year 1500 and covering the

11. These include explanations based on the openness of the colonial frontier or on the functional consequences of war for the equilibrium of the system.

12. For further justification of the focus on the great power system, see Levy (1983: chaps. 1-2).

13. For further justification for marking the origins of the system at the end of the fifteenth century, see Levy (1983: 19-24). This argument is consistent with a diverse body of literature on the origins of the modern system (Toynbee, 1954: ix, 237; Hill, 1914: II, 209; Albrecht-Carrié, 1974: 1081-1082; Mattingly, 1955: 124-125; Dehio, 1962: 23; Petrie, 1947: 1-2, 11; Mowat, 1928: 7, 28; Howard, 1976: 20; Wight, 1977).

entire span of the system, we are able to incorporate a large number of cases in a diversity of conditions, facilitating the randomization of extraneous influences on the empirical relationship in question. The great powers have been defined and identified elsewhere.¹⁴ They are as follows: France, 1500-1975; England/Great Britain, 1500-1975; Austrian Hapsburgs/Austria/Austria-Hungary, 1500-1519, 1556-1918; Spain, 1500-1519, 1556-1808; Ottoman Empire, 1500-1699; 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.

DEFINITION AND MEASUREMENT OF THE VARIABLES

The conceptualization of 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 hypothesis involves small wars, and since imperial wars are explicitly included in some versions and implicitly in others, imperial wars as well as interstate wars must be included in the analysis.¹⁵ 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 what constitutes a war. We cannot rely exclusively on the Singer-Small 1000 battle-death criterion for it is too high for our purposes. It would exclude numerous imperial wars that must be included in the limited-war category and that are explicitly identified in the "colonial frontier" explanation for the hypothesis in question. Since any lower threshold would involve problems of data accuracy and availability, we shall rely on multiple sources (as described below) to determine whether a conflict excluded by the Singer-Small criterion went beyond minor skirmishing to open warfare. The frequency of war, then, is taken to be the total number of all international wars per 25-year period.

14. For a definition and operationalization of the concept, a historical analysis by which the identity of the great powers is determined, and a comparison with other lists of greater powers, see Levy (1983: chap. 2). This compilation is very similar to others for the 1815-1945 period.

15. Imperial wars are defined as those involving a great power against a smaller entity on the periphery of the system and are historically equivalent to Singer and Small's (1972: 31-32) category of extrasystemic wars involving a great power.

Existing compilations of war data are not adequate for our purposes,¹⁶ so a new data set of international wars involving the great powers must be generated. Interstate and imperial wars involving the great powers during the post-1815 period are taken from the revised Small and Singer (1982) lists of interstate and extrasystemic wars, with some modifications. Our definition of great power is used. Richardson (1960), Langer (1948), and Dupuy and Dupuy (1977) are consulted for the inclusion of imperial wars and other wars involving less than 1000 battle deaths but significant hostilities nevertheless. For the pre-1815 period, a combination of the Wright (1965), Sorokin (1937), and Woods and Baltzly (1915) data sets are used. While these are individually unreliable, together they provide mutual validity checks. Any war listed in two of these is included in our compilation. Cases involving single-source wars are resolved by reference to Dupuy and Dupuy (1977) and Langer (1948). These two references are also important sources for the identification of imperial wars, which are only sporadically included in our main sources. Further ambiguities are resolved with reference to standard historical sources such as the *New Cambridge Modern History* (1957), Mowat (1928), and Hill (1914).¹⁷

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: 130). 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 with some aggregate measure of the severity of all wars in a given period. Although 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 too dependent upon the number of

16. For a discussion of the inadequacy of existing compilations, see Levy (1983: 53-57).

17. One of our most serious problems involves the aggregation of war. Is a temporal sequence of conflicts defined as a single war or several wars, and when are simultaneous wars aggregated? This is particularly important because of our focus on the frequency of war. It is especially troublesome for the early Turkish wars and also for imperial wars, which were often fought intermittently over an extended period of time. There does not exist adequate data for the pre-1825 period to use rigid objective criteria such as Singer and Small's annual average of 1000 battle deaths or breaks in the fighting of less than three months. If sequential conflicts involve the same participants and same specific issues, they are generally aggregated, though formal peace treaties are usually taken to define the end of a war. The aim here, consistent with conventional historical practice and that followed in other compilations, is to avoid treating a succession of battles or engagements as distinct wars. This is admittedly a difficult problem, but one that has been given inadequate attention in all of the major compilations of wars. For further discussion, see Levy (1983: 63-69).

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 will also be used, but this indicator does not discriminate 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 the great powers ("great power wars") that exceed 50,000 battle deaths is a fairly discriminating measure of severity, including only about 10% of all cases in this study.¹⁸ An even more discriminating indicator is the set of "general wars," operationally defined as wars involving over two-thirds of the great powers and an intensity exceeding 1000 battle deaths per million European population (Levy, 1983: 75-76).¹⁹

This leaves four indicators of the seriousness of war in a given period:

- (1) total number of battle deaths
- (2) average number of battle deaths per war
- (3) number of great power wars exceeding 50,000 fatalities
- (4) number of general wars

These indicators cover a range of severity, 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.

Data on the severity of war (battle deaths) is taken from the Small and Singer (1982) compilation for the post-1815 period and from Sorokin (1937) for the earlier period. Given our focus on the great power system, only the fatalities of the 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 to interstate wars involving the great powers, only fatalities from the latter will be used to

18. The number of great power wars itself is insufficiently discriminating as a measure of seriousness, for it would include about 30% of the total number of cases.

19. For our purposes, it is necessary to make some slight changes in the first author's earlier compilation of general wars. Since the French Revolutionary and Napoleonic Wars overlap into separate periods, each will be treated as a distinct general war (each individually satisfies our criteria), where as in the earlier study these two wars were combined into one. Since the Thirty Years War satisfies the criteria for a general war only after 1625, it will be treated as such only in that period.

TABLE 1
The Frequency and Seriousness of War:
25-Year Periods of Aggregation

<i>Period</i>	<i>Frequency</i>	<i>General War</i>	<i>GP War > 50,000 BD^a</i>	<i>BD^b</i>	<i>Average BD/War^c</i>
1500-1524	13	0	1	154,000	11,846
1525-1549	11	0	1	253,000	23,000
1550-1574	10	0	2	279,000	27,900
1575-1599	8	0	1	227,000	28,375
1600-1624	10	0	2	51,000	5,100
1625-1649	6	1	2	2,027,000	337,833
1650-1674	14	1	2	570,000	40,714
1675-1699	7	1	2	1,081,000	154,429
1700-1724	6	1	2	1,350,000	225,000
1725-1749	5	1	2	510,000	102,000
1750-1774	4	1	1	1,006,000	251,500
1775-1799	11	1	1	892,300	81,118
1800-1824	14	1	1	1,926,400	137,600
1825-1849	19	0	0	58,680	3,088
1850-1874	19	0	2	461,000	24,263
1875-1899	29	0	0	122,100	4,210
1900-1924	13	1	1	7,848,470	603,728
1925-1949	11	1	1	13,280,800	1,207,346
1950-1974	8	0	1	1,009,220	126,152

a. Great power wars with more than 50,000 battle deaths.

b. Total battle deaths.

c. Average battle deaths per war.

approximate the severity indicator. From this list of all international wars involving the great powers, the four indicators of major warfare can easily be constructed.²⁰ The data for the frequency and seriousness of war for 25-year periods of aggregation are presented in Table 1.

METHODS OF ANALYSIS

The hypothesized inverse relationship between the frequency and seriousness of war calls for a simple correlation analysis between their respective indicators. The war data is aggregated by 25-year periods. This is the optimal temporal unit because it captures the generational

20. For further discussion of the battle death data, the methodological problems involved in its generation, and its potential biases, see Levy (1983: 83-87).

impact of war and minimizes the problem of wars overlapping from one period into the next. Pearson's product-moment correlation coefficient is used, along with logarithmic transformations of the highly skewed severity indicator. In order to ensure that the results of this data analysis are not merely the artifact of the particular methods used, however, separate tests based on different periods of temporal aggregation and different partitioning of the data will also be conducted.

The analysis will be conducted not only for the entire 1500-1975 period but also for three distinct subperiods: (1) 1500-1649; (2) 1650-1824; and (3) 1825-1974. The two breakpoints correspond roughly to the Congresses of Westphalia and Vienna, marking the end of the Thirty Years War and the French Revolutionary and Napoleonic wars, and are widely recognized as marking major transformations in the international system. Separate analyses of these periods will facilitate the determination of whether the relationship between the frequency and seriousness of war has changed over time in response to these fundamental systemic transformations.

Since there are numerous references in the literature to the frequency and seriousness of warfare in particular centuries, that question will also be examined. Since four 25-year periods per century provide an inadequate basis for a correlational analysis, the centuries will simply be ranked along two key indicators: the frequency of war and the average severity of the wars that occur. A comparison of the rankings will provide a rough measure of the relationship between the frequency and seriousness of war in each category.

DATA ANALYSIS

The resulting correlations between the frequency of war and each of the indicators of the seriousness of war per 25-year period are presented in Table 2. The correlations are given for the three subperiods as well as for the entire duration of the system.

These findings leave little doubt about the existence of an inverse relationship between the frequency and seriousness of war. The correlation coefficients for the entire period are all negative and basically moderate in strength for each of the four indicators, and three are statistically significant at the .05 level.²¹ In addition, the relationship

21. There is adequate evidence demonstrating that these results are not simply the artifact of the particular statistical methods employed. In a separate analysis based on

TABLE 2
Correlations (r) Between the Frequency and Seriousness of War^a

<i>Period</i>	<i>Indicator of Seriousness</i>			
	<i>BD</i> ^b	<i>avg BD</i> ^b	<i>GPW > 50,000</i>	<i>Gen War</i>
1500-1974 (n = 19)	-.34	-.58	-.48	-.43
1500-1649 (n = 6)	-.66	-.76	-.40	-.74
1650-1824 (n = 7)	.15	-.68	-.21	— ^c
1825-1974 (n = 6)	-.69	-.78	-.44	-.46

a. Based on a 25-year period of aggregation. BD = total battle deaths; avg BD = average battle deaths per war; GPW > 50,000 = frequency of great power wars of 50,000 or more battle deaths; Gen War = frequency of general war. Coefficients shown in italics are statistically significant at .05.

b. A logarithmic transformation is used.

c. Not computable (no variation in general war—one per period).

appears to be stable over each of the three major periods since 1500, although, as there are only six or seven cases in each, we must be cautious in making inferences. Correlations with the best single indicator, the average severity of war, are statistically significant at .05 for each of the three subperiods as well as the entire five-century period. The relationship is slightly stronger in the pre-Westphalia and post-Napoleonic periods, where all of the correlations are negative and moderate to strong in magnitude. The 1650-1824 period is somewhat more difficult to interpret. Interestingly enough, each of the seven quarter-century periods in these eras contains one general war, which

20-year periods of aggregation, all of the correlations are negative and all are statistically significant at .06 or better, though they are slightly weaker than those for 25-year periods. (Any shorter period of aggregation would result in too many long wars continuing into the following period and too many temporarily proximate wars being isolated in distinct periods.)

If the partitioning of the data is shifted by beginning the analysis in the years 1505, 1512, and 1520, the results are not markedly different. While several of the correlations for the unconventional partitioning periods are not quite as strong as for the standard periodization beginning in 1500, all correlations are negative, most exceed $-.3$ in magnitude, and none falls below $-.19$.

Finally, the moderate negative relationship is unchanged if tau b is used in place of r , with the correlation on average being about $.1$ less in magnitude.

TABLE 3
 Rankings of the Centuries by Frequency
 and Average Severity of War

<i>Century</i>	<i>Rank</i>	
	<i>Frequency</i>	<i>Average Severity</i>
Sixteenth	3	5
Seventeenth	4	3
Eighteenth	5	2
Nineteenth	1	4
Twentieth	2	1

NOTE: 1 denotes highest rank.

means that there is no variation in the general war indicator and that the correlation coefficient cannot be computed. While there is a slight positive relationship between the frequency of war and its aggregate severity, the average severity of war is unquestionably the greatest when its frequency is lowest. Because this is the better of the two indicators, because its magnitude is fairly high and significant at .05, and because the number of great power wars over 50,000 fatalities is also negatively correlated with frequency, it must be concluded that this 1650-1824 period does not contradict the overall pattern of a negative relationship between the frequency and seriousness of war.

A more detailed look at past periods is possible through a comparison of the rankings of each of the last five centuries in terms of the frequency of war and its average severity, as presented in Table 3. On the basis of these indicators, the eighteenth and nineteenth centuries fit the hypothesized relationship most closely. The nineteenth century ranks first in frequency of war (largely because of the large number of imperial wars) but fourth in the average severity of the wars fought. The relationship also holds for the eighteenth century, but not in the direction commonly argued: Eighteenth-century wars were not frequent and limited, but instead the least frequent and, on the average, more serious than at any time before the twentieth century. The sixteenth century was average in terms of the frequency of warfare, but these wars were the most limited of modern times. The seventeenth century was about average in terms of both the frequency and seriousness of war. The hypothesis is least valid so far in the twentieth century, which ranks second in the frequency of war but first in the destructiveness of the wars

fought. With this exception, the pattern of warfare in each of the last five centuries is basically consistent with the hypothesized inverse relationship between the frequency and seriousness of war.

CONCLUSIONS

The hypothesis that the frequency of war is inversely related to its seriousness is confirmed. Wars have generally been either frequent but limited or infrequent but more serious; only rarely have they been both frequent and serious or infrequent and limited. Our confidence in the validity of these results is increased further by their consistency over several indicators tapping different degrees of the seriousness of war, by their consistency for different periods of temporal aggregation and different temporal partitioning, by their stability over time, and by the moderate strength of most of the indicators. It is particularly interesting that this inverse relationship is nearly as strong in the pre-Westphalia era as in the post-Napoleonic era. This suggests that the relationship existed independently of the proliferation of imperial wars in the most recent period and therefore that it constitutes a persistent pattern of international behavior.

The confirmation of an inverse relationship between the frequency and seriousness of war cannot be interpreted at this point as anything more than a descriptive empirical generalization. This analysis has not attempted to identify the direction of causality or even to determine whether the relationship is in fact a causal one. It is conceivable that the observed pattern can be accounted for by extraneous variables that have opposite impacts on the frequency and seriousness of war, but this possibility is minimized by the randomization of external influences over the extended five-century span of the study. Similarly, it is unlikely that the observed finding can be explained by long-term secular trends in war. Not only is the relationship the same over the three periods, but it is also consistent for different indicators of major wars, which themselves follow opposite long-term trends.²²

This analysis does have some bearing on certain causal propositions, in the sense that the disconfirmation of the hypothesized relationship

22. For example, the frequency of great power wars exceeding 50,000 fatalities has been declining, while the severity of great power wars has been increasing.

would have raised certain questions regarding the validity of several diverse theories and propositions that imply (to various degrees) the existence of that relationship. However, these findings cannot be interpreted as confirming the proposition that numerous small wars actually deter or otherwise impede major wars in a causal sense. For this question a more complex analysis based on a different research design, control variables, and additional data would be necessary. Of particular importance in this regard is the fact that this analysis has been conducted at the systemic level, so that our findings do not necessarily hold for national-level propositions. The hypothesis that a nation can avoid major wars by fighting small ones does not necessarily draw support from our finding that the frequency and seriousness of wars are inversely related at the systemic level.

These considerations should divert attention from the fact that the inverse relationship between the frequency and seriousness of war constitutes an important descriptive empirical generalization in its own right. This proposition is not logically necessary, intuitively obvious, or trivial, but it has been repeatedly asserted without supporting evidence. It has finally been subjected to systematic empirical testing, and has been confirmed.

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