BALANCE OF POWER THEORY RECONSIDERED:
The Distribution of Capabilities and Alliances 1816-1939

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ABSTRACT

This study examines the European International system from 1816 to 1939, focusing on the relationship between the distribution of capabilities and alliances. Two distinct versions of Balance of Power theory are employed to test this relationship. The manual version posits a direct or positive relationship between an unequal distribution and the number of alliances in the system. The semi-automatic or balancer version posits the same relationship but limits its applicability to a single Great Power, Great Britain. The findings support the semi-automatic version and also indicate an inverse relationship between equality and alliances. Finally, an examination of the relationship between polarization, defined as the pattern of alliances in the system, and the distribution of capabilities is undertaken. No clear relationship is found between polarization and an unequal distribution, although some evidence points towards a relationship between polarization and war. The analysis concludes by positing conflicting, if not contradictory, security demands and thus conflicting behavior for continental and insular Powers. This finding sheds some light on conflicting evidence in the quantitative literature on the relationship between the distribution of capabilities and war, and may provide an additional explanation for the level of hostility between the Soviet Union and the United States since World War II.

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INTRODUCTION

How salient is the distribution of capabilities for understanding elite decisions and state behavior in the security realm? Is the relationship between the distribution and behavior explicable by Balance of Power theory? These two questions inform the core of this study. Although greater weight is placed on the Balance of Power question, for reasons outlined below, the answer to the second question is partially dependent on the answer to the first. Many studies, particularly emanating from the Correlates of War project, fail to make the clear link between systemic theories and elite decisions. It is true that some variables employed in these studies are complex and multi-dimensional. They are likely to have little relevance to actual elites grappling with the security problem. Moreover, the thrust of these studies is to identify empirical markers in time and space which will improve our ability as observers and policy advocates to warn elites of situations which may increase the probability of war. However, some variables, particularly the distribution of capabilities, represent key components which decision-makers are likely to use.

The importance of the distribution to decision-makers, in the security calculus follows from the environment in which they operate; the anarchic state system. The security, and ultimately survival, of the state is the hands of these decision-makers. The greatest threat

to state security from the external environment is other states. This threat is ultimately manifested in terms of military force. It follows that security becomes a function of the amount of force held by one state relative to others. The distribution of capabilities represents a way to conceptualize and operationalize the concept of relative capabilities. In so doing, one is able to account for the interactive nature of international politics. Finally, the notion of relative capabilities is intuitively reasonable. Elites, confronted by the complex and often conflicting information flowing from a variety of sources with varying degrees of reliability, are likely to find solace in the relatively 'hard' data which comprises capabilities.[1]

Before placing Balance of Power theory within this discussion, it is necessary to engage briefly in the 'contemporary' debate on the substance and future direction of the field known as International Relations. This debate, better known as the 'paradigm' debate, concerns the most useful means to understand phenomena in the field.[2] Echoing elements of the behavioralist or social science epistemology, the debate serves as an occasion for individuals to identify their personal values and beliefs and claim adherence to one of several competing 'paradigms'. However, the value of engaging in this debate is rarely questioned, its presence as a detractor from theoretical and

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[1] Choucri and North (1972: 100) provide concrete support for this contention through reference to late Nineteenth Century British parliamentary debates. Others who follow this line of reasoning include Gullick (1955), Kissinger (1957), Morgenthau (1973), and Buzan (1983).

[2] A valuable summary of the debate is found in Maghoori and Ramberg (1982). A more detailed discussion of neorealism within this debate is available in Keohane (1986).

empirical research ignored, and its relationship to earlier futile debates is obscured.

At the simplest level, the 'paradigm' debate flows from the the complexity of the 'real' world. From a system's perspective, one can identify several systems which are simultaneously independent and interdependent. They include the international security system, economic system, social/cultural system, and ecological system to cite the most prominent. To debate which of these systems is the key to understanding the field as a whole is as futile as the chicken and egg debate. At a minimum, the importance of each system is a function of idiosyncratic considerations. To argue the supremacy of one system over the other, as to argue the supremacy of one method over another, is to deny the complexity of the 'beast' and the diversity of human inquiry. The result becomes a wasteland of verbiage in which some of the best minds create 'strawmen' for humiliation and/or talk past each other to the detriment of more important empirical and theoretically relevant work. Certainly, one needs to be aware of the perspective undertaken by any writer in the field. But, this is obvious from each individual's work.

A final point in this regard concerns the obscuring of the relationship between the present debate and earlier debates in the field, such as the realist/idealist and traditionalist/behavioralist. The present debate is largely an extension of these earlier debates in which the central divide concerns a 'pessimistic' or 'optimistic' view about the future of international relations, if not mankind as a

whole.[3] The former views 'man' as static, whereas the latter views 'man' as a learning and growing animal. Now, this is an interesting philosophical question which should not be ignored. But, let us engage in this debate from an empirical base, rather than questions regarding so-called 'paradigms'.

The relationship between the above discussion and this analysis is simple. The perspective of this study is clear from the opening paragraph. It concerns issues in the security system and seeks to examine empirically a relationship between two variables over a large period of time, which can not help but speak indirectly to the aforementioned philosophical question. However, the legitimacy or value of this study on Balance of Power theory comes from the existing body of research on the theory, not the 'paradigm' debate. This research reveals that Balance of Power theory, despite its widespread usage in the field, still confronts major difficulties regarding its theoretical properties and empirical utility. This study advocates the need for consensus on the properties of Balance of Power theory and draws from the existing literature the foundation of a consensus which links the theory directly with the distribution of capabilities.

This study is also concerned with an existing gap in the empirical literature, which is a function of the centrality of 'war' as the dependent variable in these emprical examinations. This gap is the absence of any empirical studies on alliances using Balance of Power theory. As many prominent writers note, alliances are central, if not

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[3] The continuing most relevant and detailed study remains Carr's (1939) examination of the debate with reference to the Interwar period.

necessary, mechanisms for the operation of the 'balance of power'. They serve as a means to enhance the security of individual states through the aggregation of military capabilities. Alliances are a means to redress an unfavorable or unequal distribution of capabilities. From a system's perspective, Balance of Power theory posits that the relationship between an unequal distribution of power and alliances will be positive. That is, more alliances will be found at higher levels of distributional inequality

Chapter One examines the properties of Balance of Power theory and its treatment in the field. It shows that attempts to treat Balance of Power theory from a Waltzian system's perspective or in terms of Morgenthau's power politics view are misplaced. Rather, the theory posits that elites actively seek 'balance' or an equal distribution of capabilities as the optimal guarantee of security and survival. As such, Balance of Power theory provides explanations for state behavior or policies. As a result, the two relevant versions of the theory, the manual and semi-automatic or balancer versions, are identified for subsequant empirical analysis. The chapter also reveals that attempts to treat Balance of Power as a system type are problematic. This approach has produced major discrepencies among authors on the 'necessary' conditions for the Balance of Power and thus the temporal and spatial boundaries of such a system. Moreover, these treatments are informed by a concern for system stability, usually defined with reference to the absence of war, and not Balance of Power. Finally, the chapter examines in some detail three groups of criticism of the theory; inconsistent usage, contemporary relevance, and methodological

impediments. It argues that none of these criticisms suffice to negate the utility of Balance of Power theory.

The theoretical relationship between the distribution and alliances, along with the hypotheses drawn from the manual version, are presented in the next chapter. It begins with an identification of the relevant empirical studies on either the distribution of capabilities or alliances, and shows that the relationship between the two variables has not been examined directly. This presentation is followed by an examination of the function of alliances as a tool of state policy relative to Balance of Power theory. It details the abstract relationship between the alliance option and the option to increase internal resources devoted to security needs and argues that the costs/benefits of one option are mirrored relatively by the other. It implies that elites may be led to an either/or decision in this regard. The chapter concludes with a presentation of the hypotheses. The first two hypotheses concern the relationship identified above. The final hypothesis draws from an adjacent body of literature concerning alliances; polarization. Polarization is defined as the pattern of linkages at the system level produced by alliances. It is hypothesized that distributional inequality is positively related to high levels of polarization, conceptualized as two mutually exclusive clusters of states in alliance.

Chapter Three sets the temporal and spatial boundaries of the system in which the hypotheses are tested. The temporal limits are set to the period of 1816-1939. These limits are function of data availability (1816) and concerns related to the potential influence of

background variables on the analysis. These variables relate to structural and technological changes which occur after World War Two. The spatial limits are set to geographic Europe. This limit is drawn from considerations related to security interdependence, which is a necessary condition for a Balance of Power explanation. Finally, several smaller periods of time within the boundaries as a whole are identified. These periods represent prominent divisions or breakpoints in the literature on European history and are used to test the hypotheses in greater detail.

Chapters Four and Five serve to operationalize the independent and dependent variables respectively. In the former, the construction of a distribution index is shown to be intertwined with the identification of Great Powers. Using the Correlates of War capability data set, and adjusting its capability indicators to account for the historical record, two distinct sets of Great Powers are identified and employed. The first represents the traditional five actor set of Great Powers in the literature. The second set is based on the percentage share of system capabilities held by states in which a minimum of ten percent is required to attribute Great Power status to a state. The study proceeds to relate the findings here to existing historical studys on the Great Powers, revealing some measure of support for the four set. The final section identifies the specific statistical procedure used to construct the distribution indicies for the two sets and the results between the two Great Power sets are briefly compared.

The discussion on alliances differentiates between alliance, alignment, and coalition. In restricting the measure to alliances, the

classification scheme developed by Singer and Small is employed. The three classes of alliances, defence pacts, ententes, and neutrality/non-aggression pacts are shown to be functional relative to Balance of Power theory. Two distinct measures of alliances as a whole and defence pacts only are identified and described for the system. The first consists of the proportion of states in alliance/defence pacts at yearly intervals. The second comprises the proportion of system dyads subsumed by alliances/defence pacts. The final section of the chapter deals with the concept of polarization. Beginning with a conceptual analysis of the need to differentiate between polarity and polarization, a schematic approach to the measurement of polarization is adopted. Although this approach limits the subsequent analysis to a comparative mode, attempts to provide a 'hard' measure of polarization are shown to have major problems relative to the historical record.

In presenting the findings of the data analysis, Chapter Six, concern is given to the problem of employing longitudinal or times series data. Two distinct tests are employed in testing the first two hypotheses. The first consists of the standard data. The second consists of the transformed data after the removal of serial or auto-correlation from the various data sets using the Box-Jenkins method. The findings indicate that the relationship between the distribution and alliances is opposite to the predictions made in Balance of Power theory. However, the strength of the negative association between inequality and alliances/defence pacts varies between the standard and transformed data sets. The former produce significant levels of asso-

ciation, whereas the latter indicate a very weak and negligible degree of association.

In testing the various smaller temporal periods, no relationship is found in all cases for the period 1816-1848. A relatively strong negative relationship is found in all cases for the period 1849-1890. Evidence for the immediate years preceding World War One and the Interwar period is ambiguous. These findings are subsequently discussed in relation to the historical record and the importance of war as a legitimate policy tool, even though the inclusion of war as a dummy variable in the regression equation does not produce significant results. The absence of a relationship in the period 1816-1848 is related to the perceptual link between war and revolution among elites. This link serves to reduce the salience of the distribution because war, and its attendent threat to security, is not a viable option. In contrast, the period 1849-1890 witnesses a return of war as a legitimate and viable option, and thus the increased salience of the distribution. Finally, the ambiguous findings for the final periods are linked to the behavior of a single state; Great Britain. Here, evidence indicates that the balancer version of Balance of Power theory may have utility, which is tested in the next chapter.

The final section provides a comparison of system polarization and the distribution indices. Little evidence is found to support the hypothesis on polarization. Evidence does indicate a potential link between polarization and war, and a common pattern in comparison of the evolution of alliance patterns after 1871 and 1919. Above all, evidence provides a further indication of the viability of the balancer treatment of Balance of Power theory.

Chapter Seven examines the semi-automatic or balancer version of the theory, first identified in Chapter One. Measuring the distribution by employing only the four continental Great Powers and dichotomizing the dependent variable to represent years Great Britain is in/out alliances, a positive relationship is found between inequality and British alliance membership. Again, the strength of this relationship varies widely between the standard and transformed data. Also, the consistent absence of a relationship is found for the period 1816-1848. The strongest consistent relationship is found for the period 1890-1939.

The conclusion of the study focuses on two important points. First, previous empirical tests at the aggregate level require reconsideration. The inclusion of Great Britain, with its apparent distinct, Balance of Power, behavior, with continental Powers, with their distinct, 'preponderance of power', behavior may underlie major differences in the findings regarding the relative utility of Balance of Power theory and Preponderance of Power or Power Transition theory. Moreover, reconsideration is required in terms of the treatment of time. At a minimum, previous tests employing a variety of independent and dependent variables should be examined relative to the strong temporal break found in 1849.

Second and most important, the question of contemporary relevance is considered. Although the strength of the findings can be debated, they do provide an indication of distinct security requirements for continental and insular states. Given that the United States is analogous to Great Britain vis-a-vis the Euro-Asian landmass, it is possi-

ble that the traditional bipolar and/or ideological image and influence on explanation has obscured a more salient image and explanation. This image is one of geopolitics in which the nature of the United States-Soviet Russia conflict is exacerbated by the conflicting security needs of a insular and continental power. The study concludes by advocating a reexamination of common assumptions regarding the contemporary era from this geopolitical perspective.

Chapter I

BALANCE OF POWER THEORY

The use of the term 'Balance of Power', descriptively or theoretically, is widespread in the field of International Politics. Its use in either manner has been subject to large scale criticism. Scholars point out the inconsistent and contradictory use of the term, and question its theoretical utility for explaining contemporary world politics. Despite these criticisms, there exists a large measure of agreement on the theory's underlying properties, evident in both the abstract and historical literature. Furthermore, a large body of empirical research has emerged which draws from a specific conceptualization of the theory. This body of literature and research enables one to go beyond the endless debates on the meaning of the Balance of Power and test its empirical utility.

This discussion examines the basic properties of Balance of Power theory. In so doing, I will show that many of the criticisms of Balance of Power theory are questionable. They result from disagreements regarding its standing as a systems theory, policy theory, and type of international system. This discussion argues that Balance of Power is a policy theory which explains changes in state behavior in the area of security and unit survival. Changes in state behavior are thus susceptible to empirical measurement and verification.

1.1 CONCEPTUALIZING THE THEORY

There are three inter-related explanations in Balance of Power theory. The first explains the continued existence of the international state system. The second explains the recurrence of balances over time among the system's actors. Balances, in this context, are defined as a relatively equal distribution of power or capabilities among states. Finally, Balance of Power theory explains the actions or policies of individual states.[4] The first two explanations represent systemic or group behavior. They are similar in sharing the assumption that balances are vital to the maintenance of the system. However, the relationship between these two systemic explanations and the final explanation, which is a state/policy theory, is not explicit in the literature.

Waltz (1979:119) argues that Balance of Power theory is a systemic form of explanation. State level analyses are inappropriate to its application, testing, or critique.[5] This argument enables one to avoid many contentious issues stemming from the policy perspective, such as the levels of analysis problem.[6] At the same time, it can be seen as

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[4] Bull (1977) identifies two additional explanations; the protection and preservation of lesser states, and the existence of such institutions as diplomacy and international law. However, it will be shown below that the preservation of lesser states may or may not result from Balance of Power behavior. Whether the theory explains the existence of such institutions or such institutions are vital for the operation of the Balance of Power is largely a moot point. The theory provides no information related to these institutions.

[5] This argument contradicts an earlier treatment of Balance of Power by Waltz (1967) in his analysis of polarity and stability. Balance of Power is treated as a theory about state behavior, similar to its conceptualization in this study. It is such contradictory treatments which aid to the confusion surrounding the Balance of Power.

[6] Levels of analysis represent the forms of explanation in the field,

part of the general disdain of grand theory in the field (See Holsti, 1971). The field has moved towards the development of theories with limited scopes, or islands of theory (McClelland, 1966). However, this development raises concerns about the need and means to link such islands.

As a systemic explanation, how can one link Balance of Power theory with theories about state behavior? More importantly, it is difficult to conceptualize how the international system in general, and balances in particular, exist if the central components of both, states, are ignored (Buzan, 1983). Such a conceptualization can only be mechanistic and deterministic in nature. Finally, Waltz's view eschews empirical verification. Balances can not be measured because to do so would require reference to the units of the system. The theory, as a systemic explanation for the maintenance of the state system, becomes a tautology. Balance of Power explains the state system because the state system exists.

Waltz essentially confuses a theoretical problem with a methodological one. As a methodological problem, he is correct in arguing that theories and empirical analysis about the behavior of any particular state can not tell us about the group and thus the system as a whole. But, such analysis can tell us whether the behavior of a particular state is explicable in Balance of Power terms. This explanation is still systemic in the sense that behavior is a function of the system in which a state operates. System, in this context, simply refers to

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encompassing the individual, the state and the system (See Waltz, 1959; Singer, 1961). Problems arise in this area when invalid assertions are applied to one level from analysis done at another, commonly known as an ecological fallacy. (See Moul, 1973).

the external environment. Balance of Power theory is an explanation of how this environment affects state behavior. This environment consists of other states whose behavior in a condition of anarchy influences the actions of any particular state.

There is one case, however, in which the central element of Balance of Power theory is conceived in a manner similar to Waltz. This is the automatic version, one of three versions of Balance of Power theory (Claude, 1962:46-47).[7] Balances, although not always defined as equality among states, occur without the intention of any of the actors.[8] This version is explained with reference to natural law, as evident in the writings from the period of the enlightenment (see Butterfield, 1966; Wight, 1973), or by Morgenthau's (1973) theory of power politics. For Morgenthau, balances result from each actor seeking to maximize its power in response to the security dilemma produced by the condition of anarchy in the international system. Balances are treated as an inevitable feature of international politics.[9]

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[7] Reynolds (1975) provides a similar set of categories for Balance of Power theory. He differs from the automatic version by focusing on the system's approach of Kaplan (1957), who is more aptly discussed in the subsequent analysis of treatments of Balance of Power as a system type. Bull (1977:104) classifies the theory into the categories of fortuitous and contrived. In the former, a balance arises without the conscious effort of any of the actors, usually in a situation of only two relevant states. In the latter case, a balance results from the conscious policy of at least one of the actors in a situation of several states.

[8] The lack of intent is the key simlarity between Waltz and Morgenthau. They differ, however, in the fundamental focus and complexities of their positions. Whereas Waltz's theory is restricted to the basic characteristic of anarchy as the key explanation, Morgenthau incorporates assumptions regarding the nature of man.

[9] Claude (1962:48) notes that Morgenthau is inconsistent on this point. He feels that Morgenthau would agree that balances are manually produced in the real world. Morgenthau (1973) indicates that inevitability is not really based on an iron law of politics, but a

The second version of Balance of Power theory, the semi-automatic, differs from the first in that balances are the intended product of the behavior of one particular type of state; the balancer. This version is closely tied to the historical behavior of Great Britain in its relations with states on the European continent.[10] Balances are maintained or created by the intervention of the balancer, who is geographically isolated or insulated from the other actors, through alliances with the weaker state(s). It is unclear whether such intervention actually creates equality (Morgenthau, 1973) or preponderance on the side of the balancer (Organski, 1968:287). Nonetheless, it is clear that the motive for the balancer's intervention is based on a perceived imbalance of power among the remaining actors, and its potential negative effect on the balancer's own security. The theory, in this context, provides an explanation of the behavior of at least one actor, and this behavior is posited as central to the operation of the Balance of Power.

The manual version simply extends the semi-automatic treatment to the bulk of states. The existence of a balance, defined as an equal distribution of capabilities, is the result of the willed actions of states. Balances are the goal of states because they provide the optimal condition for the security and survival of the state (Bull,

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basic prescriptive rule of wise policy. However, many historical observers stress the inevitable nature of the balance, and Organski (1968) formulates his criticism of the theory from this restrictive view of Morgenthau. This brief note also demonstrates how inconsistent usage provides an avenue of critique which hinders the utility of the theory.

[10] Gullick (1955) and Wight (1966) indicate that other states have played the role of the balancer in regional contexts. However, it is generally agreed that Great Britain is the basic referent for the balancer version.

1977; Gullick, 1955). This version posits a consensus among states. No individual state can be trusted with an inordinate or preponderant amount of power (Claude, 1962:42). The appearance of a preponderant power constitutes an immediate threat to the remaining states which results in predictable behavior on their part to counteract this threat. The reaction of states, in the sense of returning the distribution to a balanced condition, provides the linkage between individual state security and system preservation. In optimizing the security of individual states, the likelihood that the state system will survive is also optimized.

A central difference among the three versions is the basic assumption of the optimal condition of security. In varying degrees, they all contain the assumption that security is a function of the amount of power or capabilities held by a state relative to its competitors. In assuming that states seek to maximize their power, the automatic version, a preponderant amount of power appears to be the optimal level of security. In contrast, the semi-automatic version posits that the level of power sought by states differs among them. For a particular class or type of state, the geographically insulated, equality is the preferred condition. While other states are not dealt with in this version, one can assume that they seek preponderance because the behavior of the balancer class is a function of the presence, historically, of a preponderant state. The final version rejects the class distinction and posits that the majority, if not all, states actively seek equality as the prefered security condition.

There are several reasons for rejecting the automatic version of Balance of Power theory. There is little common sense in labeling a theory in which states seek preponderance as the optimal security condition as the 'Balance of Power' theory. Also, it is questionable whether states actually seek preponderance. The majority of states lack the resources to entertain such a goal. This is true even for the majority of Great Powers. Moreover, preponderance, if attainable, does not necessarily create greater security. The reactions of other states, through the formation of alliances and/or the use of force, may produce greater insecurity for the preponderant. Furthermore, the underlying assumption that balances are unintended byproducts of state behavior is dubious. Unless all states in general, or the Great Powers in particular, have an equal capability base, a highly unlikely occurrence, balances will not exist naturally. If balances do consistently reappear through time, they can only be the product of willful action, such as through the aggregation of state capabilities through alliances. Finally, and perhaps most important, the concept of 'balances' can have no theoretical relevance for either actors or observers. The presence or absence of a 'balance' can have no effect on behavior. As unintended byproducts, it is hard to conceive how they would affect behavior in a situation where all states constantly seek to maximize power.

Altough the semi-automatic version is too restrictive in nature, because in focusing on a single class of states, in fact a single state, no clear explanation is provided for the majority of actors, it is still consistent with the treatment of Balance of Power theory as

an explanation of state behavior. Also an examination of this version can provide further evidence regarding the utility of the theory. Whereas the manual version is disposed to aggregate or group analysis, this version provides a theoretical basis for a state level focus. Nonetheless, there are several conceptual reasons for dealing with the balancer version after the examination of the manual version. If one state seeks a balance, is it not intuitively reasonable to expect others to also seek balances. Moreover, the threat posed by a potential preponderant to the security of the balancer is likely to be felt by others. In fact, the insular position of the balancer provides it with greater leeway than other states because of the added geographical element of security. The threat to survival is much more immediate to states immediately adjacent to a preponderant.

Moreover, the manual version, in encompassing the majority of states, is the most intuitive form of Balance of Power theory. It provides a reasonable explanation for state policies, the recurrences of balances over time, and the maintenance of the state system. The basic assumptions of this version are as follows. States are the only relevant actors. Their primary goal is self-preservation which requires an optimization of security. Security is primary a function of the resources available to defend oneself. Ultimately, these resources are the military capabilities of states, either immediate and/or potential capabilities.[11] The primary indicator of security is the comparative distribution of military capabilities among states.

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[11] Reynolds (1975:356-358) points out that it is the treatment of power as capabilities in which Balance of Power theory is at its clearest. Power as influence is too vague for a precise analysis of Balance of Power theory.

It is the nature of the distribution which determines the policies of states related to security. As such, capabilities are prior to, and indicators of, the intent of states vis-a-vis others.

The assumption that an equal distribution of capabilities is perceived by elites as the optimal level of security is addressed in two ways in the literature. First, equality between two states produces an equal chance of victory or defeat in a clash of arms. It results in an atmosphere of uncertainty in which elites are unlikely to resort to force because the outcome can not be predicted (Singer et.al, 1972).[12] Elites are assumed to be risk averse. In reducing the chance of war between states, security is optimized. When war is less likely, elites are likely to feel more secure even though the price of such security is an atmosphere of uncertainty which may affect other state interests. The second assumption identifies a belief held by elites that any individual state can not be trusted with an inordinate or preponderant amount of power (Claude, 1962). Such power is likely to be used by a state to advance its interests and represents a potential, if not immediate, threat to the security of other states. It provides the preponderant with the opportunity to transform the system and create a condition of permanent security through the elimination

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[12] They argue that decisional uncertainty is an intervening, unmeasureable, variable within their general case regarding the utility of Balance of Power theory in explaining war, an issue discussed at length in the final section of this Chapter. It is not developed by the authors to extend necessarily to other explanations of state behavior from a Balance of Power perspective.

Kaplan (1971) makes a similar argument. However, it is based on the polarity/stability debate which is not the same as the Balance of Power perspective; a point which is generally overlooked in the literature. Kaplan argues that multipolar systems are more stable because the risk of war is too great in terms of its potential expansion to the whole system. As such, peace is more likely.

of all other existing states.

Together, the two assumptions lead to a model of security optimized at the extremes. Equality produces optimal security because of its dampening effect on the use of force. The transformation of the state system to a single actor or empire form creates permanent security because no threats can exist by definition. However, the process by which a state moves toward the goal of permanent security calls forth countervailing actions from the remaining states. Preponderance, presaging transformation, causes the weak to increase the amount of resources devoted to military capabilities and unite in a single coalition to deter or defeat the strong. This reaction, or the potential for it, serves to push elites away from a goal of preponderance. Thus, elites are likely to accept equality as the optimal and preferred condition of security.

This argument does not imply that no state will attempt to obtain preponderance as the necessary precondition for permanent security. To do so would fly in the face of history. As noted earlier, states are not created equal in terms of resources. A state endowed with a greater wealth of resources relative to all others, in conjunction with the appearance of elites who reject the benefits of equality, may embark on such a path. But, it is also possible to conceive of such attempts as products of miscalculation and misperception. Elites may readily miscalculate the capabilities of others and, as a result, misperceive intent, or calculate relative capabilities in a different manner than others. An extreme case is found in Germany under Hitler. His attempt to attain preponderance in Europe was partially motivated

by his belief of German inferiority in a world soon to be dominated by American and Soviet power (Calleo, 1980). But, to the allies in the West, it was a clear attempt to transform the European state system.

Attempts to attain preponderance through the acquisition of superior military capabilities may either be purposeful or accidental. Whatever the case, such an attempt alters the behavior or policies of the remaining states in the system. The goal of these states is to recreate a 'balance' in the system. States may increase the amount of resources allocated to the military. They may seek alliances as a means to augment their capabilities and signal their willingness to oppose the potential or actual preponderant. Finally, states may use force to obtain either more resources and/or defeat the preponderant.[13]

These three policies are the explanatory core of Balance of Power theory. Depending on the distribution of capabilities, the presence/absence of the above actions can be predicted. However, treatments of Balance of Power theory as an explanation for such policies are generally restricted to a specific set of states; the Great Powers. As the label implies, Great Powers are states which possess an inordinate amount of power/capabilities relative to the majority of states in the system. They are the elite of the system. Because of their power, they are the only states that can reasonably entertain a policy of preponderance. Conversely, only the Great Powers can act to counter a preponderant from among their ranks. Thus, lesser states are largely

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[13] Sveral other options are also identified in the literature, see Chapter Two, Fn 28. For a general analysis see Morgenthau (1973), Organski (1968), Claude (1962) and Rosecrance (1963).

irrelevant to the 'balance'.

However, the above assertions do not mean that lesser states should be excluded from any analysis based on Balance of Power theory. It is true that the distribution of power/capabilities, as an indicator of security for individual states and the degree of threat to the state system, is legitimately restricted to the Great Powers. But, lesser states are likely to be also concerned with the nature of the distribution and react, at least in terms of alliances, the same way as Great Powers. While an increase in military capabilities will have little, if any, effect, their resources may be valuable when aggregated with a Great Power through an alliance. Furthermore, several lesser states allied together may produce a significant bloc of power.[14] Finally, lesser states may be significant in the case of war by providing not only additional capabilities, but also key facilities due to their geographic location in the system.

This discussion illustrates the nature of Balance of Power theory and the need to treat it as a policy theory. In explaining the policies of states as dependent on the distribution of capabilities, it also provides an explanation for the appearance of 'balances' in the system and the maintenance of the state system. It provides the basis for developing explicit hypotheses which are susceptible to empirical

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[14] This argument does not mean that, for example, three lesser states allied together make a Great Power. Certainly, the ability to bring the bloc to bear as a unified actor is problematic, as the case with any alliance (see Sabrosky, 1980 on the empirical reliability of alliance commitments and Kann, 1976 on the theoretical argument). But, as Kann (1969) points out, there has been one case where an alliance between three lesser states was initially perceived as a power bloc replacing the Austro-Hungarian Empire. This was the Little Entente consisting of Czechoslovakia, Rumania, and Yugoslavia.

verification either at the group or individual level of analysis. In our case, aggregate level hypotheses can be identified to test the manual version and state level hypotheses can be developed to test the balancer version. Before identifying these hypotheses, a task left to the next chapter in the case of the manual version and Chapter Seven for the balancer, it is necessary to examine other aspects of 'Balance of Power' in the literature.

1.2 BALANCE OF POWER AS SYSTEM TYPE

One of the predominant usages of Balance of Power is its reference to a particular type of international system. According to Hoffmann (1965), systems' conceptualizations demand a correspondence between the analytic scheme and historical reality. Furthermore, Claude (1962) notes that Balance of Power theory and its treatment as a system type is usually not abstract but a product of the historical record, implying that this type of system has some measure of concrete boundaries. However, there is little agreement in the literature on the exact boundaries of the Balance of Power system in history. It is unclear whether this system is bound temporally to the modern state system and a synonym for it, or applicable only to some specific subset of time within the modern state system. Furthermore, the identification of a 'Balance of Power' system implies the existence of a set of necessary conditions for its existence. However, an inability among scholars to agree not only on the necessary conditions, but their presence/absence in time, undermines the value of this type of approach to the concept of the Balance of Power. Moreover, Balance of

Power, as defined by these necessary conditions, is shown to have no contemporary value. This raises doubts about its theoretical utility outside of the distant past. Finally, the system type perspective adds to the confusion surrounding 'Balance of Power'. Generally, proponents of this perspective assume that the Balance of Power explains the behavior of states. Their actual purpose is to examine the necessary conditions for system stability, defined as the absence of large scale war. As a result, Balance of Power becomes a label lacking either theoretical relevance or descriptive value.

Several necessary conditions of a Balance of Power system are identified in the literature. First, it requires a system of autonomous units in an environment of anarchy. In such a system, actors are concerned with survival which dictates a concern for relative capabilities. Second, a Balance of Power system needs a degree of consensus among system elites. This consensus involves an acceptance of the inherent value of the state system. Third, a degree of homogeneity must be present in the system. Homogeneity refers to the existence of a common culture, the absence of ideological cleavages, and a concentration of policy making in the hands of elites relatively unrestrained by domestic factors. Homogeneity, in conjunction with value consensus, serves to moderate the behavior of elites away from attempts to destroy competitors and transform the system through a limitation of the objectives sought through the use of force. Fourth, the level of military technology must be relatively stable. Such stability not only enables elites to calculate reasonably relative capabilities and base policy on such calculations, which itself is aided

by homogeneity, but also acts to inhibit the ability of states to use force to transform the system. Finally, a Balance of Power system requires a relatively equal diffusion of power between a minimum number of states or specifically Great Powers. This minimum is normally set at three, although most treatments focus on the presupposed 'magical' number of five to be consistent with the historical record. This minimum ensures that states are able to adjust to distributional capability changes among them through alliance behavior. Again, homogeneity comes into play. Its presence enables states to change alliance partners in response to the distribution without concern for domestic acceptability.

There is no general agreement among authors on the relative importance of each condition. The majority agree that the condition of autonomy and anarchy refers to the modern state system. According to Wight (1977), the earlier medieval period in European history contains several attributes which conflict with the condition of actor autonomy. Yet, Bernholz (1985) argues that autonomy is evident in the medieval period. Independent actors competed for power, prestige, and domination despite nominal obligations to Pope and Emperor. Furthermore, using the condition of a minimum number of actors, Bernholz identifies several Balance of Power systems prior to the modern state system, including the Greek city state and Warring period of China.

The treatment of the modern state system as a Balance of Power system, at least up to the French Revolution, is firmly linked to the conditions of elite consensus and system homogeneity. Authors, such as Wight (1977), Hoffmann (1965), Rosecrance (1963), Claude (1962) and

Gullick (1955) agree that the these two conditions create certain behavioral norms. These norms include the rejection of attempts to transform the system and the moderation of objectives sought through war. According to Northedge (1976), earlier systems exhibit the tendency towards the total elimination of one's opponent and the creation of a single hegemonic actor. In contrast, conflicts between states in modern state system are largely over issues of territorial adjustment, not the existence and legitimacy of certain states.

The use of consensus and homogeneity as necessary conditions for a Balance of Power system illustrates the three fundamental problems with the system type perspective. The first concerns problems related to historical interpretation. At what point in history did consensus and homogeneity disappear? For Hoffmann, the French Revolution, with its appeal to the nation in arms and rejection of dynastic rule, is the beginning, if not the conclusion, of the collapse of consensus and homogeneity. World War One provides another plausible break. The impact of the war's totatilty on European society, particularly in the area of the acceptability of force as an instrument of policy and the rise of internal influences on policy, and the appearance of Bolshevik Russia as an actor rejecting the very legitimacy of the state system, gives witness to a new era. Perhaps the only area of agreement in this sense is the post World War Two period. The dominance of the Soviet Union and the United States, which also violates the minimum number condition, imbedded a struggle to the death between liberal capitalism and socialist dictatorship in the system.

However, one should be cautious stressing the degree of consensus and homogeneity even in the so called Golden Age of the Balance of Power in the Eighteenth Century. The first decade of that century witnessed the final clashes of Louis XIV's perceived attempt to attain a predominant position in the system. The Seven Years War (1756-1763) entailed a life and death struggle for Prussia. As Liska (1963) argues, homogeneity and behavioral moderation during the Golden Age is more myth than reality. Even in the Ninteenth and Twentieth Centuries, an absence of homogeneity appears to have little affect on certain behavior. It did not hinder an alliance between Republican France and Tsarist Russia or an alliance between Soviet Russia and the West. Furthermore, it has not hindered the appearance of a tacit alliance between Communist China and the capitalist west.

The second problem relates to the absence of consensus and homogeneity in the contemporary international system and thereby the contemporary utility of Balance of Power theory. As noted above, the eschatological clash between East and West embodies claims about the illegitimacy of the opposing social systems and the international system itself. However, it is unclear why state behavior, in the sense outlined in the previous section , is not equally, if not more, relevant to a heterogeneous system. In producing conflicts related to legitimacy, such systems contain greater threats to state and system survival. Such threats are the core of Balance of Power theory. In a paradoxical way, the theory, and thus system label, is more applicable to heterogeneous periods of history, as evident in Gullick's (1955) study of the Balance of Power during the French Revolution/Napoleonic era.

The final problem is also evident in the above discussion. The conditions of consensus and homogeneity are related more to concerns about system stability than the Balance of Power per se. In moderating the behavior of states, these conditions serve to enhance the prospects of stable relations among states. It tells us little about the Balance of Power and state behavior in light of the 'balance'. It is also questionable whether moderation, which underpins stability, is simply a function of consensus and homogeneity. Bernholz (1985) argues that moderation is more a function of the number of Great Powers. It results from the need to preserve present enemies as future allies in a complex multi-power system.

Stability is also at the core of the military technology condition, which is related to homogeneity. Homogeneity ensures relative similarity in military structures and organizations among states. In so doing, the ability to calculate the distribution of capabilities in a relatively similar manner is facilitated. At the same time, the relatively static nature of military technology up to the mid to late Nineteenth Century acted as an impediment to drives for preponderance (Claude, 1962). Static technology also enhanced the simplicity of the calculation itself. With the industrial revolution, not only the were the impediments to preponderance removed substantially, but the ability to assess the 'balance' and react to it were undermined. In other words, the dynamic of technological change undermined the stability of the system.

Returning to Balance of Power theory, there is no reason to expect that static technology is a necessary condition for the behavior of

states within the confines of the theory. Regardless of homogeneity, states tend to copy the military structures and technology of others, particularly those who have used their military successfully. While the actual structures, weapon systems, and deployments may differ due to geographical and other political factors, there continues to be an underlying similarity among states in this area. Also, the complexity of calculations due to technological change have been accompanied by a greater ability to obtain information as well as a large body of skilled personnel to analyze it. Finally, nuclear weapons can not be divorced from basic calculations of the 'balance'. It is true that these weapons have altered significantly the utility of force to advance state interests. Yet, they are an integral component of state military capabilities and are largely a new element to consider in the general 'balance'. Also, the technological limitations hindering hegemony in the past have been replaced by a technology which makes such an attempt too costly in the present.

The final necessary condition is the equal diffusion of power among a minimum number of states; Great Powers (Bernholz, 1985; Gilpin, 1981; Hoffmann, 1965; Kaplan, 1957; Gullick, 1955).[15] Its use provides the clearest historical marker for identifying the Balance of Power system in time. There are two analytical components underlying this condition. The first concerns the irrelevance of alliances in a two power or bipolar system. The second is linked to a separate body of theory which also revolves around the stability problem and is generally confused with Balance of Power theory.

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[15] Both Hoffmann and Gullick arguments follow the stability line. Both identify the possibility of only two Great Powers in a Balance of Power system, but argue that this form is highly unstable.

Several writers argue that a minimum number of Great Powers is necessary for the operation of the alliance mechanism (Bernholz, 1985; Waltz, 1967; Kaplan, 1957). In the contemporary system, alliances are ineffective in the Balance of Power sense because capabilities are concentrated in the hands of the two Superpowers and alliances with other states will have little effect on the distribution between them. However, one must query why the alliance component is necessary for the theory. It is only one in a series of components or dependent variables within Balance of Power theory. As Waltz (1967) points out, the ineffectiveness of alliances does not negate the basic property of the Balance of Power; the distribution of capabilities. Furthermore, a two power system is the simplest forum for calculations of the distribution (Bull, 1977). This simplicity may itself enhance stability by reducing the chance of miscalculation and misperception. Finally, the question of whether alliances are effective in the contemporary system should be treated as an empirical one, and not simply assumed away.

The second component relates to a separate body of theory which focuses on system stability. This body of theory centers on the debate between Waltz (1967) and Deutsch and Singer (1964) over the relative stability of bipolar and multipolar systems. It also includes Kaplan's (1957) work on system's in which the number of Great Powers act to create certain rules or norms of behavior. Whether number is related to stability is a mute question here. More important, the linkage of multipolarity to a Balance of Power system represents a confusion of two unique bodies of theory. The polarity debate con-

cerns the relationship between number and behavior. Balance of Power concerns the relationship between the distribution and behavior. While the former may affect the latter, and vice versa, an empirical question, one should not confuse two separate bodies of theory.

The use of Balance of Power as a system type is extremely flawed. It produces unnecessary debates on the boundaries of such a system through problems related to the interpretation of the historical record and the relative weight assigned to each of the aforementioned conditions. In some instances, the conditions conflict directly with elements of Balance of Power theory. Above all, the perspective is not about the 'Balance of Power' and state behavior. It is about stability conditions in which a strong normative and prescriptive motive is present. Advocates of a non-ideological based set of policies, particularly for the United States, the institutionalization of arms control as a means to control technology and the 'arms race', and the promotion of new power centers, such as the European Community and Japan, draw from this body of research. While their arguments may or may not have historical validity, they should not be linked to, or validated a priori by, Balance of Power theory. To do so only adds confusion to the utility of the concept and the theory in which it belongs.

1.3 BALANCE OF POWER THEORY AND ITS CRITICS

Critiques of Balance of Power theory are extremely varied in nature. They can be roughly grouped into three areas. The first draws from inconsistent usage of the term 'Balance of Power' to focus on particular problems within the three versions of the theory. The second concerns the theory's implications for, and relevance to, contemporary international politics. The third, and most problematic, is methodological. It relates to concerns embodied, to some degree, in Waltz's conceptualization of the theory.

There is no need to recapitulate the varied uses of the term 'Balance of Power'. This ground has been adequately covered by Haas (1953) and Claude (1962). The major implication stemming from this problem is that 'Balance of Power' should be eliminated for purposes of theoretical clarity. However, this problem is not unique. Many concepts, such as power, democracy, and imperialism, suffer from the same problem. Nonetheless, they are concepts, along with 'Balance of Power', which cannot be readily discarded or replaced. The inconsistency problem reflects the dearth of concepts in the field to cover the phenomena of international politics. At the same time, the problem does require the creation of some measure of disciplinary consensus to ensure a greater likelihood of cumulation in the field. As shown in the next chapter, this consensus is emerging, particularly in the quantitative literature, which conceptualizes Balance of Power theory in the manner presented here.[16]

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[16] One must be careful in making this assertion. It is true that quantitative studies test Balance of Power hypotheses related to the distribution of capabilities. However, they also usually contain some reference to Morgenthau's power politics theory which has

There is also no need to re-examine in any great detail the problems created by the automatic and semi-automatic versions. Hoffmann's (1959) critique of Kaplan and Morgenthau is well taken here. To argue a mechanistic and deterministic view of international politics is to ignore the 'stuff' of which politics is made; man.[17] In the semi-automatic version, interestingly, the major criticism is not the omission of other states, but its lack of contemporary value. Organski (1968:285) argues that this version's direct link to Great Britain as the balancer suffices to negate its utility.[18] With the decline of British power and the emergence of rigid bipolarity, there is no longer a balancer in the system.

However, this argument has two flaws. First, it is not based on any empirical evidence which supports either this conceptualization of the theory or British behavior as the balancer. Second, one can question Organski's assumption about the absence of a 'balancer' in the post World War Two era. The United States shares the basic character-

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been shown to be problematic in light of the theory. Also, this literature does not clearly specify the link between the theory and state policy/behavior. This lack of specification is a function of the methodological problem outlined below.

[17] This critique also lies at the heart of problems stemming from the 'neo-realist' approach. It is the point made by Ashely, once one goes beyond his verbosity.

[18] Organski also criticizes the argument that Britain ever acted as a balancer. He argues that Britain acted in her self-interest, rather than the interests of the collective. As shown in Chapter Seven, the Balancer, i.e. Britain, by acting in its self-interest simultaneously acts in the collective interest. A final note in regards to Britain is Organski's view of Britain as the preponderant in the Nineteenth Century, which underlies his Preponderance of Power or Power Transition theory. His argument is close to cycle theorists in the field; see Thompson and Rasler (1988), Thompson (1986), Modelski and Morgan (1985), Doran (1983) and Gilpin (1981). The fundamental problem with their approach is its clear divorce from historical reality.

istic of the balancer; an insular geographic location. With the defection of China from the socialist bloc, and the potential for new power centers, such as the European Community and Japan, the system may no longer be bipolar. As a result, the 'balancer' image may have some relevance now, or in the near future for understanding international politics, assuming that the semi-automatic version is the correct one. Regardless, there is a need for empirical evidence to assess the above argument, rather than a priori rejection.

Organski (1968:288-291) also criticizes the manual version of theory. He argues that the theory is static and unable to account for dramatic changes wrought by the industrial revolution, and that the central notion of alliance flexibility as a means to alter the distribution of capabilities is a myth. According to his interpretation, states can only increase their capabilities by external means, such as territorial aggrandizement and alliances. There exists a subtle set of political, psychological, economic, and social links which hinder the ability of states to change freely alliance partners in response to changes in the distribution. Thus, he believes that the theory does not account for either the impact of industrialization on state capabilities and nationalism on alliance flexibility.

However, there is no reason to assume that the theory cannot incorporate the dynamic elements of industrialization. It is true that prior to the industrial revolution the capabilities of states are relatively static and attempts to adjust the distribution were largely restricted to external behavior. But, with the clear lessons of the Prussian wars of German unification, elites came to realize the vital

link between industrialization, capabilities, and the successful prosecution of war. Once realized, industrialization, because of its uneven affect among states, becomes a vital component to the distribution. Similarly, societal elites dominate policy and act with little restriction from domestic sources in most cases prior to the industrial revolution. But, even with the rise of greater domestic restrictions and input into policy, there is no reason to believe that flexibility is undermined. Studies of the Nineteenth Century (McGowan and Rood, 1975; Li and Thompson, 1978; and Midlarsky, 1981) show support for behavior consistent with alliance flexibility. Moreover, two major studies of alliances reveal that they are not strongly related to ideological factors (Holsti et.al., 1972; Walt, 1987).

Organski has one last criticism of Balance of Power theory which is related to the second area of critiques. The theory has no utility because it fails to explain war and is thus inconsistent with reality. He argues that the relative peace during the Nineteenth century is explained not by the existence of a balance, but by the presence of a preponderant: Great Britain. The systemic wars of the Twentieth century are occasioned by the condition of balance not preponderance.

The argument that Britain is a preponderant state is a function of a global perspective in which economic strength is the underlying measure of power. However, from a continental perspective, which includes measures of pure military power, Britain standing as a preponderant is dubious. British military power is largely naval in orientation. Its ground component has always been significantly less than the dominant Powers on the continent. Depending on the distribu-

tion, which would include measures of military power, peace during the Ninteenth Century may be a function of a 'balance' on the continent. It is also not necessarily true that the two systemic wars of the Twentieth century occurred in a situation of 'balance'. Britain's attachment to the Franco-Russian alliance prior to World War One and to France prior to World War Two can be explained by the rising power of Germany and a perception of a German attempt to attain a preponderant position on the continent. Siverson and Sullivan (1983), in their valuable summary of the literature on the relationship between the distribution of capabilities and war, argue that no conclusion can be drawn on this relationship because of major methodological differences among the various studies. Thus, the question of utility of Balance of Power theory in this regard remains an open one.

The issue of war also relates to the implications Balance of Power theory has for contemporary international politics. As shown in the next chapter, this issue informs the bulk of empirical research on the theory. Gullick (1955), Claude (1962), and Morgenthau (1973) argue that war is one of the policies used by states to ensure a relative 'balance' in the system. Jervis (1985) adds that war as a legitimate tool of state policy is necessary for the operation of the 'Balance of Power'. This policy entails not only systemic war to defeat a preponderant, but also small scale limited wars which can increase state capabilities through territorial aggrandizement.

The implication of the theory is quite clear. It justifies the use of force. In so doing, the theory, as a prescriptive tool for policy makers, can be questioned on moral grounds. If 'Balance of Power'

behavior requires the use of force, such behavior is highly undesireable, particularly in a world of nuclear weapons. But, it is difficult to conceptualize a world in which all states are satisfied with the status quo or the pacific rhetoric of a potential preponderant (Carr, 1939). As long as an anarchic community of states exists, security will be a paramount goal of the actors in which force may be required. To ignore Balance of Power theory, because of its inherent link to war is to undermine an ability to understand state behavior. One cannot let a normative bias towards peace undermine research on a theory related to system/state survival.

The morality problem is also relevant to the question of the preservation of states (Bull, 1977). 'Balance of Power' behavior may lead to the elimination of some states, even though such behavior is intended to enhance the survival of states and the state system. However, in positing the maintenance of the state system as an ultimate goal, the theory also provides for the sacrifice of some states to ensure this goal. For example, lesser states may be divided among the Great Powers to ensure a 'balance', as evidenced by the partitions of Poland. Furthermore, the theory does not hold that all the Great Powers will survive. Survival of any state is ultimately dependent on the individual skill of its elites. Failure to act properly in light of the distribution may lead to the elimination of even a Great Power. The theory simply posits certain predictable patterns of behavior in response to the distribution of capabilities as a means to enhance state security and system survival. Whether states act in the predicted ways is a question open to empirical analysis.

The morality question is only one of the elements of the critique of Balance of Power theory relative to the contemporary era. The second element in this regard is theoretical relevance. This element can be divided into three categories. The first has been dealt with in the previous section and concerns the structural requirement of a minimum number of Great Powers for the operation of the theory. The second focuses on the impact of nuclear weapons on state behavior. The final category concerns the identification of major changes related to the presupposed growth of interdependence and ascension of economic considerations in explaining state behavior.

The nuclear weapons case relates back to the importance of war to the theory. Force is no longer a viable option because of the catastrophic implications of a nuclear exchange between the Superpowers. Thus, the use of war as a means to alter the general distribution is no longer reasonable. But, the decline in the utility of war does not in itself undermine the basic property of Balance of Power theory. States are still concerned with the distribution of capabilities. This concern is evident within the sub-field of strategic studies and in the record of arms control negotiations between the superpowers. Furthermore, nuclear weapons are limited to a small number of elite states in the system. For the remaining states, war is still a plausible means to alter regional distributions, as well as for the achievement of other objectives in the search for a more secure environment. Lacking empirical evidence, nuclear weapons are not an a priori reason for rejecting Balance of Power theory.

A stronger case for rejecting the theory is made on the basis of the uniqueness of the contemporary system. Increasing interdependence among states, the importance of economic factors in state behavior in conjunction with the decline of traditional military factors, and the influence of domestic forces on policy combine to undermine the ability of states to follow Balance of Power dictates. Interdependence creates complex webs of relations among states which can not easily be put aside on the basis of pure 'military' calculations (Keohane and Nye, 1977). The welfare state of today dictates a central concern for economic factors which may conflict with military considerations. Furthermore, the ability to measure relative capabilities and identify threats are much more complex due to the incongruity of military and economic power. For example, Japan is an economic power of the first rank, but has relatively minor military capabilities. Finally, the ability of elites to change policy according to the 'balance' is hindered greatly by domestic factors. A good example is provided in the recent 'Irangate' affair where an attempted rapproachment with Iran by the United States was greatly hindered by the backlash of domestic opinion.

However, the degree of interdependence today, in comparison to the past, remains an unresolved question (see Waltz, 1982; Tetreault, 1980; Rosecrance, et.al, 1977). Moreover, economic factors are not necessarily beyond the scope of Balance of Power theory. Perhaps the venue of Balance of Power theory has shifted from the military arena to the economic one. But, it is possible to conceive of the theory within the more limited confines of economic factors. Finally, domes-

tic influences are largely over-emphasized. While domestic forces have grown with modernization and the appearance of sophisticated special interest lobbies, one should not underestimate the role domestic forces played even in the heyday of cabinet diplomacy. Also, public opinion is still relatively malleable. Perhaps the ground for dramatic policy changes must be laid more carefully today. But, elites still have a fair degree of leeway in this regard. The dramatic increase in American defence spending during the Reagon administration, at the cost of a significant increase in the size of the American deficit, bears witness to this fact.

The contemporary relevance critique, along with the majority of critiques of Balance of Power theory, have little empirical merit. They imply an a priori rejection of the theory. Underlying this rejection is a methodological problem. In treating the theory as a explanation of state behavior, one posits the ability to measure the distribution of capabilities in a manner similar to the elites themselves. In so doing, one must confront the plausible gap between the operational and psychological environments of elites (see Brecher, 1972; Snyder, Bruck and Sapin, 1962). The former is the actual state of affairs from the perspective of an observer. It is the researcher's measurement of the distribution. The latter is the state of affairs as perceived by the elites themselves. There is no assurance that the two environments are symmetrical. Thus, the measurement of the distribution and the accompanying behavior can only provide an approximation of the real world and elite perceptions within.

The problem is clear in the case of war. Systemic war may occur at either relative equality or inequality and still be subsumed, in one sense, under Balance of Power theory. At relative equality from the observer viewpoint, war may occur because of a miscalculation on the part of elites, the use of different measures between observer and actor, and/or an elite preception of a future shift in the balance. As such, the 'operational' balance is one of equality, but the dominant 'psychological' balance is one of inequality. In this case, war is explained by the theory, but refuted by the evidence derived by the researcher.

Now, the above example represents a problem of theoretical specification, above and beyond the measurement problem. It is solved by specifying, as shown in the first section, that Balance of Power theory predicts systemic war in a situation of inequality. The contradictory evidence would require a different theoretical explanation, not Balance of Power, in which the distribution of capabilities is still the key independent variable. Nonetheless, the difference between the operational and psychological environments is a methodological problem which defies any ultimate solution. Outside of specifying the measurement procedure in light of the dominant interpretations by historians, who indicate the most probable indicators of power in the past, the only solution is to examine a large enough body of time to uncover any consistent pattern of behavior. In so doing, some confidence can be placed in one's findings that the relationships uncovered are reasonably representative of the real world from which the observations are taken.

The final point concerns the relationship between the theory and the elites themselves. At the heart of the theory is an assumption about the importance of one single variable in understanding the policies undertaken by elites. This variable is the distribution of capabilities. In so doing, other variables are ignored for reasons of parsimony. One should expect that the above variable will only explain some portion of behavior. For example, the theory can provide only a partial explanation for alliances. As briefly noted in the next chapter, there are several other explanations for alliances which are likely to play a major role in the calculus of elites. But in providing such an explanation, a piece of the overall puzzle emerges. The piece, after replication, provides a building bloc of an overall grand theory about state behavior. In treating Balance of Power theory as a policy theory, the problems of putting pieces together can be addressed.

Chapter II

THE DISTRIBUTION OF CAPABILITIES AND ALLIANCES

In the search for security, states are concerned with the relative distribution of capabilities. How capabilities are distributed among states in general, and the Great Powers in particular, affect the behavior and policies of states. Three distinct policy options are used by states for the purpose of altering the distribution.[19] The first option is internal to the state. It encompasses the allocation of resources to security needs in the form of explicit military capabilities. The second and third options are externally based. States may seek allies as a means to augment their capabilities. States may also use force to attain either more resources through territorial aggrandizement or to reduce the capabilities of another state.[20]

The central concern of this study is the relationship between the distribution of capabilities and alliances. The need to examine this relationship is a function of several considerations. Alliances are identified as one of the central elements in the operation of the

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[19] Several additional options are also identified in the literature (Morgenthau, 1973; Organski, 1968; Claude, 1962; and Rosecrance, 1963). However, resource allocation, alliances and war are the most prominent.

[20] The three options are not strictly independent of each other. States may simultaneously adopt all three policies. In particular, the decision to use force generally entails a marked increase in military capabilities through mobilization and an attempt to gain allies as a means to increase the probability of victory. The inter-relationship between the use of force and the other two options is primarily a function of type of war being entertained.

'Balance of Power' (Claude, 1962: 89). Alliances, in this regard, have not been empirically examined. As shown below, empirical research linked directly or indirectly to Balance of Power theory is dominated by the issue of war. Moreover, studies of alliance in general have focused on intra and inter-alliance behavior, rather than alliance formation/dissolution. Empirical studies of alliance formation/dissolution have ignored a Balance of Power based explanation. Finally, in examining the relationship between the distribution of capabilities and alliances, evidence can be generated to shed light on the alliance based concept of polarization. Although polarization is directly linked to a relatively independent body of theory, the aforementioned polarity debate, levels of polarization, defined as the pattern of alliances in a system, are susceptible to a Balance of Power explanation.

2.1 EXISTING STUDIES ON THE DISTRIBUTION OF POWER AND ALLIANCES

Before detailing the hypotheses used to test the utility of Balance of Power theory as a explanation of alliance formation/dissolution, it is necessary to place this analysis firmly within existing studies on the distribution of power or capabilities and alliances. It is both true and false to say that Balance of Power theory is the foundation for research on capabilities and alliances. It is true because a large portion of this research is formulated with some reference to the concept Balance of Power. Also, some authors explicitly draw hypotheses from Balance of Power theory. In so doing, the distribution of capabilities, operationalized in a variety of different ways,

serves as the independent variable. It is also false because the theory is often treated in a cursory rather than a substantive manner. In particular, authors tend to link their treatments of Balance of Power theory to the Morgenthau's conceptualization. In other cases, Balance of Power hypotheses are linked to other bodies of research, such as Kaplan's (1957) work on systems, or scholars accept a multiplicity of versions and proceed to test distinct models without an adequate theoretical foundation. This is not to argue that there exists a paucity of evidence which can be related to Balance of Power theory, particularily with regards to empirical research in which measures of war serve as the dependent variable.

Both the distribution of capabilities and alliances are used as explanations, or more accurately correlates, of war,[21] although the use of alliances as a separate variable in this regard is not directly linked to Balance of Power theory. In the case of the distribution of capabilities, measured as a system aggregate or dyadic ratio, the equality-peace hypothesis is directly linked to Balance of Power theory, both by its proponents (Singer, Bremer, and Stuckey, 1972; Ferris, 1973) and its opponents (Organski and Kugler, 1980; Garnham, 1976; 1976b; Weede, 1976). The comparative merit of the findings are limited by substantive methodological differences among the various studies. Furthermore, Siverson and Sullivan (1983) also cite the failure of this research to incorporate alliances. They correctly point out

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[21] War is generally conceptualized in terms of its occurrence, duration, and or magnitude, although studies vary considerably in terms of which measure is chosen. Some studies, such as Garnham (1976b) also include major disputes containing the potential for war. For a critique of the operationalization of war see Most and Starr (1983) and Duvall (1976).

that: "Neglecting this factor is unfair in an adequate test of the balance of power theory since one of its central tenets is that nations use alliances to augment power." (p.492).[22]

Similarly, a large body of research on the relationship between alliances and war have ignored the distribution of capabilitiies. Singer and Small (1968), Ostrom and Hoole (1972), Midlarsky (1975), Siverson and King (1979), Sabrosky (1980), and Levy (1981), using a variety of different methods, time frames, and actors, test propositions related to the notion that alliances are related to war. While these studies are not explicitly drawn from the Balance of Power literature, they provide some evidence of the inter-relationship between two of the policy options within Balance of Power theory.[23]

Several studies have integrated the two variables to create a summary measure of the distribution of capabilities adjusted for alliance membership. In so doing, the capabilities of states in alliance together are aggregated. Bueno de Mesquita (1973) integrates capabilities into his operationalization of polarity to test the aforementioned equality-peace proposition. Polarity, in this context, is defined as equivalent to the number of independent Great Powers and

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[22] Moul (1986) also raises the issue of alliances in his comparative analysis of the literature in this area. He argues that the failure to take into account the historical context, inclusive of considerations related to political capabilities (i.e. internal stability), hinders the value of these studies.

[23] Wallace (1973) also examines this relationship, but includes configurational properties of alliance groupings and non-military alignment dimensions to examine the relationship between polarization, cross-cutting, and war. As such, the study is explicitly based on the Deutsch and Singer (1967) thesis, not Balance of Power. Several other studies are also partially relevant, but are not directly related to Balance of Power Theory. For example, see Waymon et.al. (1983) and Sabrosky (1985).

blocs (alliances) containing Great Powers. Stoll (1984), using the same definition of polarity, examines one of the major explanations provided by Balance of Power theory; the recurrence of a relative equal distribution of capabilities among the Great Powers over time. He argues that a 'balance of power' system is characterized by periodic major disruptions in the distribution equilibrium, followed by movement back towards equilibrium. In so doing, he employs Bueno de Mesquita's methods to develop a bloc concentration score. The resulting index, varying from 0 (an equal amount of capabilities held by all blocs) to 1 (all capabilities concentrated in one bloc), is sensitive to alterations in alliances, the tightness of alliance clusters, and relative capabilities. He finds evidence to support the presence of a balance of power system from 1824 to 1914, and its continued operation, with some restrictions up to 1965.[24]

Stoll and Champion (1985) seek to explain the conflicting findings in the literature with regard to the distribution, inclusive and exclusive of adjustments for alliances, and war. They add a measure of Great Power satisfaction with the status quo, and argue that the key issue in the debate over equality versus preponderance depends on the extent any state can be trusted with power or satisfied with its status. In so doing, their argument is explicitly linked to one of the key assumptions in Balance of Power theory identified by Claude (1962); states can not be trusted with inordinate amounts of power. They conclude that the equality-peace thesis is supported in condi-

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[24] It should be noted that Stoll's test is restricted to the Great Powers, assuming that minor power capabilities have little effect on the Great Power clusters. This restriction limits the study's overall ability to capture the essence of Balance of Power theory.

tions of general dissatisfaction, and the preponderance-peace thesis is supported in conditions of preponderant satisfaction.[25]

The above studies, as a whole, have ignored the a priori relationship between the distribution and alliance formation/dissolution. However, one study has undertaken an examination of this relationship within a much larger model of Great Power security dynamics in the period 1820-191. Cusak (1978) examines the conditions whereby a Power will alter its level of alliance commitments. He tests three variations of this model, which include aspects of a Power's capabilities in relation to the other Powers among seven independent variables in his regression equation. The variations attempt to account for three different types of security aspirations: a constant aspiration in which a state's desired level of power vis-a-vis other powers remains constant over time and a state's behavior fluctuates only as its relative position is altered; a power aspiration whereby a state adjusts its desired needs according to the upward or downward movement in its

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[25] The above three studies can be critiqued on several counts, inclusive of problems with the conceptualization of polarity, the treatment of alliances, and, as Wallace (1985) points out, the method for identifying poles. In particular, the studies fail to distinguish the level of alliance bonding sufficient for aggregating capabilities, inclusive of the different classes of alliances identified by Singer and Small (1968). Schroeder (1975) and Moul (1983) raise substantial questions about the legitimacy of aggregating capabilities for certain historical alliances. They point out that several states formed alliances with powerful states as a means to restrain their behavior. The conceptual and operational questions, where relevant, are dealt with in Chapters Four and Five. The question of aggregation is outside the purview of this analysis. The purpose here is to establish the relationship between the distribution and alliance formation/dissolution. Balance of Power theory does make a direct link between alliances and capability aggregation. However, this link is not necessary for this analysis. Alliances, for the purpose of aggregation and/or restraint, should follow the same logic in relation to the distribution.

relative power position; and a peer based aspiration defined as the propensity for a state to emulate the average perceived power position of all the Great Powers. He finds that neither of the three aspiration assumptions are superior to any other, and concludes that the overall model's ability to predict changes in alliance ties is suspect.

Although there is great merit in the breadth of his study, there are several problems, particularly in relation to Balance of Power theory and the relationship under examination here. His findings provide little, if any, indication of the relative utility of Balance of Power theory. While he does discuss and draw elements from the literature on the balance of power, there is no clear formulated linkage between the theory and his propositions. Cusack accepts the multiplicity of interpretations of the 'Balance of Power' and offers a synthesis as the basis for the set of factors incorporated into his model. This synthesis, however, is at the base of his multi-collinearity problem, which explains to some degree his negligible results. Moreover, the attempt to explain alterations in alliance commitments becomes lost in the complexity of his model and resulting equations.

A further problem with his analysis stems from his failure to include lesser states. Cusak is only concerned with the Great Powers and alliances among them. While he identifies the importance of lesser states from a geo-political perspective, he argues that they are inconsequential in terms of their contribution to Great Power capabilities and security. This assumption is based on his finding that the Great Powers never held less than 60% of total system capabilities,

and lesser state participation in alliances represented only a small percentage of total alliances. However, the less than 40% capabilities held by lesser states does not mean that this portion is equally distributed among them. Lesser states are not equal, and those states in the upper echelon could readily have provided a substantial contribution to Great Power security. Furthermore, a low percentage of total alliances obscures the fact that, until 1911, lesser states participated only in alliances containing at least one Great Power.[26] This fact provides some indication of a role for lesser states in relation to Great Power security.

Finally, Cusack does not differentiate between classes of alliances, and treats defensive pacts, non-aggression/neutrality pacts, and ententes as identical. This treatment may have been partially motivated by statistical requirements for a large enough sample especially given his rejection of lesser states. But the failure to address the substantive differences between them may explain his inability to uncover a significant relationship. It is possible that only one class of alliances, defense pacts, is explicable in terms of a Balance of Power based explanation.

Two other studies provide some interesting information relative to the relationship between the distribution and alliances. Both Sabrosky (1975) and Kennedy (1984) examine the distribution of power among the two Great Powers and their respective dominant alliance groups

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[26] The first alliance among only lesser states was the Balkan alliance consisting of Bulgaria, Serbia, and Roumania. The assumption also contradicts Midlarsky's (1981) findings on the importance of lesser states to the balance. However, Cusack's study was completed prior to the Midlarsky work.

Table I

Comparison of Pre-World War One Capability Shares

	Sabrosky (a)				Kennedy (b)	
	1900	1905	1909	1913	1900	1913
France	10.1	9.8	9.6	10.4	36.8	57.3
Russia	16.1	16.5	16.5	16.5	47.5	76.6
Fr-Rus	26.1	26.3	26.1	26.9	84.3	133.9
Britain	20.6	16.5	15.0	14.1	100.0	127.2
Tr.Ent.	---	---	41.1	40.1	---	261.1
Germany	16.7	16.9	17.2	18.2	71.2	137.7
Aus/Hun	6.1	6.2	6.4	6.1	25.6	40.7
Ger-A/H	22.8	23.1	23.6	24.3	96.8	178.4

a)-Percentage of Total Capabilitiies for the System

b)-Total Industrial Production relative to Britain in 1900 at 100

prior to World War One (Table I). Sabrosky, relying on the data from the COW project and using the percentage shares of capabilities held by individual Great Powers, finds a relative balance between the Franco-Russian and Austro-German alliances in 1905. With the creation of the Triple Entente, he finds a significant imbalance in its favor. Kennedy, using a measure of Total Industrial Potential, reveals a relative balance between the two alliances and Great Britain in 1900. In 1913, the Austro-German alliance has a marked superiority over the Franco-Russian alliance, which is significantly altered in favor of

the later with the addition of Great Britain through the Triple Entente.

The conflicting findings on the degree of balance between the two studies may be attributed to different measures of capabilities. However, the findings as a whole raise two interesting questions. First, is it intuitively reasonable to treat the two alliances in the same manner as the Entente? While few authors would argue against the aggregation of capabilities for the two major alliances, the two separate entente agreements which created the Triple Entente were non-European in focus. As such, aggregating British capabilities with Franco-Russian may be questionable from a historical perspective.[27] Second, the findings provide conflicting evidence in relation to Balance of Power theory. Kennedy's findings support a Balance of Power explanation. Britain moves into alliance with France and Russia in a situation of inequality among the continental alliances. Sabrosky's data show a situation of relative equality at the time of Britain's adherence to the Franco-Russian alliance. From a dyadic perspective, both studies show Britain moving into alliance with the rise of German capabilities to a position of superiority. However, the data does not show the formation date of the alliances relative to the distribution.

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[27] Two distinct arguments can be made in this regard. First, the entente did not clarify Britain's opposition to Germany, and in the events of August 1914 Germany questioned Britain's willingness to fight along side the Franco-Russian alliance. Second, Germany recognized the linkage, but calculated that British capabilities would have a negligible impact in a quick war. Both find support within the voluminous literature on the origins of World War One. The most recent studies in this regard include Kagan (1987), Lynn-Jones (1986), Sagan (1986), Snyder (1984), Layne (1981), and Kahler (1979-80). Depending on one's interpretation, a case can be made either way for aggregation. As noted in Chapter Four, a case can be made for treating the Anglo-French entente in more formal terms, but not the Anglo-Russian entente.

Without such evidence, no conclusion can be reached on the theoretical merit of Balance of Power theory.

The final body of literature relevant to this analysis concerns research on alliance formation.[28] Although there exists a paucity of empirical studies on this question (Ward, 1981; Job, 1980), some studies do exist which are germane to Balance of Power theory. Russett (1968) posits a relationship between the relative power positions of states and alliance formation. His argument is consistent with a Balance of Power explanation. Unfortunately, his operational theory remains an outline lacking empirical evidence. Walt (1987) provides the most recent and relevant empirical study on alliance formation. He examines the tendency of states to 'balance' or 'bandwagon' in a situation of imbalance in the system. Using the Middle East as his test environment, he finds support for the 'balancing' hypothesis.

However, Walt's theoretical foundation differs significantly from Balance of Power theory. His study is based on 'Balance of Threat' theory and goes beyond the capability dimension of Balance of Power theory to include geographic proximity, offensive capability, and aggressive intent. In particular, aggressive intent is central to his

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[28] An entirely distinct conceptualization, more germane to the polarity debate, of Balance of Power is found in the work of Healy and Stein (1973), Rosecrance et.al. (1974), and McDonald and Rosecrance (1985). Both test propositions drawn from a variety of authors. However, in terms of an adequate test of Balance of Power, the studies have two major defects. First, several propositions are not amenable, and in fact are not tested to any great degree, using their interval scale. Propositions concerned with the degree of balance in the system can not be adequately examined because of the exclusion of capabilities. Second, other propositions more appropriately belong to another body of theory. These propositions concern the influence of alliance formation on subsequent intra and inter-alliance behavior, to some extent linked to the Deutsch and Singer (1964) thesis on multipolarity and system stability.

analysis. He argues that alliance formation can be explained by the subjective element of threat, even in a situation of a 'balance' of capabilities. As a result, Walt does not test the direct relationship between the distribution and alliance formation.[29]

McGowan and Rood (1975), Li and Thompson (1978), and Midlarsky (1981) examine aspects of alliance flexibility using a variety of random process models. Although the initial study of McGowan and Rood cite Kaplan's (1957) work as the source for their analysis, they are, in effect, testing a traditional proposition from Balance of Power theory. This proposition posits the need for states to ally with any other system member, regardless of ideological and idiosyncratic factors, to maintain the 'balance' of power (Wight, 1966). Thus, the alliance process at the system level, according to McGowan and Rood, should be random in nature because present and future alliances are not influenced or determined by past alliances. That is, states have no a priori restrictions which influence their alliance decisions.

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[29] His focus on threat undermines the quantitative aspect of his analysis. Threat, a purely qualitative and subjective component, enables him to explain anomalyies in alliance behavior in the Middle East (see p.265). It could be argued that the choice of the Middle East is not a good one in terms of Balance of Power theory. At a minimum, the endemic Arab-Israeli conflict violates the principle of alliance flexibility posited in Balance of Power theory.

A more important problem is with his treatment of the theory. First, he argues that Balance of Threat theory is simply a more complex version of Balance of Power theory. However, the latter contradicts the former. Threat theory implies that perceptions of intent precede capability distributions. Balance of Power theory posits the distribution as the indicator of intent and thereby threat. Second, Walt argues that both theories are equally parsimonious. But, the incorporation of additional elements, along with the measurement problem entailed by the concept of threat, brings this argument into question.

McGowan and Rood's initial study on Nineteenth Century Europe, where they find support for a random alliance process over time, is replicated and expanded by Li and Thompson. Including the Twentieth Century and two additional variables representing the structural characteristics of polarity and polarization, they find support for the McGowan and Rood position for the periods 1815-1914 and 1919-1939, but not for the period 1945-1965. They conclude that structural changes from loose multipolarity (pre 1945) to tight bipolarity (post 1945) alters the alliance process. Finally, Midlarsky (1981) tests for relative equality in alliance configurations at the system level in the Ninteenth Century. His findings about the presence of equality supports the basic proposition of states freely moving between alliance partners to ensure a relative 'balance'. He also notes the central importance of lesser states in ensuring equality of alliance configurations.

These studies provide some degree of support for a Balance of Power based explanation of alliances. However, all are deficient in one regard. The distribution of capabilities, the core of Balance of Power theory, is either ignored (McGowan and Rood; Midlarsky) or dealt with superficially (Li and Thompson). Midlarsky assumes, a la Organski, that Great Power capabilities are static in the Nineteenth Century and any alterations to the distribution is a function of alliances. If correct, Balance of Power theory can not explain changes in alliances over time. However, this assumption is highly dubious given the evidence provided by Stoll and Champion (1985). They find significant changes in the proportion of system capabilities held by the Great

Powers during the Ninteenth Century.[30] Li and Thompson, albeit identifying the importance of capabilities to the alliance process, operationalize this variable as simply the number of Great Powers, defined as system poles. Their results, therefore, simply reiterate common sense knowledge of the breakdown of alliance flexibility due to the ascension of the United States and Soviet Russia to superpower status, and the emergence of the Cold War.

Zinnes (1970) examines the relationship between alliances in Balance of Power theory and sociological work on coalitions. She identifies several key differences between the two schools. Coalition theories deal only with situations where they must form, where all system members participate, and where the winning size of the coalition equals 51% of total resources. In contrast, Balance of Power exists in situations where coalitions do not necessarily exist, where only subsets of the system are involved, and where the coalition size is greater than 51% of system resources. She concludes that some sociological theories of coalitions provide an indication of stability for some Balance of Power systems, whereas others do not.[31]

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[30] Stoll and Champion (1985) provide a graph of capability scores for the European Great Powers from 1820 to 1960. It reveals the dominance of Great Britain which declines from a peak in 1860. It also shows significant alterations in the positions of Russia, France, and Prussia/Germany, with the latter surpassing Great Britain in 1900. Percentage shares are drawn from data provided by the Correlates of War project and are based on an aggregate of three dimensions; demographic, industrial, and military. As shown in Chapter Four, a great deal of movement in capability shares is evident when the indicators are adjusted for the historical context throughout the Ninteenth century.

[31] It can be added that Zinnes' formulation of Balance of Power is suspect because of the assertion that alliances are treated as independent variables and her concern with system stability without due regard for capability distributions. Nonetheless, the application of sociological coalition theories in the empirical study of

Turning to the general literature on alliances, there is a curious lack of empirical studies on alliance formation as a whole. According to Job (1981), the lack of studies on alliance formation in general is due to the perceived declining importance of alliances in contemporary world politics, problems of data availability and/or reliability, and contradictions between the findings of existing empirical studies. Also, it appears that the failure to examine alliance formation from a Balance of Power perspective can be attributed largely to alterations in the nature of alliances in the post-1945 world.

Holsti, Hopmann, and Sullivan (1973) argue that Balance of Power theory is not adequate for a general theory of alliance formation. While they cite several alliance propositions drawn from Balance of Power theory, they believe that there exists a sizeable number of deviant cases. To support this assertion, Holsti et. al. cite the Dawson and Rosecrance (1966) study on the Anglo-American relationship, which argues that conventional Balance of Power theory cannot explain this relationship after 1949. However, Dawson and Rosecrance admit that the wartime and early cold war Anglo-American alliance is explicable in terms of Balance of Power theory. Given the general static distribution of conventional capabilities between the Soviet Union and the United States in Europe since the late forties, as well as British weakness, the continued presence of this relationship does not appear to be at odds with Balance of Power theory. More importantly, the theory does not purport to explain the detailed aspects of intra-alliance behavior, only the basic conditions of alliance formation and

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alliances has not been undertaken in the field. Her earlier study (1967) provides only a catelogue of propositions from the literta-ture in which many are not clearly Balance of Power based.

dissolution.

Final consideration must be given briefly to alternative explanations of alliance formation. Beyond the general consensus that alliances are formed in response to existing or perceived security threats, a view compatible with Balance of Power theory, the bulk of work in this area remains largely speculative and ideographic (Ward, 1982; Walt, 1987). Choucri and North (1975) examine the threat element within a broader study of conflict in Europe during the latter part of the Nineteenth century. They find a measure of support for a relationship between rising military expenditures and alliances, although no consideration is given to the distributional explanation which is at the heart of Balance of Power theory. Liska (1962) points out that alliances may be also motivated by aims of national expansion, but fails to provide any systematic evidence in support of this view. Schroeder (1976), and later work by Moul (1983), emphasize the formation of alliances as a means to restrain the behavior of other states. As shown below, this argument is not entirely incompatible with Balance of Power theory. Concern must also be given to the potential ideological, social, and economic based explanations of alliances which have found little support in the literature (Job, 1981). Here, Russett (1962) is probably correct in arguing that these factors may be important contextural elements, but not direct causes.

In conclusion, the existing literature has largely failed to deal with the central properties of Balance of Power theory with regards to the relationship between the distribution of capabilities and alliances. It has been concerned predominantly with the issue of war, and

the relationship of capability distributions and alliances to this issue. Even studies which purport to test Balance of Power theory have failed to examine the central relationship between distributions of capabilities and state reactions in terms of internal resources and alliance formation. Finally, the alliance literature has neglected the importance of the theory in explaining alliance formation. Competing or alternative explanations are limited in empirical support and ,as shown below, many of them can be related or integrated to a degree with Balance of Power theory.

2.2 INTERNAL AND EXTERNAL POLICY OPTIONS

Balance of Power theory, as previously formulated, posits that behavior is a function of a state's capabilities relative to other states. A state's position or standing provides its elites with an indication of the degree of threat emanating from the environment. In so doing, decisions related to security are made according to its capability standing at any particular point in time and changes in its position over time. Regardless of whether a state's position improves or declines, any significant change leads to a re-assessment of security requirements. From this re-assessment, changes in state behavior result.

The theory also posits equality as the optimal and preferred security position. Behavioral change, its nature and direction, is tied ultimately to the maintenance and/or assurance of equality. Outside of war, two fundamental mechanisms, or policy options, one internal and the other external to the state, are available to ensure this

position.[32] First, elites can alter the amount of internal resources devoted to security needs in general and military needs in particular. Second, elites can alter their relationships with other states in the external environment through the creation/dissolution of alliances. Abstractly, elite response is predictable because of the equality assumption. A decline in a state's relative position will lead to an increase in the allocation of internal resources and/or the search for allies. Conversely, improvement is likely to lead to behavior in the opposite direction.

While equality may be the preferred position, the fact of life in international politics is gross disparities in the capabilities of states. As such, the theory is qualified to cover only one particular set of states; the Great Powers. This qualification is consistent with one of the central explanations provided by Balance of Power theory; the preservation of the state system. Great Powers are the only actors, by definition, able to alter unilaterally the basic system characteristic of anarchy. Conversely, they are the only actors which can prevent such an alteration. Despite this qualification, there is no reason to assume that Balance of Power theory has no relevance for understanding the behavior of lesser states.

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[32] The literature also identifies several other responses (Morgenthau, 1973). They include such elements as the concept of divide and rule, territorial compensation, and the creation of buffer states. These elements are directly linked to the distribution in that they concern territorial possessions. As such, they are more aptly seen as part of the evolving distribution, rather than specific responses to its alteration. As shown below in the context of the internal response, their measurement is inherent in any measurement of the distribution of capabilities.

Lesser states are also concerned with their relative capability position. Their relative position may be defined in regional terms reflecting their specific geographic position in the system and their immediate environment in which threats to their survival are most prominent. But, they are also concerned with the general distribution of capabilities among the Great Powers. Threats to the system are also threats to their existence. Moreover, their capabilities, along with their geographic position, can have an influence on the general distribution when allied with a Great Power. Such an alliance provides lesser states with a protector which necessarily enhances their individual security (Rothstein, 1968). Finally, lesser states are more dependent on the nature of the general distribution. While they may always seek a Great Power as a protector, the theory indicates that the availability of a protector will be a function of the distribution.

Returning to the Great Powers, the above discussion indicates that the general distribution of capabilities is drawn exclusively from the Great Powers. It also implies that relative equality among the Great Powers is not only possible, but the norm. There is an 'a priori' assumption in the literature that Great Powers, by definition, are equal. Yet, the historical record clearly indicates that equality is the exception, not the rule. At many points in time, some Great Powers are not able to entertain any hope of equality in terms of their individual capabilities, actual or potential. Now, one could argue that these states are not truly Great Powers. But to do so would result in a radically different picture of history than provided by

historians. The relative weakness of some Great Powers informs us of the central importance of alliances as a means to ensure equality.

It is how capabilities are distributed among the Great Powers as a group which determines the degree of threat to the individual states and thus motivates their behavior in a general sense. In a system containing two Great Powers, the calculation of the distribution is relatively straightforward. But, with the addition of other Great Powers, this calculation becomes more complex. This complexity arises from the requirement of elites to assess not only their relative standing vis-a-vis each other, but also the relative standing between all other pairs of Great Powers. Despite this complexity, the existence of an unequal distribution, depending on its degree, indicates the existence of a preponderant Power. This indication serves as the explanation for behavioral change.

Elites have two immediate options available to redress inequality.[33] It is not necessarily the case that a decision in favor of one option precludes the other. Elites may choose to increase internal military capabilities and obtain allies simultaneously. This situation would occur most likely when neither response is sufficient by itself to offset the capabilities of the preponderant. Given that all other states react in a similar manner, the alliance option, because it requires a bilateral or multilateral decision, is likely to be more

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[33] The third option is the use of force against the preponderant Power. However, this option also demands a previous decision to increase internal military capabilities, usually through mobilization, and possibly the search for allies to increase the probability of victory. Thus, the choice of the war option is likely to follow decisions related to the other two options and be conditioned by them.

prominent when the degree of inequality is explicit in nature. In a situation where either response may be sufficient, implying only a limited degree of distributional inequality, elites may be predisposed to an either/or decision. In fact, a decision to increase military capabilities may return the distribution to equality, thereby negating the need and availability of an alliance partner. Similarly, the successful consumation of an alliance may negate the need to increase military capabilities.

Although Balance of Power theory does not encompass elite predispositions in this regard, certain factors indicate that elites are likely to prefer one option over the other, relative to the degree of inequality. Some Great Powers, as well as the majority of lesser states, may lack the ability to increase military capabilities for domestic political or economic reasons. Alliances are the only reasonable option in this case. Conversely, the alliance option may be unavailable for a variety of domestic and international reasons. Moreover, examining the benefits and costs of the two options (see Holsti et.al, 1973; Freidman, 1970; Russett, 1968), reveal an inverse relationship between one option and the other.

Beginning with the internal option, the benefits are as follows. First, an increase in resources devoted to security needs may serve to stimulate the domestic economy. It may also enhance domestic stability and increase popular support for the government and its policies. Second, this option does not affect directly other foreign policy goals which may be undermined in the process of negotiating and maintaining an alliance. Third, it enables elites to avoid any potential

domestic problem resulting from attempts to ally with an unpopular state. Finally, the problems entailed in maintaining an alliance are avoided. These include the reliability of the commitment, the compatibility of armed forces and planning, and the aforementioned conflicts with allies in other areas of foreign policy.

The costs entailed by the internal option are largely domestic in nature. As noted earlier, a state may simply lack the resources to contemplate this option. Any state has a finite amount of total resources which can be directed towards security. Short of mobilization for war, a step which itself has drastic consequences, elites are not likely to devote all possible resources to security. In this regard, elites must consider the potential damage caused by an increase in resources devoted to security needs to the health of the economy as a whole. Consideration must also be given to domestic opposition against any increase in security capabilities, regardless of the state of the economy. Finally, reliance on the internal option may be counterproductive. It may not reduce distributional inequality, but create an equivalent response from other states. This action-reaction phenomenon is more commonly known as an 'arms race'. The net result of such a race may be an increased burden on the domestic economy, a situation whereby a state cannot compete, thereby increasing inequality and insecurity, and possibly the outbreak of war.

In contrast, the external or alliance option enables elites to avoid some of the costs associated with the internal option. Alliances serve not only to augment a state's capabilities, and thereby redress distributional inequality, but also serves to deny an ally's

capabilities to other states. At the same time, alliances can provide side benefits such as increased legitimacy, prestige, and enhanced trade opportunities. The external option also serves to clarify the alignment structure of the system. In so doing, they provide a clearer indication of friends and enemies, increase a state's ability to project power, and have a deterrent value in signalling commitment and resolve to states. An alliance can also serve as a restraint on the behavior of other states (Shroeder, 1977; Moul, 1983), even a potential preponderant, by reducing the degree of threat in its environment and controlling any aggressive intentions this Power may have. Finally, in a situation where war is perceived as likely, an alliance with a preponderant Power provides an opportunity for the weak to share in the spoils of victory, while ensuring its survival.

The costs entailed by alliances are partially dealt with in the discussion of benefits accrued from the internal option. An additional cost results from the nature of bonding with another state. Depending on the type of alliance commitment, the relationship may be manipulated by an ally for other purposes. A state which values the relationship above all else may find itself drawn into a conflict in which it has no intrinsic interests. Initiating an alliance may lead to the formation of counter-alliances. As in the case of the internal option, the reaction of other states to alliance formation may undermine the initial benefit in redressing inequality due to the formation of a superior counter-alliance. Finally, the situation of impending war and the desire to share in the spoils of victory may lead to disaster if the state's predictions about the outcome are incorrect.

As indicated in the above discussion, elite decisions in terms of a response to distributional inequality are extremely complex and problematic. Although the benefits of one option partially mirror the costs of the other, there is no clear evidence that elites in the real world rationally weigh the two options together and are led to an either/or decision. In any case, explanations of the situation in which elites choose between options are not relevant to this analysis. To undertake such an explanation would require, at a minimum, a detailed examination of an individual state's foreign policy, economic structure and condition, and the personnel dispositions and biases of select decision-makers over a small period of time. Furthermore, it entails movement beyond the scope of Balance of Power theory with its focus on explaining general patterns of behavior over time and its neglect of domestic and idiosyncratic variables. Finally, whether elites choose one or both options has no effect on the analysis. In identifying the distribution of capabilities as the key explanatory variable for state behavior, the internal option is incorporated to some degree in the analysis, although it is not analyzed in any systematic manner.

Any measure of the distribution is based on indicators representing state capabilities. As a result, the internal option is part of the independent variable. Thus, movement away from and back towards distributional equality is an indirect measure of internal behavior in relation to the resources devoted to security. It is indirect because there is no means to ascertain whether changes are a function of a conscious decision by one or several Great Powers to increase security

resources. In contrast, alliances contain the property of a conscious decision simply because they require more than one actor.

2.3 HYPOTHESES

Before outlining the hypotheses used to test Balance of Power theory, two issues require brief discussion. First, the specific states who ally together and the reasons underlying individual predilections towards a particular partner are beyond the scope of this analysis. Our concern is with the general relationship between the distribution of capabilities and the presence of alliances in the system. Although Balance of Power theory indicates that states will ally with the weak to 'balance' the strong, such an occurrence is likely to result only when preponderance is achieved by a state. In situations of an ambiguous degree of inequality, the theory provides no clear indication of alliance predilection. Moreover, it may not always be the case that the weak will ally to 'balance' the strong. Some states may opt to 'bandwagon' with the strong as a means to ensure survival and possibly share in any spoils. The question of 'balancing' versus 'bandwagoning' is largely a separate theoretical issue. It entails a concern for other variables which influence the alliance decision. In contrast, the relationship between the distribution of capabilities and the presence of alliances is a clear of Balance of Power theory. It represents a unique contribution to an understanding of state behavior.

The second issue concerns the observations used to measure the distribution of capabilities at yearly intervals. For many scholars in

this area of research, observations are adjusted for the existence of alliances among the Great Powers. The capabilities of two Great Powers in alliance are aggregated to form one observation in the construction of the distribution measure. Theoretically, elites are concerned with the aggregate capabilities of alliance clusters. However, the initial motivation for alliance creation, according to Balance of Power theory, is a function of the individual capabilities of Great Powers. It is reasonable to assume that elites will continue to monitor the distribution from an individual Great Power perspective. Such monitoring is vital to ensure that a state's alliances remain functional in the Balance of Power sense. The degree of equality/inequality between alliance groups is a separate theoretical issue, which may or may not be explicable in Balance of Power terms[34]

As apparent in the above discussion, the relationship between the distribution of capabilities and alliances are the central focus of this analysis. In Balance of Power theory, alliances are conceived as agents of capability aggregation which are entered into by states as a response to an unequal distribution of capabilities. It is assumed that equality provides the optimal level of security, and movement away from equality is a clear indication of increasing threat to individual states and the system as a whole. Thus, equality should result in the absence of alliances in the system. They are dysfunctional in Balance of Power terms. States are unwilling to bear the costs associated with alliances because their security is at its optimal level.

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[34] The core of this problem is noted in Chapter One. Morgenthau and Organski differ on whether alliances produce equality or inequality. The former argues that alliances are sought to create equality in a situation of inequality whereas the later argues that such alliances simply alter the actor/s that are preponderant.

As inequality appears, state security declines and alliances are sought to offset this decline. Even a Great Power whose individual position improves relative to all others will consider alliances either in response to other states forming alliances or as a means to deny a state's capabilities from others. The tendency to form alliances will spread within the system as greater inequality appears. Thus, the number of states in alliance is directly related to the degree of distributional inequality in the system.

As the number of states in alliance increase, a change is also predicted in the type of alliances formed. As inequality produces greater insecurity, states will seek to formalize their alliance commitments. At low levels of inequality, states may seek only imprecise or vague/general commitments. In so doing, they receive the partial benefits of increased security, but avoid the greater costs entailed by a formalized commitment. As inequality, and thus insecurity rises, states will desire formalized relationships to guard against possible defection on the part of an ally. This commitment will entail greater coordination of policy among alliance members and the identification of the conditions in which the combined use of force will result. The greater costs of such commitment, especially related to other interests and goals, are offset by the enhanced security stemming from the de facto aggregation of capabilities and the identification the conditions in which force will be used. Given that defence pacts, as defined by Singer and Small (1972), represent the strongest level of alliance commitment, the number of defence pacts in the system will also be positively related to distributional inequality. In a compar-

ative sense, defence pacts are expected to be more strongly related to the distribution than alliances as a a whole.

The final phenomenon resulting from an unequal distribution of capabilities concerns changes in the structure of the system as defined by patterns produced by the existence of alliances. This structure is generally defined as the degree of polarization in the system. Putting aside conceptual and methodological problems in the literature on polarization for the moment (see Chapter Five), a highly polarized system exists when the pattern of alliance commitments from the system perspective exhibits the presence of two or more mutually exclusive clusters of states in alliance. Every state in the system is tied formally to one, and only one, of the clusters. A non-polarized system is conceptualized as the absence of any alliance clusters. Between these extremes lies a myriad of patterns.

Given that polarization is a function of alliances and the presence of alliances are a function of the distribution, it follows that polarization will be related to the state of the distribution. Historically, the alliance patterns produced during the eras of Louis XIV, Napoleon, and Hitler are examples of polarization resulting from an attempt by these actors to alter the state system, although one should not neglect the presence of war as a related explanation. At low levels of inequality, states may seek informal commitments to lay the foundation for the future or even seek some form of relationship with a potential preponderant as a means to restrain its behavior. At the system level, the pattern produced may be one of several clusters with links between members of the clusters. As inequality increases,

the threat to the system and its individual members create a demand for formalized commitments. These commitments entail the dissolution of any contradictory alliance relationships to provide a degree of confidence in the willingness of states to meet their respective alliance commitments. In such a situation, the cluster to which states adhere, in the sense of 'balancing' or 'bandwagoning', leads to the polarization of the system. In effect, polarization is a natural byproduct of the fundamental relationship between distributional inequality and the presence of alliances.

In conclusion, three hypotheses are identified for empirical testing. Two of the hypotheses are drawn directly from Balance of Power theory. The third hypothesis, polarization, is linked to the theory, although the theory as presented does not cover the phenomenon directly. The hypotheses are;

H1: There is a direct or positive relationship between an unequal distribution of capabilities and the presence of alliances.

H2: There is a positive relationship between inequality and the type of alliance commitment. As inequality increases, the number of defence pacts in the system will increase.

H3: There is a positive relationship between inequality and system polarization. As inequality increases, two mutually exclusive alliance clusters will appear in the system.

There are several major conceptual and operational issues which have been avoided in this discussion. They will be dealt with in subsequent chapters. However, a final consideration relates to probability that the above relationships will not be immediate, but appear over time. The existence of such a lag is due to several factors.

The recognition of changes in the distribution as a general trend is likely to be gradual in nature. Elites must first identify the trend and assess whether or not it is permanent. Elites must also weigh the benefits and costs associated with the two options. Finally, alliances entail negotiations which are time consuming. Therefore, the predicted behavior must be tested for the presence of a time lag.

Chapter III

ESTABLISHING THE BOUNDARIES OF ANALYSIS

The question of boundaries is vital for any empirical analysis. Boundaries set the parameters for data collection and variable operationalization. Naturally, boundary identification may simply be a function of data availability. In this study, data on state capabilities, drawn from the Correlates of War project, limit the study to the post 1816 era. The remaining boundaries, the concluding year and spatial limits which indicate state membership, follow from other considerations. These considerations are function of the need to ensure that the resulting analysis and findings are reliable, rather than spurious. The concluding year of this study, 1939,[35] is based on a concern for the influence of non-included or background variables on the analysis. State membership, restricted largely to geographic Europe, is a function of security interdependence which is at the heart of Balance of Power theory.

A final concern, in this regard, stems from existing historical treatments of time within the general boundaries of Europe from 1816 to 1939. These are the various periods or temporal sub-systems identified in the literature. These periods are found in both historical and international relations texts, and are a function of a variety of

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[35] The rationale for ending the study in 1939 actually is related to key structural changes in the international system following World War One. 1939, rather than 1945, is chosen because of the lack of data on state capabilities during the war. Similarly, the years 1914 to 1918 are also excluded.

theoretical and methodological concerns. Despite some disagreement, a general consensus on the existence and duration of certain key periods exists. While these periods range in duration from the Nineteenth century as a whole to two decades in length, their application can be beneficial for understanding the utility of Balance of Power theory. Also, testing the hypotheses within these various periods will provide some evidence regarding the utility of the periods themselves, relative to Balance of Power theory.

In short, three tasks are undertaken in this chapter. The first concerns the identification of key background variables which validate the temporal boundary of 1939. The second encompasses the rationale for restricting the analysis to European states in general, and the reasons for excluding the the United States and Japan in particular. The third task relates to the choice of periods which should be analyzed separately, in conjunction with the analysis on the entire system. In fulfilling these tasks, the subsequent operationalization of the variables and statistical analysis will have a greater degree of reliablity.

3.1 TEMPORAL BOUNDARIES, POLARITY AND NUCLEAR WEAPONS

Any research endeavour must be concerned with the possible influence of background variables. The failure to identify and control these variables can lead to spurious findings. There are two methods for dealing with the problem of background variables. Levy (1985:43) argues that the effect of background variables can be controlled by choosing a sufficient body of time and space. This choice serves to

randomize the influence of these variables. Saunders (1986:31) argues that a small discrete body of time and space should be identified in which background variables are held constant and serve to define the limits of the study. Each approach contains certain costs.

Concerning the first approach, data may not be available for a sufficient period of time. More importantly, it is unclear how large a time span and data set is necessary to ensure the randomization of background variables. Levy argues that the time span of the Correlates of War data set (1816-1980) is insufficient. However, his argument is based on the relatively short span of bipolarity in the data set and its historical congruence with the emergence of nuclear weapons. It is unclear whether the remaining time span (1816-1945) is sufficient.[36] Finally a large time span and data set may undermine the reliablity of indicators to represent phenomena. The same indicator may represent different phenomena at different points in time. (see Alker, 1966).[37]

The use of a small time span and data set undermines the ability to generate statements which have wider applicability. Findings, and generalizations, are restricted to the period under examination with no means to ascertain their general utility. Also, such an approach

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[36] Levy uses a much larger time span to examine the relationship between polarity and stability. In so doing, he identifies several different eras of polarity. However, the main problem with Levy's view lies in his definition and operationalization of polarity. This problem is discussed at later point in this section.

[37] This problem is known in the literature as statistical non-additivity (Alker, 1964). The statistical manifestation of this problem is noted in the data analysis part of this study, especially as it relates to the aggregation of various sub-systems or historical periods together.

is inadequate for testing hypotheses related to general patterns of behavior, and conflicts with the nomothetic thrust of the field and discipline as a whole. Finally, it may be difficult to identify the key background variables to be held constant.

A mix of the two approaches is adopted. The Levy approach, relative to the temporal span of the study as a whole, legitimizes the exclusion of certain variables, whose exclusion also follows from the type of theory which informs this analysis. Balance of Power theory is a system based theory. It belongs to that body of theory which focuses on factors external to the state in explaining behavior. Moreover, it explains why states with different internal political and social systems behave similarly (Garnett, 1986:44). This type of theory leads to an 'a priori' assumption that internal factors have no systematic influence on state behavior. This does not imply that internal factors, even during the heyday of cabinet diplomacy, are completely irrelevant. Such factors have always played a role in behavior. Rather, external factors, in which the distribution of capabilities is central, are assumed to predominate. Furthermore, the adoption of a large time span, 1816-1939, ensures that the influence of internal factors, which are likely to be event specific, will have no systematic affect on the analysis. In the above case, the Levy approach to background variables is found.

At the same time, the Saunder's approach is also used to define the conclusion of the study: 1939. A major transformation in the external environment of states results from World War Two. The system transforms from a multipolar structure to a bipolar one. Also, the emer-

gence of nuclear weapons alters the utility of force as a means to adjust the distribution and fundamentally affects the ability of elites to calculate the distribution. This structural and technological transformation creates a system relatively unique from that which precedes it. To include it in the analysis would undermine our ability to test the 'true' relationship between the distribution and alliances independent from the effects of structure and technology.

System structure is a primary variable in the understanding of state behavior (Young, 1968; Waltz, 1979). In fact, the bulk of empirical examinations at the system's level are structural in nature. Structure is defined as the arrangement of system actors in relation to one another and conceptualized in two dimensions; vertical and horizontal (Ray, 1980: 32). The vertical dimension is the hierarchical structure of the system. It is based on the ranking of states, usually on the basis of capabilities, and is comparative in nature.[38] It is conceptualized with explicit reference to the subset of states at the top of the hierarchy; the Great Powers. The horizontal dimension is defined in terms of the linkages among states. This dimension is largely concerned with the pattern of political relationships or alliances among states, although it can include economic and/or social patterns. As with the vertical dimension, the central concern is the Great Powers and linkage patterns among them.

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[38] In this case, comparative refers to the construction of rank orders due to the nature of the data and applied method. The rank of any individual state depends on the scores of all other states.

Polarity is the dominant concept representing system structure. However, there is no consensus on the definition and operationalization of polarity chiefly because different scholars incorporate different elements of the two dimensions of structure. Three definitions of polarity dominate in the literature. The first two definitions limit polarity to the vertical dimension. Waltz (1979) defines polarity with strict reference to the number of states at the top of the system's hierarchy of capabilities.[39] In so doing, polarity is the function of the distribution of capabilities among all actors within a system, and is identical to the number of Great Powers. In contrast, Levy (1985) defines polarity on the basis of the distribution of capabilities among the states at the top of the system's hierarchy. In so doing, system polarity is not equal to the number of Great Powers. The final definition encompasses both the vertical and horizontal dimensions of structure. Polarity equated to the number of non-aligned Great Powers and alliances between Great Powers (Haas, 1970; Bueno de Mesquita, 1973).

Each definition represents a potential explanation for state behavior. However, for reasons shown below, only the first definition is the key background variable. The other two definitions integrate separate elements of structure which leads to conceptual confusion, not only for the field as a whole, but also for examinations of Balance of Power theory.

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[39] Waltz, however, does not operationalize polarity strictly according to the number of Great Powers. He uses a ordinal scale in which no differentiation is made between systems with three or more Great Powers. As Hart (1985:25) points out, this is the orthodox treatment of polarity.

Beginning with the first definition, Waltz (1979) reports that there is a consensus in the field that international outcomes vary with changes in the number of Great Powers. Earlier, Waltz (1967) argues that changes in the number of Great Powers alters the function of alliances. In a system containing three or more Great Powers (multipolar), alliances function to alter an unequal distribution of capabilities among the Great Powers. In a two power or bipolar system, alliances can no longer serve this function. Lesser states do not have sufficient capabilities to alter the distribution between the two Great Powers.[40]

Waltz phrases his argument with explicit reference to Balance of Power theory. In so doing, he posits no relationship between the distribution of capabilities and alliances in a bipolar system. Changes in the number, type, and general pattern of alliances in a bipolar system are statistically independent from changes in the distribution. Thus, combining observations from a bipolar and multipolar system may lead to spurious findings. The strength and direction of the relationship could be altered by the failure to control for structural change.

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[40] Rothstein (1968) notes that lesser state capabilities may become relevant in situations where the distribution is not too wide between two powers. For example, in a five Power system where there is a wide capability gap between the top two and the bottom three and where the top two difference is slight, the capabilities of lesser states may become vital. This case provides a further reason for including the lesser states. However, in general, lesser state capabilities, by definition, cannot have a major impact on the distribution.

Polarity, in the second definition, is largely independent of the number of Great Powers and based only on how capabilities are distributed among them. However, this definition has little utility for the task at hand. One cannot separate out the effect of polarity in this sense from our independent variable which is the distribution of capabilities among the Great Powers. As such, it is not an independent background variable.[41] Also, the specific means to distinguish polarity from the Great Power set is problematic. Levy uses a soft indicator to identify polarity over a large period of time, which leads to problems of reliability and intersubjective agreement (Wallace, 1985:109). For example, his identification of the Napoleonic era as unipolar ignores the capabilities and roles of Russia and Great Britain.

The third definition, in which polarity is adjusted for alliance linkages among the Great Powers, is also inappropriate. Methodological problems notwithstanding (see Wallace, 1985), polarity includes part of our dependent variable; alliances. Similar to the case for the second definition, our ability to examine clearly our hypothesized relationships separate from background influences is negated. Conceptually, this definition leads to the treatment of a system with several Great Powers aligned into two mutually exclusive groups as structurally identical to a system containing only two Great Powers.[42]

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[41] In effect, the relationship between this definition and our independent variable is the conceptual equivalent of the statistical phenomenon of multicollinearity. For a discussion of multicollinearity, see Blalock (1964:87-90).

[42] As Levy (1985:47-48) points out, Haas' (1970) use of this definition leads to a characterization of both the period 1891-1918 and 1946-1965 as tight bipolar.

Alliance groups are treated as national actors without regard for the differences between them.[43] Finally, polarity in this sense collides with the concept of polarization as defined in Chapter Two. In conclusion, the importance of alliance configurations, especially when explaining war, should not be ignored. But, polarity should not be used to represent two separate structural phenomena. To do so leads to conceptual confusion.[44]

In adopting Waltz's conception of polarity, the number of Great Powers is assumed to have an independent effect on state behavior. Great Powers, as well as lesser states, are assumed to behave differently in multipolar and bipolar systems. Thus, to take observations from these two distinct structural environments in a single analysis will undermine the validity of the subsequent findings. One could

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[43] Fedder (1968) correctly argues that a state entering into an alliance does not transform into a coalition actor. Such a state retains its individuality. Alliances are only a type of behavior and only through reification can they be treated as actors.

[44] However, a further problem exists which is not directly germane to this study because of a constancy in the number of Great Powers in the system from 1816 to 1939, as shown in Chapter Four. There is not an exact correspondence between this definition and its operationalization. For example, Waltz operationalizes polarity in only two forms; bipolarity and multipolarity. In so doing, multipolarity encompasses any system containing at least three Great Powers, which is the orthodox application of polarity in the field regardless of definition (for example Haas, 1970; Modelski, 1973; and Levy, 1985). Deutsch and Singer (1967) appear to indicate that 5 is the minimum number of Great Powers for multipolarity, although their concern is with the polarity-stability issue. Bernholz (1986) replaces multipolar with Balance of Power, keeps the 3 Power minimum, and applies multipolar to a system containing more than 7 Powers. But, there is reason to believe that polarity should be applied with specific reference to the actual number of Great Powers.

To ignore variations within multipolarity contradicts the consensusal belief that outcomes vary with changes in the number of Great Powers. A portion of the literature on the relationship

argue that structure, in the above sense, should be used as an experimental control. Both systems, pre and post World War One should be used as separate test environments. Evidence can then be generated on the independent effect of polarity. However, such an approach is questionable because of the relatively short time span of the post World War One period and, as Levy (1985) notes correctly, the confounding factor of nuclear weapons. Moreover, the impact of nuclear weapons on thinking in the security realm conflicts with certain assumptions of Balance of Power theory. Finally, nuclear weapons create a major measurement problem.

Recall that Balance of Power theory is primarily about the Great Powers in which the use of force to redress an unequal distribution of capabilities is central. With the advent of nuclear weapons in general, and invulnerable second strike forces in particular, force is no longer a viable means to redress inequality. War between the United States and Soviet Russia entails the probable destruction of both societies. The citizens of both states can be provided with no reasonable defence from a strategic exchange. Thus, the traditional use of force as a means to enhance security and state/system survival is confronted by an outcome of state/system destruction. War between the two Great Powers has no value because the benefit, equality and system

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between number and stability indicates that the latter differs in a two, three, four, and five power system (see Deutsch and Singer, 1967; Yalem, 1972; Simowitz, 1982: Wagner, 1986). In terms of alliances, the failure to discuss the potential influence of variations within multipolarity is due to the assumption that only alliances among Great Powers are germane to Balance of Power theory. But, since the degree of inequality within the distribution varies, alliances with lesser states may have utility. More importantly, the addition or subtraction of one Great Power in an overall multipolar system may affect Great Power alliance preferences and behavior.

preservation, is always outweighed by the cost, assured destruction.

The Great Powers still have the option of using force in the second manner outlined in the theory. The distribution can be altered through the acquisition of territory; the traditional 'goods' of international politics. Even here, nuclear weapons have had an impact. A limited war in the peripheries, even between Great Power proxies, can lead to direct confrontation between the Powers and escalation. The fear of nuclear war, in relation to its effect on the acceptability of force and territorial acquisition, has undermined the domestic support for the use of force, particularly in the West. Moreover, given the technological , not territorial, basis of the nuclear revolution, additional resources provided by territorial acquisition is not likely to have a major impact on the distribution. In sum, the use of force and the acquisition of territory in relation to the distribution is no longer profitable.

It could be argued that the effect of nuclear weapons on beliefs should increase the utility of alliances as a means to redress an unfavorable distribution. Outside of internal actions, alliances appear to be the only profitable means. If anything, the alliance 'mania' in the post 1945 world attests to this contention. However similar to the decline in the value of territory, it is doubtful that alliances even with other nuclear states can have any meaningful effect on the distribution between the two Great Powers. How can the additional of several divisions or even small independent nuclear forces have any significant impact on the distribution between the United States and Soviet Russia with their massive nuclear stockpiles.

Alliances continue to have value as instruments defining spheres of influence and signalling commitment and resolve, vital elements for a deterrent posture, but they cannot significantly alter the distribution (for a general discussion, see Fedder, 1968; Dinerstein, 1965).

Naturally an 'a priori' explanation of alliances requires empirical verification and the above discussion should not be interpreted to imply that Balance of Power explanations for alliances should be rejected out of hand for the nuclear age. It simply reveals that the relative simplicity of a Balance of Power explanation in the pre-nuclear age provides a firmer starting point for analysis. Furthermore, the discussion also reveals the major methodological problem engendered by nuclear weapons. How does one measure the nuclear 'balance' in conjunction with the conventional 'balance'.

Prior to the nuclear age, capabilities, from both the observer and actor perspective, can be reasonably measured through an amalgam of military and industrial resources. However, the nuclear dimension is a confounding element. It is true that nuclear capabilities are highly correlated with traditional capabilities. The Great Power rank of the United States and Soviet Russia are a function of nuclear and conventional capabilities. Moreover, both Great Powers have shown concern for both the nuclear and conventional distribution and the interrelationship between these two dimensions. Problems arise in the context of other states and the distinction between the two dimensions.

Several second rank states, Great Britain, France, and China, possess both nuclear and conventional capabilities. However, two prominent states, West Germany and Japan, rank at the top of economic indicators of capability, but only the former possesses any significant conventional military capabilities and neither has nuclear weapons.[45] The problem becomes not only the simple identification of Great Powers from a capability perspective, but the appropriate mix of capability indicators for this task.

In one sense, nuclear weapons are the great equalizer. Even a small state with a minimum deterrent capability can ensure a degree security unavailable in the pre-nuclear age. Nuclear weapons are not simply another component of military capabilities. One cannot simply add launchers or warheads as another component in the basic equation. As Rothstein (1968:112) points out: "Nothing as revolutionary as nuclear weapons intruded to make traditional calculations of power (capabilities) purely non-sensical". Nor can nuclear weapons be ignored in any consideration of the distribution. The problem is simply the weighting of the various elements of state capabilities which, in the nuclear age, require a major research focus in itself.

Again, the measurement problem should not be viewed as a reason for completely rejecting Balance of Power theory. It simply reveals that the nuclear age requires a separate analysis in its own right. Moreover, empirical evidence from the pre-nuclear age may provide insights which can inform a subsequent analysis of the nuclear age. Simply,

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[45] Although still relatively small when compared to the Superpowers, the size of Japanese conventional forces is increasing significantly along with its military expenditures.

the structural transformation from multipolarity to bipolarity and the complex nuclear environment of the contemporary world dictate its exclusion from this analysis. In a one sense, the multipolar system of Europe and the relatively static nature of capabilities provide a 'best' case for examining the utility of Balance of Power theory as an explanation for alliances.[46]

3.2 SECURITY INTERDEPENDENCE AND STATE MEMBERSHIP IN THE SYSTEM

Identifying the spatial scope of security interdependence as the means to identify the members of the system is an important issue in its own right. The failure to establish adequate criteria for state membership can lead to the inclusion of states who are not relevant players in the security equation. As a result, the question of spatial boundaries is vital to ensure a viable representation of the historical record. Unfortunately, the spatial boundary issue has drawn little attention in relation to the testing of hypotheses on general behavioral patterns. It is true that a great deal of work has been done on regional sub-systems (see Thompson, 1973). But, this work is largely biased towards a concern for interaction patterns defined with reference to economic variables. When it comes to security issues, the literature is very limited. Brecher (1967) is concerned primarily with identifying subordinate systems to examine state behavior outside of the dominant system (i.e. contemporary Bipolarity). Deutsch et.al. (1957), and Cline (1978) define security sub-systems by alliance rela-

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[46] The reference to 'best' case is drawn from Prezworski and Teune (1975). They argue that two research choices, best or worst case, are available. In choosing the best case, one assumes that an inability to reject the null hypothesis allows one to infer that this inability would hold in other, i.e. worst case, scenarios.

tionships. Finally, Buzan (1986; 1983) defines security sub-systems in relation to major nodes of conflict. While this literature agrees on the importance of geography in defining security interdependence, there is no agreed upon set of criteria to measure the linkage between the two.

The focus on security, in a political/military sense, stems from Balance of Power theory. State behavior is explained in relation to the primary goal of state survival. Security represents the ability of a state to meet this goal and is primarily dependent on their military capabilities relative to other states. Naturally, economic factors play a role in the determination of any state's security requirements. Also, they are components in the determination of any state's capabilities, and can not be entirely ignored. But, economic elements, such as trade and access to markets, have only a secondary relationship to basic security needs. According to Buzan (1986), economic relationships have a different dynamic than political/military relationships. He points out, for example, that the contemporary Soviet-American rivalry is accompanied by little economic interchange. The difference in the two dimensions, Buzan argues, is due to the greater influence of geography on political/military relationships.

The centrality of geography for defining areas of security interdependence is crucial. It is true that changes in military technology have affected the security benefits derived from geographic location and have enabled some states to project power over large distances. But, the basic defining characteristic of state security remains geographic. Depending on the type of geographic features which exist at

or within a state's borders, states may feel more or less secure. A state surrounded by mountains or water has greater initial security than states which reside on flatlands. Geography still plays a key role in defining the type of military forces a state acquires and deploys.

The ability to project power over long distances is also not a satisfactory reason for ignoring the geographic element of state security. Despite technological change, even the most powerful states experience a decline in strength and influence over distance (Boulding, 1963; Bueno de Mesquita, 1981). Also, the ability to project power over wide distances should not be equated simply with the ability to project physical punishment. For example, it is not the nuclear capabilities of the Soviet Union and the United States alone which makes them Superpowers, but their ability to occupy or attack physically the territory of other states by virtue of their conventional capabilities.

The concept of interdependence lies at the heart of this issue. Generally, interdependence is conceived as a situation between states characterized by reciprocal effects (Nye and Keohane, 1977; see also Waltz, 1979). In security terms, it relates to the set of states whose military/political behavior has some effect on the continued survival of any individual state. Reciprocity can be symmetrical or asymmetrical depending on the capabilities of one state relative to another. It is a symmetrical relationship for the Great Powers. It is asymmetrical between the Great Powers and all the other states. Furthermore, given the existence of marked disparities in relative

capabilities among states as a whole, the scope of security interdependence for each state is likely to vary widely.

Relative capabilities and geographic position are the basic factors which enable decision-makers to identify and priorize security threats and needs. But, it is of little value for this study to identify the scope of security interdependence from the perspective of individual states. As noted above, the complex interaction between a state's relative capabilities and geographic position is likely to produce divergent areas of security interdependence. Specifically, the scope of any individual state's perceived security interdependence will differ from any other state.

The geographic limits of this study is Europe. This limit is consistent with historical considerations which point out Europe as the centre and birthplace of international politics, and the empirical referent for Balance of Power theory. Moreover, the relationship between European states and the periphery, with two exceptions noted below, is one of dominance and subservience. Technologically, the ability to project power for the majority of states is limited to the continent, and capabilities among the continental states are largely dominated by land forces. Thus, security concerns for the European states is restricted to the continent itself.

Having established the geographic boundaries of the study, we can now identify the rules for membership. For a European state to be included, it must meet the conditions outlined by Singer and Small (1972:20). These conditions are a minimum population of 500,000 and

the reception of a diplomatic mission from either Great Britain or France for the period 1816-1919. After 1919, states must either be members of the League of Nations, or meet the population measure and receive diplomatic missions from any two Great Powers.

Despite the geographic limitation to Europe, consideration must be given to two non-European states, the United States and Japan, which have been treated as members of the European system for part of the period under examination (Singer and Small, 1972). The central question in relation to their membership is whether these states are part of the European security equation. Three criteria can be used to indicate membership in this regard:[47] the occupation or control of territory within Europe; the existence of a security relationship with one of the geographic members; and/or a historical willingness to use force to defend or expand their interests in Europe. Furthermore, two of the three criteria must be met for inclusion. Otherwise, states which have a security relationship with a geographic member for purposes outside of their region can not be excluded.

The specific case for the inclusion of the United States and Japan stems from the ascension to Great Power rank on the basis of their respective victories in late Nineteenth Century 'wars'.[48] However, these victories are non-European in location and are related to con-

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[47] The discussion of American and Japanese membership could readily be done without reference to criteria. However there is a need to establish a set of rules for state membership in general. These criteria have value in providing a clear method for identifying states who participate in non-contiguous regions in the contemporary period.

[48] For Japan, it was the defeat of China in 1895. The United States defeated Spain in 1898. Membership is also based on their military capabilities relative to other states.

cerns in their respective geographic regions. When applying the above criteria, neither state can be treated as a member of the European security system from 1816-1939.

Japan had several political links with European states, dating back to the Anglo-Japanese alliance in 1902. Also, Japan participated in both World Wars of this century. However, the Anglo-Japanese alliance was largely an Asian affair. Subsequent political links between Japan and Germany in the 1930s were not formal in the sense of linking security or co-ordinating policy (Taylor, 1964:145-146). In fact, Japan became a neutral during the Russo-German war (1941-1945). Japan's participation in World War One was limited to the acquisition of German colonial possessions in Asia. As noted above, Japan did not participate in the European theatre during World War Two.[49] In conclusion, Japan does not meet the criteria for membership in the European sub-system. It is a regional player whose relationship with the Europeans is strictly a function of the European presence in Asia.[50]

Similarly, the United States does not meet the criteria for inclusion. Although the United States participated in the later stages of World War One, this participation was an anomaly relative to traditional behavior. Immediately after the war, the United States rejected any type of security link with Europe, as evidenced by her refusal

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[49] World War Two is traditionally treated as one war. However, at closer examination, there are actually two separate wars, a Pacific War and a European war. From a longer historical perspective, historians may come to treat World War One as two separate wars, as argued by Wight (1977: 38).

[50] Historians support this view. For example, both Adamthwaite (1977) and Ross (1983) argue that Japan was an Asian actor, and not a player in the European security equation.

to ratify the Versailles Treaty and her unilateral enunciation of neutrality in 1935.[51] The United States neither occupied territory for any significant period of time, nor maintained a security link with European states over time.

A final concern is the colonial possessions of the European Powers. In general, the majority of possessions are directly controlled by the metropolitan Power and, thus do not meet the membership conditions outlined by Singer and Small. The exception here is the various dominions of the British Empire. Prior to World War One, the foreign/defence policies of these states are controlled by Great Britain. Thus, they can not be treated as truly independent states. However, beginning with their major contributions to the British war effort during World War One, these dominions sought an independent voice, legitimated by the Statute of Westminister.

Only Canada among the dominions is given membership, limited to the Interwar years. Although Canada withdrew into an isolationist position similar to the United States, it signed the Versailles Treaty, participated in the League of Nations, and declared war on Germany in 1939 immediately following Great Britain. Although the other dominions acted similar to Canada, their location, in conjunction with the rising Japanese threat in the 1930s, places them outside of the equa-

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[51] Offner (1975: 116) points out that American security concerns were strictly focused on the Pacific region. Also, it was the German declaration of war in 1941 which brought the United States into the European war and not vice-versa. The problem of entry, as sought by F.D.R., was solved. As Graebner (1961) notes, automatic U.S. participation in Europe was far from a foregone conclusion. Finally, Albrecht-Carrie (1958) recognizes the fact that the United State was the strongest power at the time, but because of her isolationist stance, she was not part of European security calculations.

tion.[52]

Table II

System Members

Great Britain		Ireland	(1922)
Holland		Belgium	(1830)
Luxemborg	(1920)	France	
Switzerland		Spain	
Portugal		Hanover	(1838-1866)
Bavaria	(1816-1870)	Prussia/Germany	
Baden	(1816-1870)	Saxony	(1816-1867)
Wurtemborg	(1816-1870)	Hesse Elect.	(1816-1866)
Hesse Gr.Duc.	(1816-1866)	Mecklenberg	(1843-1866)
Poland	(1919)	Austr-Hungary	(1816-1918)
Austria	(1919-1938)	Hungary	(1919)
Czecoslovakia	(1919-1938)	Sardinia/Italy	
Papal States	(1816-1860)	Two Sicilies	(1816-1860)
Modena	(1842-1860)	Parma	(1851-1860)
Tuscany	(1816-1860)	Albania	(1914-1938)
Serbia/Yugo.	(1878)	Greece	(1828)
Bulgaria	(1908)	Rumania	(1878)
Russia		Estonia	(1918)
Latvia	(1918)	Lithuania	(1918)
Finland	(1919)	Sweden	
Norway	(1905)	Denmark	
Canada	(1919)		

In conclusion, this study is limited to the geographic boundaries of Europe,, with the exception of the inclusion of Canada in the Interwar period. The states, which meet the conditions for membership are presented in Table II, along with the dates of membership. These states provide the basic observations for the independent and depen-

[52] A related issue is the contribution of colonial possessions to the capabilities of the metropolitan states. This issue is discussed in the subsequent Chapter which serves to operationalize the independent variable.

dent variables.

3.3 IDENTIFYING PERIODS WITHIN THE GENERAL BOUNDARIES

Europe in the period 1816-1939 is identified as the empirical boundaries for this analysis. These boundaries are a function of structural and technological changes which occured following World War One, and the security interdependence among European states. The result is a system of international politics which exhibits relative contextual consistency over time. The effect of other factors, particularly related to individual states, on behavior is assumed to be temporally limited. They are likely to have only a random, rather than systematic, effect on our subsequent analysis. However, concern must still be given to changes within this system as a whole which could affect our analysis.

Change, as distinct from transformation, refers to alterations in the environment which may affect behavior and thus alter the predicted relationship between the distribution and alliances.[53] In Rosecrance's (1963) study of historical systems, change is linked alterations in the mode, objectives, and techniques of diplomacy. Although he failed to provide an adequate means to measure such changes, relying instead on historical tracts and a concern for stability defined as war, he correctly indicates that systematic empirical analysis must be concerned with changes that sweep across the system. Such changes alter

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[53] Choucri and North (1975) define such changes as breakpoints which are a function of changes in the relationship among variables. However, one must first identify breakpoints and test for such changes, which serve to validate the breakpoints, rather than the other way around.

outcomes of state interaction and thus affect expectations in terms of predicted relationships among phenomena.

One key to the identification of such changes, their duration, and therefore, temporal sub-systems or periods, is the theory under examination. As noted earlier, Balance of Power theory is directed to the problem of security in an anarchic environment. The fundamental form of the security threat is the use of force or war. War is the ultimate arbiter of survival. It follows that Balance of Power explanations are strongest when war has utility in the system as a whole.[54] Its utility underlies the importance of the distribution of capabilities in explaining behavior.

Whereas the utility of force is directly and permanently affected by the emergence of nuclear weapons, its utility in the non-nuclear age is affected by other factors. Jervis (1985) points out that after a major systemic war, such as Napoleonic Wars and World War One, the willingness of states to bear the costs of another war is very low for a period of time. States are exhausted by the costs of the previous war. The generational/societal theory of war also directs our attention to changes in the willingness of states to use force. The generations which experienced a major war are less likely to support another war, whereas successive generations who have not experienced war are more likely to support the use of force. Moreover, societies which glorify conflict, such as Nazi Germany, are more likely to use the war option (Howard, 1984), which will have ramifications for behavior in the rest of the system. Another factor which may affect

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[54] Jervis (1985) argues that war as a legitimate tool of state policy is a necessary condition for Balance of Power behavior.

the willingness of states to use force is the relative balance between offensive and defensive capabilities (Quester, 1977; Levy, 1984). When the offense dominates, the positive utility of force increases. Conversely a dominant defence produces a negative utility.

Table III

Temporal Periods for Subsequent Analysis

1816-1914	1816-1848	1816-1870
1849-1914	1849-1870	1871-1914
1919-1939	1816-1899	1900-1939

Naturally, any 'a priori' decision regarding the division of time is a function of one's interest and is thus relatively arbitrary. Surveying both the historical and international relations literature, a plethora of temporal divisions can be found and rationalized within the period 1816-1939. Nonetheless, some consensus does exist. Rather than examining the diverse rationale for these periods, an interesting but problematic endeavour, it is sufficient to identify them and apply them in our data analysis. In so doing, the empirical findings from their application will serve as a validation check. Explanation of periods will only be necessary where the evidence relating to the relationship between distribution and alliances requires it. However, certain specifics in the choice of periods do require brief consideration.

Table III presents the periods which will be applyed in the statistical analysis. As evident, many of the smaller periods identified by Rosecrance (1963) are absent. Their absence is partially a function of their small duration in time. With a small number of observations, the confidence one can place in the findings is largely limited. There are, however, two exceptions. The periods 1849-1870 and 1919-1939 are included. In the case of the former, the defeat of the revolutions in 1848-49 have a major effect on the scope of state behavior (see discussion in Chapter Six). The wars of national unification conclude in 1870-71 with the defeat of France and the unification of Germany. As a result, the struggle over the domination of Germany, an issue stretching back to the origins of the state system, is concluded. Again, this represents a distinct change which may affect the hypothesized relationships. Similarly, the Interwar period cannot be ignored. To do so would fly in the face of history and the impact of World War One on subsequent state behavior.

A final concern in this regard is the choice of the inter-century breakpoint (1899/1900). Although no historians identify a break at this point in time, Singer et.al. (1972) uncover a significant change in the direction of the relationship between the distribution and war at this point. Their choice partially flows from the limitation in observations on the capability index, which were quinquennial at the time. Moreover, their analysis included observations from the post-World War Two era, as well as a wider spatial limit. Nonetheless, this break is employed for the simple reason of replication, given our use of their expanded data set. As shown in Chapter Six, evidence leads us to re-examine the validity of this decision.

In conclusion, nine distinct periods are employed to test the hypotheses. In so doing, a more detailed and historically exact analysis will result. Naturally the choice of periods, both the system as a whole and smaller periods identified above, can be contested. However, the legitimacy of the choices is best addressed by the evidence itself. In so doing, the confidence one can place in the subsequent findings will be much higher than the case would be if the boundary problem is ignored.

Chapter IV

THE GREAT POWERS AND MEASURING THE DISTRIBUTION

The purpose of this chapter is to discuss the methods used to operationalize the independent variable: the distribution of capabilities. To do so requires attention not only to the relevant indicators of state capabilities and the statistical technique necessary to construct a distribution score, but also to the set of states--the Great Powers--who provide the observations for this variable. A Great Power is a state which holds a significant proportion of system capabilities. Thus, Great Power status is susceptible to empirical verification based on the identification of relevant capability indicators and the establishment of a minimum share requirement for Great Power status. This set of indicators simultaneously serves as the basis for the calculation of the independent variable.[55] Therefore, the operationalization of the independent variable is intertwined with Great Power identification.

The first section of this chapter presents the case for using a quantitative approach for Great Power identification. It examines the traditional approach to Great Power identification, problems contained therein, and addresses the criticisms leveled at the quantitative

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[55] The key difference, outside of the additional calculation of a distribution score, is the set of observations relevant to each task. State shares for the purpose of Great Power identification are based on the sum of the capabilities of all states in the system. Shares used in the calculation of the distribution score are based on the sum of capabilities of the Great Powers only.

approach to this issue. The next section presents the indicators and specific method used to measure Great Power status. In so doing, it argues for the adjustment of certain indicators to ensure greater accuracy. The third section reports the findings for the European international system (1816-1939). These findings are verified against the historical record. Finally, the last section presents the specific technique used in calculating a distribution score from the Great Power subset. This score ranges from 0.0, perfect equality among the Great Powers, to 1.0, a situation in which a single state holds 100% of subset capabilities.

Before undertaking these tasks, two underlying and related issues require brief discussion. First, it is probably evident to the reader by now that the term power has been carefully avoided in reference to the measurement of capabilities. Power carries with it a great deal of conceptual baggage. There is little, if any, value in re-engaging in this well trodden area of conceptualization in which power is largely related to influence and outcomes.[56] Power as capabilities concerns the means or resources, human and material, which elites tap in attempts to influence and obtain favorable outcomes (Singer and Stuckey, 1973). Power, in this form, is neither equivalent to, nor necessarily correlated with, a capacity to exercise influence and obtain favorable outcomes. Nonetheless, power as capabilities has been consistently a central concern for elites in the calculation of

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[56] For a detailed analysis of treatments of 'power' in the literature; see Baldwin (1979). For a general discussion, see Dougherty and Pfaltzgraff (1981:86-92). For an analysis of the dominant approaches to the measurement of power, see Hart (1976). Finally, the classical treatment of power as capabilities is Knorr (1975; 1956).

security and thus a key variable in understanding behavior, particularly from a Balance of Power theory perspective (Gullick, 1955; Kissinger, 1957; Singer et. al., 1973; Choucri and North, 1975; and Buzan, 1983).

Second, the overall thrust of this analysis is quantitative. However, this does not mean that the importance of the more impressionistic historical record is neglected. It plays a vital role not only as a confidence check for our findings, but also as a guide in the construction of our indices. To undertake a quantitative approach without an eye on history is to divorce oneself from the actual material under analysis. Conversely, to engage in impressionistic analysis alone either limits one to an ideographic mode of theorizing or to an endless debate on whose evidence and interpretation is correct.

4.1 THE CASE FOR MEASURING GREAT POWER STATUS

There is an overwhelming consensus in the field on the importance of the Great Powers for understanding and explaining International Politics. Great Powers are consensusally defined as states which play a fundamental role in all security issues which arise in a system.[57]

[57] This basic definition is drawn from Levy (1983). However, it is consistent in meaning with most definitions. Wight (1978) defines a Great Power as a state with general interests whereas lesser states have only limited interests. Albrecht-Carrie (1958:71-72), using the indicator of recognition, also argues that Great Powers have general interests, "meaning by this one which has a voice in all affairs in contrast with a Power of lower rank, or a Power with limited interests." Interests, in this context, is synonymous with a Great Power's concern for all security issues. As shown below, differing definitions and qualifiers are actually attempts to operationalize, and thereby measure, Great Power rank. They are not, in the pure sense, competing definitions.

Finally, the historical roots of the distinction between Great

While different criteria exist, there is convergence among political scientists and historians alike concerning which states have been Great Powers. However, despite this agreement, there are two reasons why a quantitative approach should be applied to this issue.

First, a quantitative approach will serve to clarify the ambiguous position of some states in the historical literature. This ambiguity is especially evident in the case of Italy during the Nineteenth and early Twentieth Centuries. Unless such ambiguity is resolved, the measurement of our independent variable may be adversely affected. Second, there is an implicit, if not explicit, consensus that capabilities are the basic criterion of Great Power status.[58] Unfortunately, some scholars have avoided using and thereby measuring capabilities. Instead, they have relied on several surrogate criteria to legitimize their Great Power sets. However, there is sufficient slippage between these surrogates and actual Great Power status to call into question their value.

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and lesser Powers is worth noting. Rothstein (1968:196) notes that the actors made this distinction at the conclusion of the Napoleonic Wars. A Great Power was a state able to contribute at least 60,000 troops against any further French aggression. This amount ensured that only the four prominent coalition members, Great Britain, Austria, Russia, and Prussia, would participate at the Congress of Vienna. In excluding lesser states, the problems of redrawing the map of Europe was simplified.

[58] Our strict theoretical focus on security validates the treatment of status in terms of capabilities. However, Wallace (1973) points out that the portrayal of status as simply a product of the capability hierarchy is a considerable oversimplification. The hierarchy of states will differ in various geographic regions, issue areas, types of influence, and other non-capability factors such as social and political attractiveness. Nations are more aptly conceived as having different standings on a variety of status dimensions or having a status set. As noted above, this study is only concerned with one dimension, security, in which capabilities are the prime determinant of status.

Many scholars, such as Northedge (1976), Bull (1977), Wight (1978), and Levy (1983), use the criteria of recognition, and special rights and privileges. A state is a Great Power when it is recognized as such by its own elites, as well as the elites of other states and when it is given special duties and privileges. However, recognition, despite its link to actor perceptions, is rarely applied in the manner in which it is defined.[59] Rather, political scientists draw from the list of states recognized by historians. But, recognition from an actor perspective may be motivated by political reasons outside of the actual role a state plays in security issues. For example, it is Italy's membership in the Triple Alliance after 1882 which enables it to attain a measure of acceptance as a Great Power (Bridge and Bullen, 1980). Finally, a state may be recognized as a Great Power due to tradition and its past role in the system. This is the argument underlying Gilbert's (1979) assertion that Spain remained a Great Power in the Nineteenth Century.

There is a difficulty in differentiating between nominal and substantive Great Powers when using the criterion of recognition.[60]

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[59] This inconsistency is partly a function of the distinction between a semantic and scientific explanation as noted by Kaplan (1964). The former type refers to explanation from the perspective of the actor and his interpretation in this regard. The latter type is the observers interpretation which is open to verification. It appears that users of recognition as a criteria largely confuse these two types of explanation. In fact, they actually use the latter in the guise of the former.

[60] In the most recent study, Burridge and Young (1988) make a similar argument, but use the terms courtesy and unambiguous. Problems in their treatment arise from inconsistency in definition and application which leads them to include Prussia and Austria in their list. They state; A Great Power is one whose reputation or latent military strength may be equaled, but not surpassed by that of any other power;...(p.233). As shown in Figures 4.2 and 4.3, Prussia and Austria do not possess capabilities which fit the definition.

Another criterion applied to the issue of Great Power identification is the linkage between Great Powers and special duties and privileges (Bull, 1977). However, special duties and privileges are sufficiently vague as to force scholars to rely on the membership of key states in international forums and organizations. In fact, the historical basis for this criterion is the Concert of Europe. Yet simple membership in the Concert can not be directly equated to actual Great Power status. For example, Prussia's membership in the Concert is a mere courtesy extended by the other powers, largely due to Russia's patronage of the Hohenzollern crown (Anderson, 1972). At the Congress of Paris (1856), Prussia is only grudgingly admitted on the wishes of Austria and against the wishes of Great Britain (Taylor, 1954:86). Turning to the contemporary era, one finds five states which meet this criterion at the United Nations. Yet, it is obvious that only two are actually Great Powers in the original sense.[61] Finally, such organizations are the exception rather than the norm in the history of international politics and their substantive importance is questionable over time.

Any value in the use of these criteria is simply the product of a surrogate relationship with state capabilities. Any recognition, and/or special duties and privileges states may receive stem from their ability to affect independently any issues or outcomes in the security realm. This ability is a function of the dominant capabilities which

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Moreover, both state's reputation was severly tarnished by major defeats; Prussia in 1806 and Austria in 1866.

[61] Bull (1977:203) argues that the distinction between Superpowers and Great Powers is a partial attempt to overcome this problem. He believes that this distinction has little value. Only the Soviet Union and the United States, by virtue of their overwhelming military superiority, are Great Powers in the true sense of the concept.

Great Powers possess relative to other states. This dominance enables them to entertain the use of force to alter outcomes which conflict with their interests.

This ability to use or entertain the use of force leads us to consider the value of another prominent surrogate criterion of Great Power status; war. Victory or defeat are treated by many observers as the best measure of Great Power status.[62] Russia and Prussia became Great Powers by virtue of their defeat of other Great Powers. Conversely, Sweden, and the Austro-Hungarian Empire lost this status because of defeat. But, the relationship between victory/defeat and the rise/fall of Great Powers is historically inexact (Wight, 1978:49). For some, France (1815), and Germany (1918), defeat has only meant, at a minimum, a temporary loss of Great Power status. Even in victory, a Great Power may find itself overwhelmed by the strength of an ally, as was Great Britain relative to the United States in 1945, if not earlier. Finally, the identification of the wars which resulted in alterations in the ranks of the Great Powers is problematic in itself.[63]

Paradoxically, the ambiguity in using surrogates to measure Great Power status is a function of a reliance by political scientists on historians. Indicators are either abstracted from historical works

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[62] Some scholars view the simple measure of participation in war as the hallmark of a Great Power. Modelski (1973) points out that war is a Great Power phenomenon and not evenly distributed over all states. Furthermore, Taylor (1954) emphasizes the ability to wage war as the basic test of a Great Power.

[63] Levy (1985b) shows the lack of consensus among macro-theorists in the identification of major systemic wars. This lack of consensus bodes ill for any attempt to identify the wars which altered the ranks of the Great Powers.

directly or applied after the fact to legitimize historical observations. In effect, political scientists have relied on the judgement of historians, who, for reasons of discipline bias, eschew both a concern for concept definition and operationalization, and a direct quantitative approach to the issue.[64] This reliance on historians partially stems from doubts about the utility of directly measuring capabilitiies to identify Great Powers, also evident among many political scientists.

Levy (1983:15-16) extensively criticizes a quantitative approach to Great Power identification. He argues that it is not likely to meet the minimum test of face validity. Focusing on the work of Stuckey and Singer (1973), he cites two failures in this regard. First, one should expect a state with greater capabilities, and thereby a higher status, to prevail in war against a weaker state. But this is not always the case. For example, Israel's military successes have occurred against states with much greater capabilities. Second, he finds that the rank orders generated in the above study are often counter-intuitive. Both the United States and Turkey in 1845 ranked higher than Prussia, yet only Prussia is seen as a Great Power by his-

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[64] Several British political scientists, such as Wight and Bull, pay great attention to the issue of Great Power status. However, their approach is similar to historians. Singer and Small (1966) linked status to diplomatic recognition. Also, Wallace (1973) focused directly on the status problem, although not with the intent of Great Power identification.

At the same time, historians have provided hard measures of state capabilities in their discussions on the Great Powers. The most prominent example is found in Taylor's (1954) introduction to his study of European diplomacy from 1848 to 1918. However, as shown later on in the Chapter, historians fail to apply consistently these findings. Powers shown to lack the capabilities for Great Power status are still labeled as Great Powers throughout the texts.

torians. Similarly, in 1913, China ranks higher than four of the orthodox Great Powers (Italy, France, Japan, and Austria-Hungary).

Levy's first point largely misses the mark. The relationship between war and Great Power status is problematic. Greater military capabilities may increase the likelihood of victory, but several other factors also affect the outcome of war. In the case of Israel, preemption in 1967 enabled it to overcome her inferiority, while limited Egyptian military goals in 1973 saved Israel from a potentially catastrophic defeat. The results of the Singer and Stuckey study are a product of their failure to demarcate adequate boundaries. They include several states, especially China and the United States, when they are not truly members of the European security system. Thus, their findings, and Levy's criticism, are questionable. Also, the rank of Prussia is not that surprising given its weakness throughout the first half of the Nineteenth century. Most historians would agree that Prussia was the weakest Great Power during this period. Finally, it is not a state's standing in any single year which makes it a Great Power. Its standing, because it is comparative in nature, may fluctuate over short periods of time for a variety of reasons. For example, a state may mobilize its resources for war and thereby affect the relative standing of other states. It is the standing of states over a sufficient period of time which indicates its actual place in the hierarchy.

A more important criticism leveled at quantitative studies is their inability to capture and measure adequately all the elements of state capabilities. Levy points to various elements, such as leadership,

morale, and training, which evade measurement. As a result, he concludes that only a general estimate of state capabilities is possible. However, a reliance on general estimates is not a significant problem in itself. Recall from Chapter One that one of the goals of this study is to capture as accurately as possible the historical conditions confronted by the actors.[65] In so doing, it is reasonable to expect that decision-makers are also forced to rely on estimates. For example, Russian capabilities were overvalued in 1914 by the majority of decision-makers at the time (Kennedy, 1984; for an general analysis see Wohlforth, 1987). In other words, as long as quantitative indicators are adjusted for major changes in historical conditions, estimates are likely to be generally representative of the actual picture of relative capabilities as seen through the eyes of the actors themselves.

The final concern in this area relates to the commensurablity of different indicators of capabilities. As Schroeder (1977) points out, geography has an effect on relative capabilitiies. Land power and seapower are not commensurate. Furthermore, distance also affects capabilities. For example, Russia is a stronger power defensively because of its geographic detachment from the other Powers of Europe. Similarly, Britain's insular status provides greater defensive capa-

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[65] One should not construe this point to mean an ability on our part to capture the same picture as decision-makers. Rather, it underlies the need to make key methodological decisions with an eye on the historical context and the actors involved. Outside of a radically different approach which would examine individual elite perceptions through primary sources, decisions are made from a concern for existing historical interpretations. In effect, one must be simultaneously a political scientist and a historian. In this way, the historical context can be best integrated with the theoretical thrust of this analysis.

bility, but also hinders its offensive capability because of a reliance on naval forces.

Naturally, these factors are vital in considerations of war. However, they are also difficult to assess in a general consideration of capabilities without placing them in the context of specific situations. One factor, such as naval assets may be positive in one situation, but negative in another. While such considerations can not be ignored in explanations of specific actions in time and space, they are not vital for general considerations regarding the relative capabilities of states as a whole and the general distribution of capabilities. Our estimates are only designed to account for the general situation and not the nuances of particular instances in the historical record. The latter is a different theoretical concern.

4.2 CAPABILITY INDICATORS AND THE HISTORICAL RECORD

Given the central need to account for changes in historical conditions over time, the specific indicators of state capabilities can be identified and adjusted.[66] The indicators, and data for this study are

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[66] Two competing approaches to the measurement of state capabilities are rejected for historical and methodological reasons. Ferris (1972) uses factor analysis to construct an index of relative state capabilities. In so doing, he admits that his findings go beyond the historical record, and attempt to elucidate objective rankings which may have been misperceived by historical elites (p. 55). Moreover, the validity of factor analysis has been called into question (Wallace, 1975). Organski and Kugler (1980) apply GNP as the basic indicator of state capabilities. But as Wayman et. al. (1983) and Moul (1986) point out, GNP, as a measure of economic performance, appeared in the late 1940s. Before the 1940s, the specific information necessary to calculate GNP is not available. Thus, earlier estimates of GNP are questionable. This problem forces Organski and Kugler to restrict their domain to the traditional Great Powers from 1850 onward, with the notable exclusion of Austro-Hungary until 1914. As a result, the comparative ranking of

drawn from the Correlates of War (COW) project. In this project, individual state capabilities are divided into three dimensions, with each dimension containing two indicators. The military dimension consists of armed forces personnel and military expenditures. The industrial dimension contains energy consumption and iron/steel production. Finally, the demographic dimension includes total population and urban population. Individual state capabilities on the six indicators are provided, where available, on a yearly basis for time frame under examination here (1816-1939).[67]

The value of this data set for our task is fourfold. The indicators are reasonably representative of the capabilities necessary for a state to meet its basic goals of security, territorial integrity, and survival. The indicators also meet the condition of historical relevance. Within certain limitations discussed below, historical decision-makers are likely to have had access to similar information on which to base their individual calculations. The data on the various indicators are readily comparable.[68] Finally, the availability of data

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states is not possible. Also, it is likely that the use of GNP estimates will undermine our ability to estimate the historical record. Decision-makers would not have made such calculations, and thus findings may be largely divorced from the historical record. Finally, Wayman et.al. note that GNP may not be an appropriate measure of state military capability. GNP measures a good deal of economic activity irrelevant or detrimental to a state's military capacity.

[67] The detailed coding rules for the various indicators have been presented elsewhere. (See Wallace, 1973; Singer, et.al., 1973) The publication of the code book for this data set is forthcoming from the COW project. Specifics will be presented in the text where warranted in the subsequent discussion.

[68] Comparability does not mean, for example, that a dollar spent in Russia buys the same amount of goods as a dollar spent in England. It is unlikely that values in this area can ever be accuratly compared and thus represents one source of potential error.

on a yearly basis permits a clear representation of behavorial patterns, not only for the purpose of Great Power identification, but also for measuring alterations in the distribution of capabilities, and testing the hypothesized relationships.

However, one must recognize the inherent limitations in the data set. These limitations can be divided into two groups: availability and reliability; and the relevancy/weighting of the various indicators. In terms of availability and reliability, the data set contains a number of missing values, particularly in the case of smaller states, in both the Nineteenth and Twentieth centuries. In some cases, missing values can be overcome through the calculation of estimates. For example, when a state has one or two consecutive years of missing military expenditures within a series of roughly twenty years of reported values, an estimate can be constructed by examining the pattern of values prior and subsequent to the missing years, and by using reported military forces as a reasonable confidence check.[69] Only when a state has a substantial number of consecutive missing values are estimates avoided and the state deleted for purposes of analysis. Fortunately, this did not occur for any of the large states and the deletion of some smaller states for brief periods of time does not significantly affect our ranking outcomes.

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[69] Attempts to use military forces over time to estimate missing expenditures was not found useful. The two indicators are found to be only weakly related (r=.305) for the European system. Therefore, forces can only provide a check for the estimates. That is, the pattern can be examined to see if there was any dramatic change in reported forces that would lead one to expect a break in the historical pattern. This was not the case in any of the relevant cases.

Reliability, in contrast, is a limitation which escapes solution. There is no assurance that the figures reported for the states are correct. Using a variety of public sources, the COW project, and by implication this study, can only assume that the values are reasonable estimates. Accounting procedures, particularly in the case of the distant past, may neither be reliable nor comparable to any great degree. Also, states, at different points in time, may find it politically useful to under/overvalue their reported figures on the various indicators. Finally, state intelligence networks may have provided decision-makers with substantially different values, as well as relevant indicators, on which to base their assessments.

Turning to the relevancy/weighting issue, it is questionable whether all the indicators are necessary or useful for the ranking of states and Great Power identification. According to Moul (1986), the COW capability index represents three different types of capabilities: immediate (military); intermediate (industrial); and long term (demographic). He argues that the use of any or all the indicators depends on the subject matter under examination.

> "If the interest were with power potential, to include current power capabilities would distract from a proper appreciation of the long run possibilities. Similarly, if the interest were in conflicts at any given time... what matters would be the shorter term, not the long run. To include total population and total urban population in an analysis of war/peace in any given year, at best, would be to include noise in the assessment of the balance of power capabilities." (p.10-11)

The ranking of states, based on their individual share of total system capabilities, initially appears to require the full set of indicators. Military indicators are, of course, vital components in

any assessment of state capabilities. The industrial indicators, representing the basic input (energy consumption) and output (iron/steel production) elements of development, are also vital components in the capability equation, especially in relation to the ability of states to prosecute successfully war since the mid-Nineteenth century. Finally, the demographic indicators, given their representation of the long term capabilities of states, speak to the notion of Great Power rank resulting from a long term perspective.

However, the validity of the demographic indicators is problematic. Neither one captures simply the long term element of capabilities. They also serve to increase the influence of the other indicators in the calculation. Total population adds weight to the military side of the equation. The size of a state's armed forces is generally a function of its population base. Naturally, this relationship depends on the specific demographic breakdown of a state over time which determines the available pool of manpower. But, with the emergence of conscript armies, this pool is already partially integrated within the personnel indicator. As expected, a strong positive relationship is found between total population and armed forces personnel ($r=.8155$). By adding weight to the military component, the importance of the industrial elements in state capabilities is reduced, which may lead to overvaluing the capabilities of states with a weak industrial base, yet a very large population base.

Urban population has similar problems. Urbanization is partially a function of industrialization. Thus, this indicator adds weight to the influence of the industrial component in the calculation. One

finds that total urban population is strongly correlated with both energy consumption (r=.831) and iron/steel production (r=.893). Conversely, in some cases, high scores on total urban population may simply be the function of a large population base. In this case, the indicator is indirectly linked to the military side of the calculation.

The confounding influence of these two indicators warrants their exclusion from the analysis. For our purposes, the identification of Great Powers is derived only from the two military and industrial indicators. At yearly intervals and on each indicator, the percentage share of total system capabilities is calculated for every state. The mean share is taken for every state across all relevant indicators to establish its relative standing in the system.

As Moul (1986) points out, the equal weighting of the indicators is a "studied confession of ignorance concerning the 'true' proportions in which the various components should be mixed"(p.12). But, he argues that this simple solution is preferable to a complicated weighting scheme. Any complex manipulation is likely to increase the amount of error already imbedded in the data itself. Furthermore, equal weighting of the indicators does not amount to an equal weighting of industrial and military capabilities. Depending on the historical context, one can weight the respective capabilities by excluding one or more of the indicators for different time frames and/or adjusting the amount of individual state capabilities directed towards the system.

Both industrial indicators are excluded from 1816 to 1870 and one industrial indicator, energy consumption, is excluded from 1871 to 1914. The decision to exclude these indicators is based on the historical record. A change in the components of military capabilities and the nature of war occurred in the mid-Nineteenth century. Prior to the wars of German unification, military armaments and the means to move military forces remained relatively static for two centuries. Prussia's victories over the Austrian Empire (1866) and France (1870-1871) were attributed to the new 'breech loaded' armaments and the effective use of its railway system to mobilize, transport, and supply her armies.[70] After these events, the importance of industrialization to state military capabilities was recognized by the historical actors.

This change in capabilities indicates a need to adjust our indicators. Prior to 1870, the two military indicators have the greatest utility for the comparative ranking of states. Although with hindsight one can question the actual military strength of states such as Russia, the main concern is to provide a reasonable representation of the historical situation. For example, Anderson (1972:7) speaks directly to the beliefs at the time when discussing Russian strength; "the deep-rooted and crippling weaknesses of Russia during the decades

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[70] Howard (1976; 97-105) discusses the revolution in military forces and war during this period. He notes that many of the technological changes appeared prior to the wars of German unification. However, for a variety of reasons, states had either ignored the developments or employed them poorly. He attributes the Prussian success in employing these changes to the development of a permanent administrative structure; the General Staff. This structure, along with the changes employed by the Prussians, were subsequently copied by all the European powers at various points in time after 1871. See also Bond (1983) and Brodie (1976).

after 1815 were largely hidden from contemporaries. To them the glittering facade of military power which she presented to the outside world still carried conviction".

After 1870, there is a clear recognition of the importance of industrialization to military power. However, this recognition does not mean that decision-makers weighed equally the importance of military and industrial capabilities. The beliefs of military elites prior to World War One provide evidence about the relative importance of military and industrial capabilities. As Howard (1961), Anderson (1972), and Bond (1983) point out, military elites did not understand the lessons of industrial war for generations after the 1870s.[71] While not disregarding the industrial component, these elites continued to stress traditional beliefs about the importance of basic military capabilities. Given the political relationship between military and political elites, it is likely that political decision-makers also undervalued the true importance of the industrial component until World War One.[72]

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[71] For example, Howard (1961:119) states: "But the lessons which now seem so evident in retrospect the armies of Europe were to take fifty years to learn. Only the very clear sighted could have seen the triple significance of 6 August 1870: the collapse of the cavalry; the transformation of the infantry; and the triumph of the gun". Hart (1960) argues: "Yet even in the first great war of the twentieth century, it was still customary to measure comparative strength of armies in 'x-thousand rifles' and 'y-thousand sabres', - so persistent is the grip of traditional habits of thought."

[72] This is especially true of the European states prior to 1914. War plans were the domain of military elites and they acted as the main, if not only, venues of information in this regard for political elites. (see Synder, 1984; Kennedy, 1979).

It is also useful to show the effect that the various components of state capabilities have on the relative standing of key states. Figure 4.1 shows how the addition of the industrial indicators affects the percentage share of system capabilities held by Great Britain, France, Germany, and Russia from 1870 to 1914. Comparing the patterns reveal that the addition of the industrial indicators has opposite effects for Great Britain and Russia, as well as Germany and France. Britain's share of system capabilities rises significantly with the addition of the industrial indicators. Conversely, Russia's share declines significantly with the above changes. The industrial indicators also have an opposite affect on France and Germany, albeit insignificant.

Given these findings, the decision to include only one industrial indicator (iron/steel) for the period 1870-1914 is reinforced.[73] Using the military indicators alone inflates the Russian capabilities, but using both industrial indicators overemphasizes Britain's capabilities. Although the exclusion of the second industrial indicator may lead to an inflation in the Russian share, this inflation is consistent with the perceptions of the actors at the time. (See Kennedy, 1984). After World War One, all four indicators are used for the study, thereby reflecting the lessons of total war.

Consideration must also be given to the security interests of states outside of the European continent. In particular, one must consider the relative impact of colonial possessions on state capabil-

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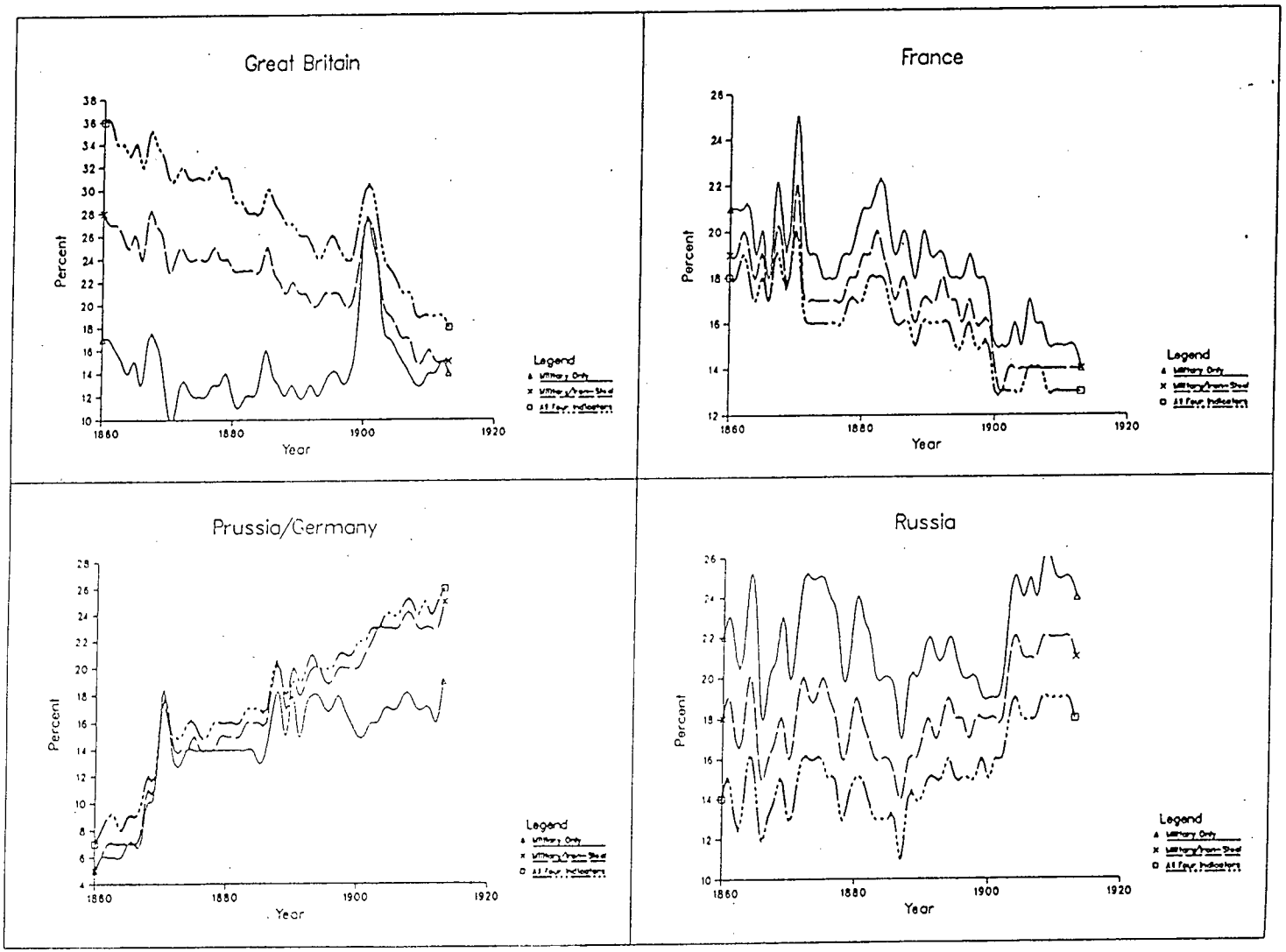
[73] The use of the iron/steel indicator, rather than energy consumption is based on the problem of data availability. Energy consumption figures are only available for the traditional set of Great Powers from 1870-1880. As such, its use could bias the rankings.

FIGURE 4.1
Comparison of the Impact of
Select Industrial Indicators on State Shares.



ities. This is a complex issue, compounded by problems of data availability and measurement. For example, both Great Britain and France deployed military forces outside of Europe to defend their respective empires. At the same time, Great Britain and France did use the manpower pool of their colonies in both World Wars. While certain colonies did represent a financial drain on the metropolitan state, they also provided key raw materials and food stuffs. It is difficult, independent of data availability problems, to weigh properly the relative costs and benefits of the colonies. It would require a major undertaking on its own. Therefore, we assume that costs equal benefits and make no adjustments.

However, there is one exception to this rule: Russia. It differs from other European states by virtue of its geo-political position, which places it astride the Euro-Asian landmass. As such, the benefits are already included in the data, but the costs are not. History provides a general indication of these costs, particularly in terms of military deployments. In 1904-05, Russia fought a major war with Japan in the Far East. After the 1917 revolution, Asian Russia was a major center of counter-revolutionary White forces until their defeat in 1922. The Bolshevik regime established its first satellite in this area, Mongolia, immediately following the Civil War. The Bolsheviks also engaged in several clashes with Chinese warlords in the Twenties, followed by a series of major military confrontations with Japanese troops from 1931-1939.

It is necessary to account for this drain on Russian capabilities relative to actual amount of capabilities directed towards the European system. But, such an adjustment is hampered by data availability. Figures are available on Russian forces used in the war against Japan (Kuropatkin, 1909). However, there is no reliable data on Russian deployments prior and subsequent to the war. As such, Russian capabilities are not adjusted prior to 1919.[74] After 1919, estimates of Soviet troop deployments are available from Japanese intelligence estimates as reported by Ikuhiko (1976).[75] These estimates are used to provide the relevant coefficients for the period 1919-1939. Using these figures, we calculate the percentage of Soviet military personnel not deployed in the Far East. The resulting coefficients are used also to adjust the reported values on the other indicators for Soviet Russia.[76]

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[74] The decision to adjust Soviet capabilities in the Interwar period is bolstered by the general unreliability of reported capabilities on the four indicators. It appears evident in the raw data that certain values, particularly iron/steel production, are highly inflated. Thus, adjusting for the costs of Soviet interests in the Far East also serves to modify the effect of reported Soviet values.

[75] These estimates are even more vital given the border clashes between these two Power in the late Thirties (see Coox, 1977; Lee, 1983; and Tinch, 1951).

[76] Ikuhiko (1976:131) reports 100,000 Soviet troops in the Far East prior the Manchurian incident in 1931. Beginning in 1932, Soviet troops increase from 230,000 to 450,000 (1938). The resulting coefficients are .8 (1922-1931), .75 (1932-1935), .74 (1936), .75 (1937), and .72 (1938).

4.3 THE EUROPEAN GREAT POWERS 1816-1939

Having outlined the various adjustments to our capability measures, the Great Powers can be identified empirically. Only states holding a minimum 'five' percent share of total system capabilities are presented. Figure 4.2 represents the period 1816-1870 in which state capability shares are calculated from the two military indicators. This figure reveals two clusters of states. One cluster, consisting of Prussia, Turkey, and Spain, resides consistently below the 10 percent level of system capabilities. The second cluster, containing Russia, Great Britain, France, and Austria, is found above the ten percent level. It also shows a significant change in the percentage shares and the ranking of two states. During the 1860s, Prussia increases its share of capabilities and moves into the upper cluster of states. Conversely, Austria at this time declines below the ten percent level. Finally, Italy enters into the picture in 1860. Although Italy climbs initially above the ten percent level, largely due to the unification process and participation in the Austro-Prussian War, it declines below this level after 1866.

Figure 4.3 covers the next period (1870-1914). State shares are based on the addition of a third indicator; iron/steel production. The general pattern and rank of the various states is replicated even though exact continuity in reported shares is absent relative to Figure 4.2. Russia, Great Britain, France and Germany (Prussia) each hold substantially more than ten percent of system capabilities.[77]

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[77] The comparative standing for Germany and France replicate the findings of Healy and Stein (1974) for the 1870s. The French share in this decade is shown to be higher than the German; a point critiqued by Scroeder (1977; 1977b). He argues that this finding con-

Figure 4.2
State Shares of European System Capabilities
1816–1870

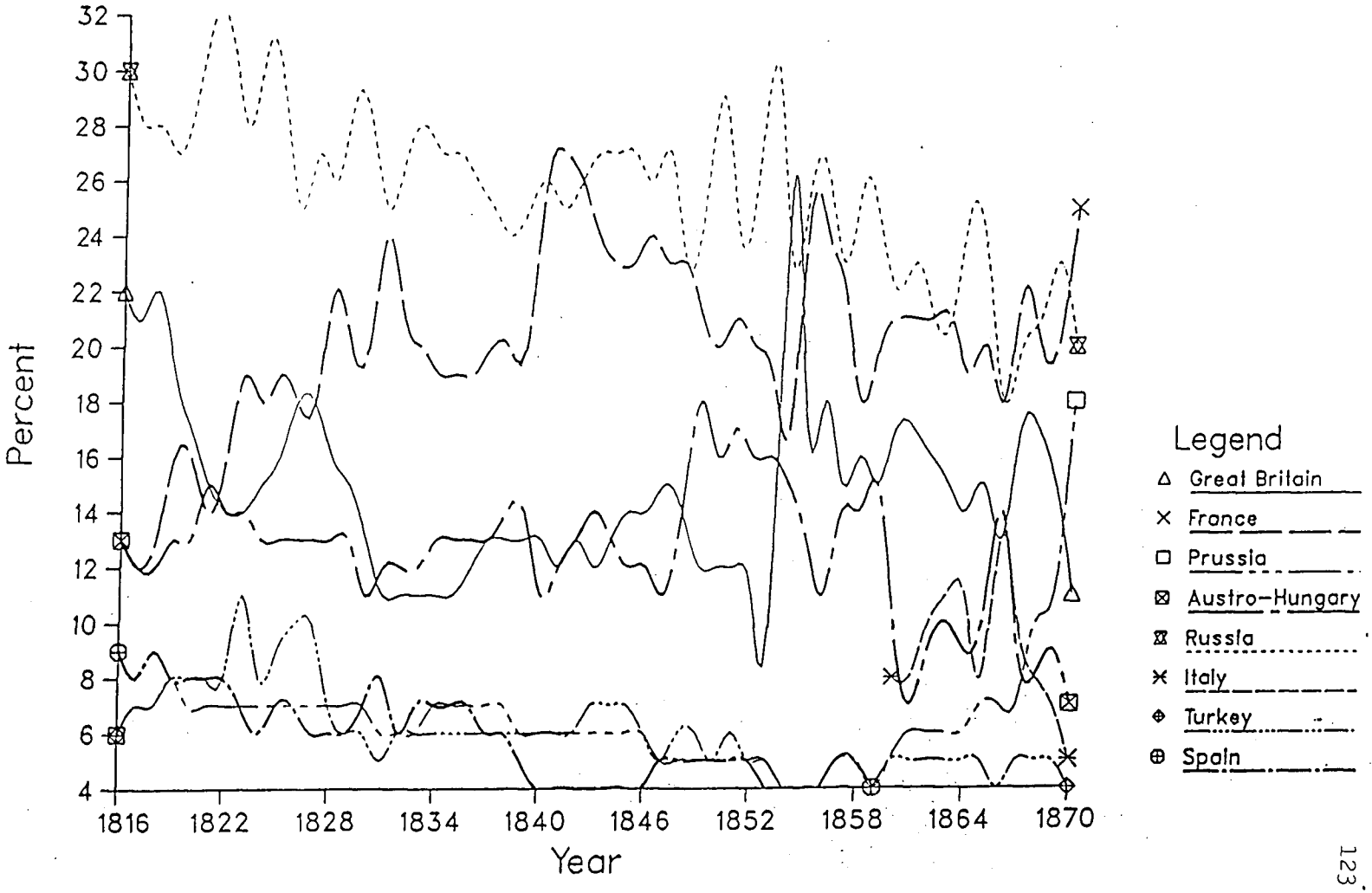
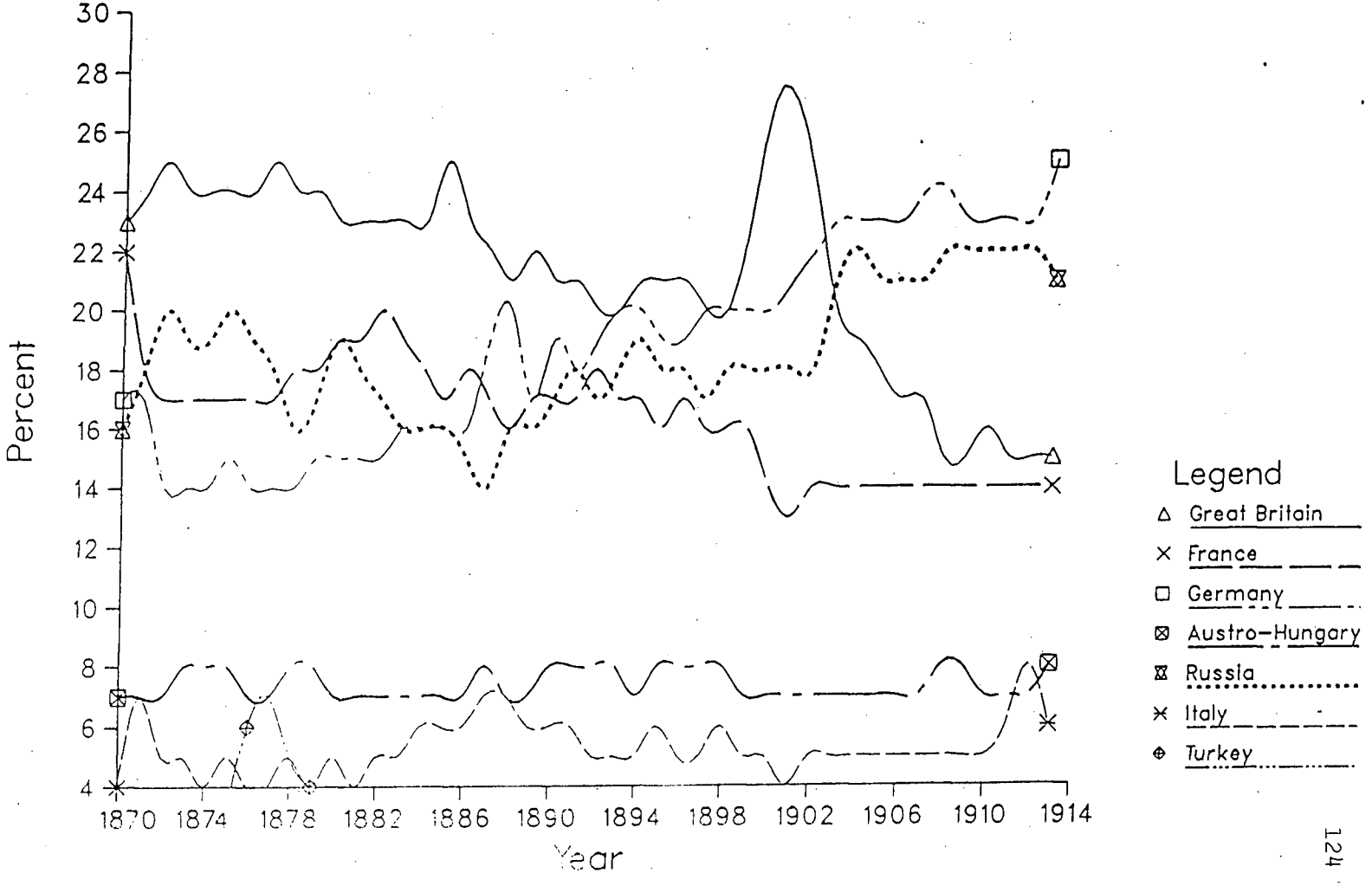


Figure 4.3
State Shares of European System Capabilities
1871–1914



Austro-Hungary (Austria) and Italy hold significantly less than ten percent. Turkey also makes a brief appearance (1876-1880). Its share does not rise above the seven percent level.

Figure 4.4 contains the measures for the Interwar period (1919-1939). State shares are based on all four indicators. The pattern found on the previous figures is less apparent here. Great Britain and Germany are above the ten percent level for the entire period, while France drops below this level during the final two years of the period. Soviet Russia, absent from the graph prior to 1922 due to civil war, enters with an eighteen percent share. Its share declines below the ten percent level in 1923, and reaches a period low of seven percent in 1924. By 1926, the Soviet Union attains the ten percent threshold, and remains significantly above it for the remainer of the period. Italy begins the period at the ten percent level, but declines below this level for the remaining years, with an average share of eight percent. Finally, Poland meets the minimum requirements for inclusion from 1924 to 1934.

All three Figures reveal a break at the ten percent level of system capabilities. This level appears to be the minimum requirement for Great Power status.[78] A lower percentage would lead to the inclusion

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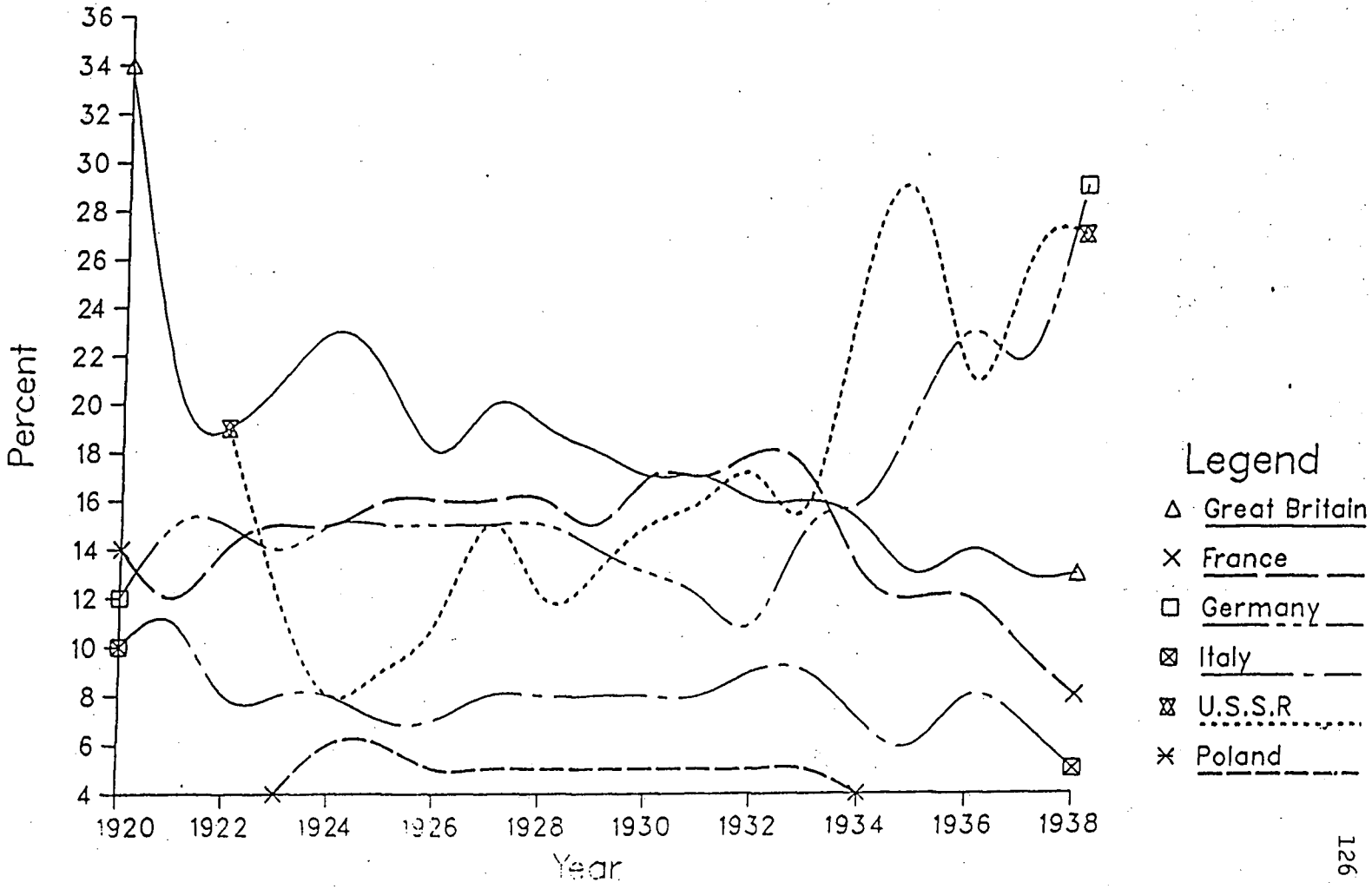
tradicts the smashing defeat of France in 1870-71 and subsequent diplomatic record. Alexandroff et.al (1977) respond with a different interpretation of the historical record. The relative merits of the two arguments are left to the reader. It is also possible that the French standing is a function of the inclusion of colonial forces, although the data is unclear on this point. It is suffice to note that our findings are not greatly divergent from the likely state of affairs at this time.

[78] This level differs substantially from the level proposed by Model-

Figure 4.4
State Shares of European System Capabilities
1920–1938



of such states as Turkey, Spain, and Poland within the ranks of the Great Powers at various points in time. However, a ten percent share requirement also leads to the exclusion of certain states who have been seen traditionally as Great Powers. These states are Prussia (1816-1870), Austro-Hungary (1870-1914), and Italy (1860-1939).[79] Also, their exclusion results in the treatment of the European system as a four power system, in contrast with the orthodox view of a five and/or six power system.

Although the discrepancy between these findings and traditional arguments may be a product of an inability to capture and measure all the actual elements which lead to Great Power status, the discrepancy may be more apparent than real. It is true that the majority of historians identify Prussia, Austro-Hungary and Italy as Great Powers during the time span in which they hold less than ten percent of system capabilities. Yet, historians, as shown below, significantly qualify their arguments. In particular, these qualifications are related to the failure of the aforementioned states to have system wide or general security interests.

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ski (1974) and applied by Rapkin et.al. (1979) and Thompson (1986). They argue that five percent is the minimum requirement for a Great Power. But, this minimum as shown above is not empirically satisfactory. It should also be noted that the Modelski proposal also includes a basic distributional requirement among the set of states with more than five percent of system capabilities. The five percent minimum, as shown above, does not meet the test of historical validity. The use of an additional distributional requirement conflicts with the relationship between Great Powers and polarity (see discussion on polarization in Chapter 5) and can not cover the wide variety of possible distributions without ambiguity.

[79] The decision to use 1870 as the operational date is a product of the likely lag between the events of 1866 and 1870, as well as the change in the indicators which occurs at this date.

Concerning Prussia's status prior to the 1860s, several historians indicate her limited role and interests. Sked (1979:8) suggests that a realistic view of Europe at this time shows a Europe divided into four spheres of influence controlled by Great Britain, France, Austria, and Russia. Anderson (1972:10-11) indicates that Prussia's Great Power standing at the time of the Congress of Vienna was simply a courtesy extended by the other Powers. Citing Metternich in 1833, he identifies the belief that Prussia was only a second rate actor. Anderson also points to the limited unassuming nature of Prussian foreign policy during the next thirty years (See also Holborn, 1951; Thomson, 1958). Finally, a general survey of diplomatic histories of this period indicates the dominance of the four aforementioned Great Powers in system wide security affairs with the Prussian presence limited to the German theatre (For example, see Albrect-Carrie, 1958; Cragg, 1980).[80]

Austria's decline in status after the 1860s is also duly noted by historians. Echoing our findings, Taylor (1954),[81] Anderson (1972), and Bond (1983) point out that Austria could no longer compete militarily with the other Great Powers. More specifically, Anderson labels the Empire as a mere shell of a Great Power. He argues that

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[80] A useful way to check out this belief would be through a content analysis of major historical texts. In fact, a comparison of our findings with such an analysis would go far in settling the problem of the ambigious status of certain states.

[81] The arguments made by Taylor in his preface and the subsequent arguments made in the text are a classic example of the lack of concern by many historians about the definition and consistent application of concepts. The preface clearly stresses the second rate status of the Austro-Hungarian Empire and Italy. The text consistently labels these two states as Great Powers. This is also the case for Ross (1983) and the other authors cited above.

Austria rapidly became a client of Germany, able to entertain a successful war only against another second rate state. Holborn (1951:45) also implies a client-patron relationship and notes that Russian designs in the Balkans were only deterred because of German support to Austria. Finally, having been expelled from Italy and Central Europe, the Empire's foreign policy is limited to the Balkans (Burridge and Young, 1988).[82]

Similar evidence supports our findings for Italy during this period. Taylor (1954), Leslie (1964), Anderson (1972), Bond (1983) and Ross (1983) argue that Italy's military and political weaknesses ensured a second rate status, despite aspirations to be a Great Power. Moreover, any treatment of Italy as an equal is a function of its alliance with the Central Powers (1882) and limited to issues regarding the Ottomann Empire (Bridge and Bullen, 1980). Italy's humiliating defeat at Adowa (1896) clearly demonstrates its second rate standing to actors and observers alike. Furthermore, Italian neutrality in 1914, followed by her participation on the allied side, had a negligible influence on the outcome of the war. In fact, Italy rapidly became another drain on Allied resources (Kennedy, 1984:15). Finally, its second rate status is apparent clearly in Italy's limited role at Versailles. As Thomson (1958:579) remarks about decision-making after the departure of Italian Premier Orlando in April 1919; "Most important decisions were henceforth taken avowedly, as they had previously

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[82] Many historians cite the internal weaknesses of the Empire as shown be political concessions to the Hungarian aristocracy. Taylor (1954:358) also identifies a belief held by several elites at the turn of the century that the Empire would collapse on the death of Franz Joseph and be divided between Germany and Russia. In particular, Russia actively promoted such a scheme.

been taken substantively, by the famous Big Three..."

While Italy's Great Power status prior to 1919 can be readily dismissed, its status in the Interwar period is a complex issue. As shown above, Italy, until the final years of the period, averages an eight percent share of system capabilities. Politically, Italy is a guarantor in the Locarno Pact (1925). Both Great Britain and France in the early 1930s are concerned about Italian behavior and seek her as an ally to deter German expansionism, especially in relation to Austria (Stresa Conference). However, the Italian share is partially a function of German military restrictions stemming from the Treaty of Versailles. The decline in Italy's share begins with German rearmament in the mid-Thirties. Also, German restrictions and the isolation of Bolshevik Russia during the 1920s inflates Italy's role in system security issues. With the Abysinnian and Spanish adventures, Italy becomes greatly dependent on German support. By the late 1930s, Italy is clearly a second rate client of Germany.

In the true sense, Italy is not a Great Power. Any limited status of this nature is a function of the the upheaval caused by World War One. Although important because of its key geo-political position, it is difficult to conceive of Italy as a Great Power in the capability sense defined here. However, the ambiguity, along with the respective cases for Prussia and Austria, leads us to apply two distinct Great Power sets for the testing of our hypotheses.

The inclusion of Prussia and Austria for the entire period prior to 1914 and Italy for the Interwar era has some historical merit. In the

cases of Prussia prior to 1870 and Austria after 1870 consideration must be given to their earlier status. Prussia is clearly a Great Power prior to the disasters experienced in the Napoleonic era, and according to our own findings Austria is a Great Power prior to 1870. It is this previous recognition which may bias elites to maintain this belief long after a state's capabilities warrant it. In a more contemporary example, both France and Great Britain continue to be recognized as Great Powers for a significant period of time after World War Two. In the case of Italy, it is the abnormal situation stemming from World War One which provides some degree of support to its treatment as a Great Power. However, there exists no evidence to support the claim of Italian Great Power status any earlier.

These caveats support the use of two distinct sets of Great Powers. In so doing, we can compare our findings to judge the extent to which the Great Power debate affects the relationship between capability distributions and alliances. The first set of Great Powers consists of Great Britain, France, and Russia for the entire temporal span, Austria from 1816 to 1870, and Germany from 1870 to 1939. The second set adds Prussia (1816-1870), Austria (1870-1914), and Italy (1919-1939).

4.4 MEASURING THE DISTRIBUTION OF CAPABILITIES

The procedure for measuring the distribution of capabilities for both sets of Great Powers is found in Singer et.al. (1972) and discussed at length by Ray and Singer (1979). Singer and Ray argue that

any measure of distribution[83] must meet four conditions. It must be readily interpretable and comparable. It must react to movement in the proportions among the units. It must accurately represent all the units in the set. Finally, changes in the number of cases within the set must be accounted for in a manner appropriate to the theoretical concern at hand. They find that most the measurement procedures meet the first three conditions, but fail to satisfy the final condition.

However, the problem of changes in the number of cases or sensitivity, as defined by Singer and Ray, is moot in our case. The number of cases remains constant in both sets of Great Powers even though the specific units within each set do change. It is the difference in the number of cases or observations between the two Great Power sets which lead to the adoption, in part, of the Singer and Ray procedure. This procedure provides an index ranging from 0, equality, to 1, single actor dominance. In contrast, other procedures, identified by Singer and Ray, produce indices which differ in range depending on the number of cases. Thus, it would be difficult to compare the findings for our two sets if the range of the indices is not consistent.[84]

The creation of the adopted distribution index is relatively straightforward. First, each individual actor's share of capabilities within the set of Great Powers is calculated. The standard deviation of these shares is then calculated. The resulting score is then

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[83] They refer to their approach as the measurement of concentration, not distribution. This is only a semantic difference. For reasons of clarity, the study will consistently refer to the measure as one of the distribution of capabilities.

[84] Singer and Ray point out that all the procedures contain similar mathematical properties.

divided by the maximum possible standard deviation when one state holds all possible capabilities. The denominator is .75 in a four power set and .80 in a five power set. The square root of the resulting value produces a distribution score which can range from 0, perfect equality, to 1.0, complete inequality. This procedure is repeated for each yearly observation.

$$DIST = \frac{\sqrt{\sum_{i=1}^{n} (Si)^2 - \frac{1}{n}}}{\sqrt{1 - \frac{1}{n}}}$$

For each distribution index, the yearly scores are adjusted through the use of a three year moving average. This adjustment serves to limit the effects of brief shocks on the distribution. For example, the mobilization of state resources in response to a crisis by one of the Great Powers would significantly skew the score for any single year. The moving average serves to reduce the effect of these exceptional occurrences.

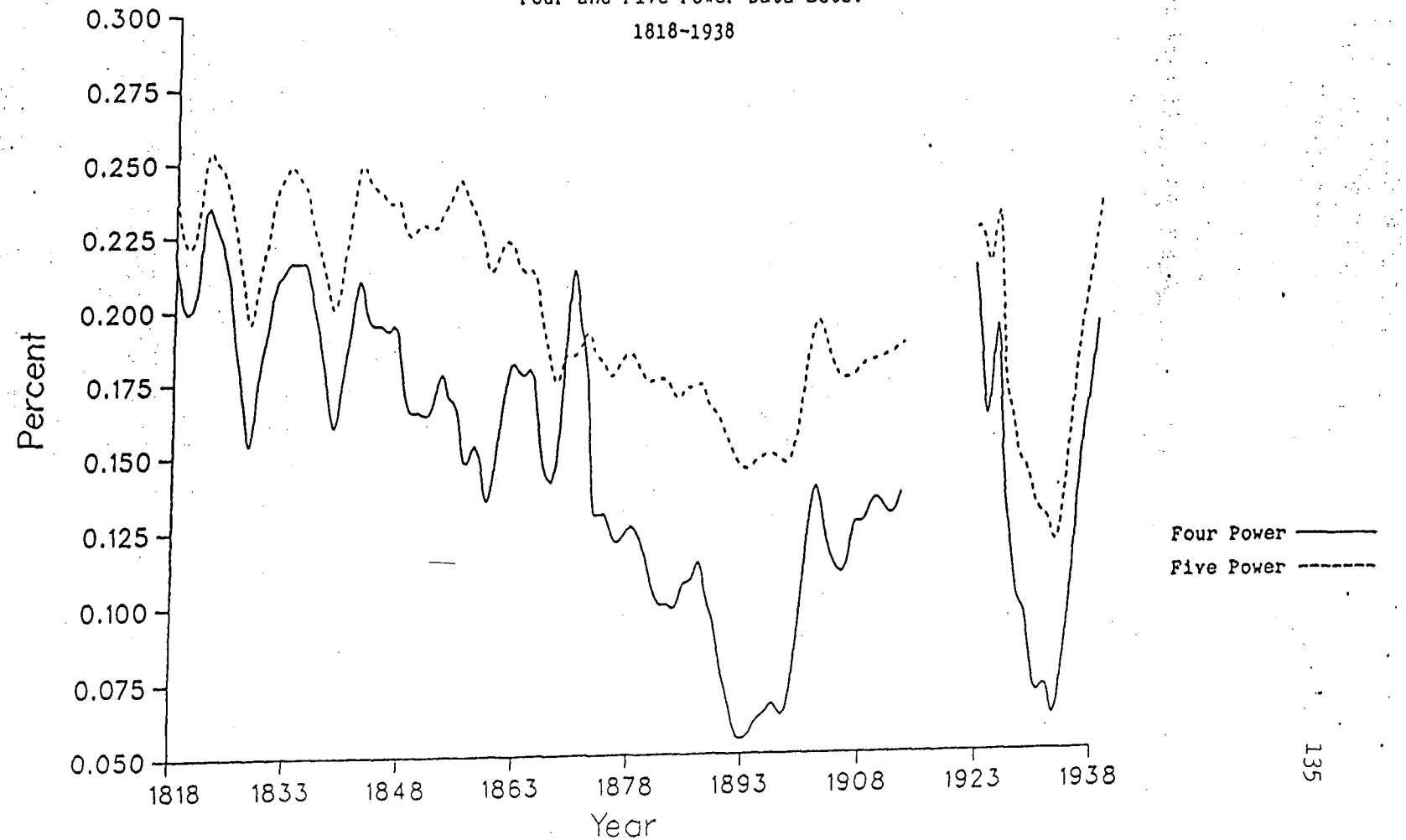
In general, the patterns shown on Figure 4.5 for both sets are relatively identical. The distribution moves towards equality and reaches its lowest point at the turn of the century. From here, it moves significantly away from equality up to the break at World War One.

After the war, the distribution is curvilinear. A high level of inequality is followed by a trend towards greater equality until the mid-1930s. At this point, inequality rapidly increases. As expected, the two indices are highly correlated; r=.9146. Also, the five Power index is consistently higher than than four Great Power one. The mean for the former is .198, whereas the mean for the latter set is .148. This finding is expected given the difference between the two sets. The inclusion of a state, such as Prussia prior to 1871, with relatively weak capabilities in the creation of the five Power index should lead to higher levels of inequality, as discussed in Chapter Six. However, certain anomalies are present in this comparison.

During the Interwar years, inequality is higher on the four Power index; a reversal of the pre-1914 pattern. These higher levels, in comparison to the five Power index, are a function largely of the limitations placed on German military resources in the Treaty of Versailles. With the inclusion of Italy in the Five Power index, and weak German capabilities until the mid-1930s, one should expect this pattern reversal. Although one would expect the lines to cross at the point of German re-armament, it is not the case because of the relative decline of French and British military capabilities at this same time. In fact, Italian capabilities are only slightly less than France and Great Britain in the late 1930s.

The scores for the four Great Power index rise above the other index in the late 1860s. This rise is a function of changes in the composition of the four Power index. With the exclusion of Prussia until 1870, the rapid decline of Austrian capabilities (see Figure

FIGURE 4.5
Distribution Scores of the
Four and Five Power Data Sets.
1818-1938



4.2) pushes the index up. With the removal of Austria and its replacement by Germany, the general comparative pattern resumes. In other words, the four Power index contains a relatively weak state, Austria, whereas a rising state, Prussia, is excluded in the 1860s. Austrian weakness in the four Power index pushes it to higher levels of inequality, until its replacement by Prussia in 1871.

It is also apparent that movement on the four power index is much more dramatic than on the five power one. This difference is most evident during the final decades of the Nineteenth Century. The scores on the former decline from approximately .125 in the 1870s to .060 in the early 1890s. The respective decline for the latter set is from .18 to .14. Again, this difference reflects the inclusion of a weak Power, Austria-Hungary, in the five Power index.

In conclusion, the patterns between the two sets are relatively similar, although some differences do exist. These differences should result in some variance in the strength of relationships tested from our hypotheses. But, before examining these findings, it is necessary to operationalize our dependent variable.

Chapter V

ALLIANCES AND POLARIZATION

This chapter is concerned with the definition and operationalization of the dependent variable: alliances. In our hypotheses, alliances are conceptualized in three ways. Alliances are treated as a general category of state behavior, dependent on the distribution of capabilities over time. Alliances are limited to one specific type, defence pacts, which are viewed as the most likely form of relationship states will seek in response to an unequal distribution of capabilities. Finally, alliances are examined as the pattern of commitments from the system perspective, with reference to the concept of polarization.

The chapter is divided into three parts. Part one examines the definition and classification of alliances, as well as the relationship between the classification scheme adopted by this study and Balance of Power theory. The second part identifies the various modifications made to the alliance data set developed initially by the COW project. It also identifies the two measures of alliances employed in this study and provides the descriptive results for these measures in our analysis. The final part addresses alliances from the system perspective in the context of the debate over the meaning and measurement of system polarization.

5.1 ALLIANCES

Alliances are not only integral to Balance of Power theory, but are also a fundamental element of international politics. Yet, as noted in Chapter Two, many facets of alliances have escaped empirical research. In particular, empirical studies of alliance formation are notably absent in the field (Ward, 1982; Job, 1981). There does exist, however, a large body of theoretical literature on alliances. This literature provides a wealth of information on the relevant issues related to the definition and classification of alliances.

An alliance is one type of link or bond between states. It differs from other types of bonds because of its intrinsic relationship with the military/security realm. (Ward, 1982; Holsti et.al., 1973; Freedman, 1970; Osgood, 1968; Modelski, 1963; Liska, 1962). Although definitions vary, most agree that an alliance is "a limited set of states acting in concert at X time regarding the mutual enhancement of the military security of the members" (Fedder, 1968:68). Furthermore an alliance requires a formalized relationship between states embodied in a treaty. This requirement serves to differentiate alliance from the more generic category of alignment.

Alignments are informal in nature and are defined as a predisposition among states towards others over a host of issues (Ward, 1982). As shown in Table IV, alignment differs from alliance in several substantive ways. However, Morgenthau (1973) indicates that in certain circumstances an alignment can be the equivalent of an alliance. The interests of states may be obvious and identical such that joint poli-

Table IV

Comparison of Alignment, Alliance, and Coalition

	Alliance	Alignment	Coalition
Indication of Formation	Temporal Signing	No Simplified Way	Techniques from formation itself to game solution
Issues	Military-Defence Sector	Beyond Military to Economic, Pol-Stability	Single Issue Area
Exclusivity of Membership	Cross-Cutting Possible	Overlapping & Cross-Cutting	NO Overlapping & Cross-Cutting
Goals	Increased Security	Non-Specific	Utility Maximization
Resources	Aggregation	Same	Same
Types	----------	E/W vs. N/S Reg vs. Global	Minimal Winning N
Temporal Structure	Dramatic Temporal Discontinuities Dissolve/Form	Fluid but Slow Change	Timebound to Game Situation
Relationship to Intl. Environ.	Specific to Military Balance	Reflects or Comprises	Situation determines Outcome of
Consequences of Changes	Outcomes	Non-Specific	Outcome & Payoffs
Potential Implications	Elicit Formal Specific Deductions	Unclear	Same as Alliances

Source - Ward (1982)

cies and actions result without the need for a formal relationship, such as the contemporary relationship between the United States and Israel. But, such informal relationships are likely to be rare. It is unlikely that state interests over a wide range of issues will be identical with another state. Even when the interests of two states converge in the military/security realm, conflicting interests in other areas of foreign policy will likely lead states to seek some formalized relationship. While states may seek to limit the scope of their commitment when such conflicts exist, they will seek still some degree of formality to ensure an adequate degree of certainty and policy co-ordination.[85]

Table IV also shows the similarity between alliance and coalition, even though the latter is formulated in game theoretic terms. Similarity does not mean that the two concepts are equivalent and interchangeable. Coalition is more aptly seen as a kind of alliance. Consistent with its game theory roots, as well as its application in the traditional literature on the Balance of Power, coalition is applied to a set of states allied together under certain conditions. These conditions are the presence of a state seeking system hegemony and the outbreak of war. A prominent example is the various coalitions against France during the Revolutionary/Napoleonic era (For example,

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[85] Naturally, there will be the occasional case where an alliance relationship is not embodied by a formal treaty. One example is the Anglo-French relationship during the 1930s. In this case, the alliance bond between France and Britain is evident in the holding of staff talks, briefly in 1936 and extensively in 1939, and the coordination of policy in such situations as the Munich Crisis (see Adamthwaite,1977; Howard, 1972; Taylor,1964). In these rare cases, one must be aware of the historical record. However, to speak of such relationships as informal alliances is to misrepresent the historical record.

see Gullick, 1955). With the defeat of Napoleon, the coalition of Great Britain, France, Prussia, and Russia is replaced by the Quadruple Alliance.[86]

In this example, war serves as the defining condition for labeling the anti-Napoleon alliance a coalition. With the conclusion of the war, the coalition label is replaced by an alliance or defence pact label. However, the presence of a potential system hegemon does not disappear with the exile of Napoleon. Thus, the function of both the coalition and successor alliance is identical; the prevention of French hegemony. In this case, as well as the majority of situations in which coalition appears in the historical literature, war is the key condition for differentiating between coalitions and other kinds of alliances.

The decision not to use coalition in operationalizing alliances stems from our theoretical perspective. States enter/leave alliances in response to the distribution. It is true that the distribution will be affected by war in that victory or defeat embodied in the gain/loss of territory alters the distribution. But, it is this effect on the distribution which alters the alliance calculus for states. The relationship between war and alliances is indirect. Thus, coalitions, as wartime alliances, are not conceptually unique. They are also related to the basic Balance of Power explanation of

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[86] It is true that the Quadruple Alliance is more formal and explicit than the coalition it replaced. However, the most prominent difference between the alliance and earlier coalition is the treaty's provision which commited its adherents to regular meetings. This provision became the basis for the Congress or Concert system which has received special attention in the literature (see Rosecrance, 1963; Elrod, 1976; Jervis, 1985).

alliances.

For our purposes, we adopt the classification scheme developed by the COW project (Singer and Small, 1966). Alliances are classified according to the kind and level of commitment laid down in the various treaties of alliance. Defence pacts are the highest level of commitment in which a state pledges to support its allies militarily if they are attacked. A Non-Aggression/Neutrality pact, the next level of commitment, pledges a state to remain neutral if its partner(s) engage in war. An entente, the final and lowest level of commitment, commits a state to consultation if one of its members is attacked.

As evident in this scheme, alliances are framed with reference to state commitments if, or when, war occurs. However, alliances play several other functions. Schroeder (1976) stresses the key function of alliances as agents of control and conflict management, which has been examined in some detail by Moul (1983; 1986). They argue, in the context of empirical studies on the relationship between alliances and war, that the inclusion of alliances which function as conflict managers is questionable. They should be excluded, a priori, in any attempt to examine the <u>true</u> relationship between alliances and war. Relative to this study, their case implies the use of only those alliances which fit the general conditions of Balance of Power theory. That is, one should only use alliances which are formed as a means to increase state capabilities and alter the distribution.

However, the ability to distinguish among alliances is extremely complex in the above scenario. It is true that specific states may

seek an alliance to restrain the behavior of a competitor and/or ensure that a competitor will not interfere in its actions, as in the case of Italy cited by Moul (1983). Moreover, their argument is still related to threat and the use of alliances to deal with it. In this sense, it is not neccesarily in conflict with Balance of Power. The motive to seek an alliance may still be a function of distributional inequality whereas the specific choice may somewhat diverge from the traditional 'balancing' assumption, as noted by Walt (1987). Nonetheless, one should remember that alliances are, at a minimum, dyadic affairs. The motives for the alliance from the perspective of its individual members may differ widely. An alliance also may perform several functions simultaneously. To classify alliances on the basis of individual state motives becomes extremely complex and potentially arbitrary. At the same time, the classification scheme, and thus choice of alliance cases, must be related to Balance of Power theory.

Although the COW classification scheme is not based on Balance of Power theory, the centrality of commitment as the defining criterion is relatively applicable for our tasks. Treatments of alliances in Balance of Power theory focus on their function as agents of capability re-distribution (see, Liska, 1962; Waltz, 1967; Zinnes, 1967; Morgenthau, 1973; and Holsti et.al, 1973). When two, or more, states ally together, they are commiting their individual capabilities to a common or collective cause. Thus, alliances naturally entail capability aggregation among members. However, differences among the type of alliances affects any treatment of aggregation.

The extent to which capabilities can be aggregated is a function of the type of commitment. Accordingly, defence pacts, by virtue of a commitment by its members to use force in defined situations, which entails formal policy planning among military elites from the various countries, are de facto aggregation pacts. Ententes, although less formal relative to defence pacts, also imply some degree of aggregation. In providing for consultation among members, the possibility of active military support in certain situations is relatively high. In fact, Kann (1976) argues that ententes tend towards greater commitments among adherents over time.[87]

However, neutrality/non-aggression pacts, the final type in the COW classification scheme, are markedly distinct from defence pacts and ententes, and appear to conflict with the role of alliances in Balance of Power theory. Neutrality/non-aggression pacts are negative commitments, whereas defence pacts and ententes are positive. They are commitments whereby states pledge <u>not</u> to act or commit military resources. As such, one cannot logically aggregate the capabilities of the states involved. In Balance of Power terms, they would not appear to affect the distribution and should thus be excluded from the analysis.

But, neutrality/non-aggression pacts can be related to Balance of Power theory. A negative commitment will also affect the distribution. This effect amounts to the removal of the availability of alliance partners to other states. By removing alliance partners, a state can undermine the ability of others to form an alliance with suffi-

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[87] Paradoxically, Kann argues the reverse for defence pacts. They tend toward the loosening of commitments over time. He feels that it was the fear of defection in 1914 that led the Powers of Europe to commit themselves to war.

cient capabilities to alter significantly the distribution. Moreover, neutrality/non-aggression pacts can also function to maintain a relatively equal distribution, after the initial formation of positive alliances, by undermining the ability of an opposing alliance to create a preponderant alliance. Finally, both defence pacts and ententes simultaneously exhibit positive and negative components. When states enter into positive commitments which entail capability aggregation, they are denying their capabilities to outsiders.

In showing that neutrality/non-aggression pacts are explicable in Balance of Power theory, concern must be briefly given to the their treatment as a single type. According to Levy (1981: 588), non-aggression pacts are more general in terms of state obligations than neutrality pacts.[88] He classifies non-aggression pacts as similar to general agreements on behavior, such as the Kellogg-Briand Pact. However, this distinction is questionable. To treat non-aggression pacts within the same class as general, and perhaps meaningless, agreements on behavior is to ignore an important part of the historical record. Specifically, non-aggression pacts are unique to the Interwar period. Neutrality pacts are unique to the pre-World War One era. The key question, thus, is whether the temporal uniqueness of the two is substantive or simply rhetorical.

It appears that the difference is primarily rhetorical and a function of two factors emerging from the World War One. First, many observers identified alliances, in conjunction with secret diplomacy,

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[88] The more general nature of non-aggression relative to neutrality pacts is also recognized by Singer and Small. However, they do not address the problem and make no adjustments in their analysis.

as a basic cause of World War One. Potential domestic opposition to alliance agreements worded with direct reference to war, as in the case of neutrality pacts prior to World War One, may have led governments to sign pacts which contained a more pacifist bent. Second, non-aggression pacts may have occurred due to the appearance of the Soviet Union, which was simultaneously a Great Power and an ideological pariah. Such pacts, because of their general wording, may have been the only acceptable type of relationship with the Soviet Union for many states, and favored by the Soviet Union as a means to weaken the capitalist "cordon sanitaire".[89]

In sum, the COW classification scheme is readily adaptable to this study of alliances from a Balance of Power perspective. Moreover, the commitment basis of this scheme enables us to identify the basic observations of the dependent variable in our hypotheses. Alliances in the first hypothesis are adequately represented through the inclusion of all three types. It is the most general hypothesis. The second hypothesis is more specific. It concerns relatively formal military/security alliances. Thus, limiting alliances to defence pacts only, the most formal commitment among states, is a reasonable means to test the second hypothesis. Finally, differentiating between types

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[89] It is interesting to note that 36% of all non-aggression pacts included the Soviet Union. Also, a further 36% contained either France, Germany, or Italy. The above explanations can also be seen as factors which undermine the relationships posited in Balance of Power theory. The impact of World War One and the existence of the Soviet Union are dominant factors in many historical explanations which indicate the failure of the states to follow the dictates of the Balance of Power (Neuman, 1968; see also the general literature on appeasement). They are also dominant in arguments which limit the relevance of Balance of Power explanations to the pre-World War One world. Both of these positions have been discussed in earlier Chapters and play a fundamental role in establishing sub-periods to test our hypotheses.

of alliances is central to the final hypothesis on polarization. The three types, and the patterns they produce at the system's level, provide a more accurate depiction of the nature of polarization.

5.2 MODIFICATIONS, MEASURES, AND ALLIANCE PATTERNS

In using the classification scheme developed by the COW project, we also rely on their list of alliances for the period 1816-1939. Certain modifications are made to this list. The list is expanded to include alliances formed within three months of war, but continues to exclude alliances formed during World War One.[90] The additional alliances are derived from Holsti et.al. (1973:234-235). Alliances between system and non-system members are also excluded. Certain alliances, such as the Anglo-Japanese in 1902, may have been related partially to Balance of Power dictates in Europe. However, as in the above example, the independent effect of Asian issues, including the Asian distribution of capabilities, likely played a role as well and cannot be ignored. Whereas the distribution for system members in alliance is identical, one must deal with two distributions in the case of an inter-system alliance. Unless this is addressed, which leads to expansion at a minimum of the spatial boundaries of the analysis, the inclusion of inter-system alliances could contaminate our analysis and undermine the reliability of our findings.

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[90] These alliances are excluded from the original data set because of a belief that their inclusion would contaminate the analysis between alliances and war. Our theoretical view leads us to argue that presence or absence of alliances will not be affected by the occurrence of war, with the exception of alliances formed during World War One. They are excluded because of the lack of capability data for states during this war.

Several other modifications are made from historical considerations. Alliances and their classification in the COW data set are based on the technical provisions laid down in the various treaties. However, in some cases certain alliances are either incorrectly included, excluded, or misclassified. The multilateral defence pacts (1816-1847;1849-1866) between the small German states, Prussia and Austria are deleted. These pacts, better known as the German Confederation, are not actual defence relationships. This loose knit confederation is simultaneously an arena for the competition between Austria and Prussia for dominance over Central Europe, and a mechanism which enabled the lesser German states to enhance their independence by playing the two competing states off against each other (see Carr, 1969;Werner, 1977).[91] Its exclusion enhances our ability to capture accurately the historical record. It enables us to account for the actual state of relations between Austria and Prussia in the first half of the Nineteenth Century. If the Confederation were included, an erroneous defence pact relationship would be coded for these two rivals until the 1860s.

Two alliances are added for the 1860s, and a change is made in the coding of another alliance in 1911. The Austro-Prussian defence pact of 1864 is included. Ostensibly, this alliance is linked to the German Confederation and the subsequent war with Denmark. Its duration is only for a single year. In 1866, the neutrality relationship between France and Austria is included. (Taylor, 1954;Albrect-Carrie, 1958). Its duration is also limited to a single year. The Anglo-

[91] Taylor (1954) identifies the German Confederation as a quasi-international set of relationships.

French entente (1904) is changed to a defence pact in 1911. This change is based on the alteration of the initial colonial agreement to a defence agreement as signaled by the conversations held between their respective military staffs (1906) and an exchange of letters between the two governments after the Morroco crisis (Moul, 1986:7; see also Lebow, 1981:310).[92]

Several significant modifications are made for the Interwar period. The Rappallo agreement between Germany and Soviet Russia (1922), excluded from the COW list, is coded as an entente. This agreement, as noted by Adamthwaite (1977:89), initiated political and military cooperation between the two outcasts. It is replaced in 1926 by the Treaty of Berlin, which was included in the Singer and Small and remains coded as a non-aggression pact. Rather than 1939, 1938 is used as the concluding date of the Franco-Russian defence pact. As Taylor (1964:188) points out, the results of Munich (September, 1938) effectively signalled the death of the Franco-Russian relationship. Munich also signals the dissolution of all other defence relationships with Czechoslovakia. It is clear that none of Czechoslovakia's allies would honour their commitments, as borne out in March of 1939.

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[92] The Anglo-Russian entente of 1907 remains an entente. Taylor (1954:322) stresses the limited nature of the British commitment to Russia. For example, he quotes British Foreign Minister Grey, who stated; "...But it was not likely that Germany would make an aggressive and menacing attack upon Russia; and even if she did, people in Great Britain would be inclined to say that, though Germany would have successes at first, Russia's resources were so great that, in the long run, Germany would be exhausted without our helping Russia."

The Anglo-French relationship is coded as an entente in 1936, and upgraded to a defence pact in 1939. The COW project excludes this relationship entirely. In so doing, a key element of international politics of the time is missing. Its coding as an entente is based on the brief series of military staff talks held by the two states in response to the Rhineland crisis and their fundamental co-ordination of policy up to and including the Munich affair. In response to Germany's seizure of the rump of Czechoslovakia (March, 1939), the relationship becomes relatively identical to a defence pact (see Bond, 1983; Howard, 1972).

The Anglo-Polish relationship in 1939 is included and coded as a defence pact. Although the bond initially is a unilateral guarantee extended by Britain to Poland, Albrecht-Carrie (1956:532,539) points out that it is a prelude to a fullfledged alliance, consummated in August, 1939. In this sense, the bond differs from the series of guarantees extended by Britain to other states, such as Roumania.

Finally, an alteration is made in the coding for a set of multilateral alliances among Balkan states in the late 1930s. In 1938, Bulgaria, Greece, Rumania, Yugoslavia, and Turkey concluded a multilateral Non-Aggression Pact. Prior to 1938, this set of states, with the exception of Bulgaria, were linked through a multi-lateral defence pact relationship. To avoid counting linkages between states twice, relative to the two types of alliances, only the Bulgarian linkage to each of the above states is coded as a Non-Aggression pact. The remaining linkages, such as the link between Greece and Yugoslavia, remain coded as Defence pacts. Similarly, the relationship between

Hungary and Italy is coded as an entente, despite the simultaneous presence of a Non-Aggression link between them. These decisions are consistent with the measures employed to represent the dependent variable, as noted below.

The first two hypotheses identify two dependent variables. The first is alliances and represents the general relationship posited in Balance of Power theory. Defence pacts is the second variable, as noted at the conclusion of the previous section. Defence pacts, because they entail a high degree of formal military commitment, are consistent with the second hypothesis which posits a relationship between inequality and formal security commitments among states. For each variable, two distinct measures are employed. The first measure is the proportion of states in alliances/defence pacts in each year of the study.[93] While this measure represents the simple presence of states in alliances it does not address the phenomena of multiple and multilateral alliance relationships. For this reason, a second measure is also employed. This measure consists of the proportion of system dyads subsumed by alliance/defence pacts each year. In employing this measure, multi-lateral alliances/defence pacts are treated as a series of bilateral relationships. Dyads enable us to capture more accurately the phenomena of alliances/defence pacts. For example, a state may participate in a single alliance for a long period of time.

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[93] In contrast to the independent variable in which data for the relevant indicators are referenced to January 1, the alliance data is referenced to December 31 or as reasonable as possible in the cases of alliances lasting a single year. In making this decision, a partial lag is built into the analysis. Also, the concluding time for alliances is September, 1939; the outbreak of war. All alliances coded by Singer and Small as terminating in 1939 are included in the 1939 data.

During this same period, this state may enter and leave another alliance. In term of the first measure, assuming that this state's allies also have other relationships, no change will result. But, the second measure will account for these changes. Thus, this measure is more sensitive to changes in state behavior in this realm, relative to the first.

It should be understood that the counting of dyads is limited to direct alliance/defence pact relationships. Secondary links or bonds are excluded. For example, given three states (A,B,C) with two bilateral alliance bonds (A-B; A-C), the third possible bond or secondary link (B-C) is excluded. Relative to the first measure, the example also shows the greater sensitivity of the dyad measure. While the first measure for a three actor system would be 100% in the example, the dyad measure would only be 66%

Having identified the two measures of the two dependent variables, the following Tables and Figures provide a basic description of alliances in the system as a whole, as well as for three smaller periods of time.[94] Also, the results for all types of alliances are presented. Although ententes and neutrality/non-aggression pacts are not separate components of the study, their presentation provides the reader with a snapshot of their presence over time.

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[94] Several other smaller periods were identified for analysis in Chapter Three. They are not presented here for reasons of brevity. Only three prominent historical divisions are employed to indicate the degree of change in the the prominence of alliances over time.

Table V presents the average proportion of states in alliances as a whole, and in each individual type of alliance. For the entire system an average of .316 of states participate in alliances of any type. Defence Pacts are the most prominent form of alliance participation (.227) followed by Ententes (.109) and Neutrality/Non-aggression pacts (.10).

Turning to the three periods, significant differences are apparent. The average number of states in alliances increases substantially from the first period (.177), through the middle period (.381), to the final period (.549). This pattern is also evident in the case of Defence and Neutrality/Non-aggression agreements. In the Entente category, this pattern is broken. There is negligible change from the middle (.148) to the final period (.145), and its direction is downward. In comparing the periods across categories, the dominance of defence pacts in the first two periods is not repeated in the final period. Here we find Neutrality/Non-aggression pacts containing a slightly greater average of states (.362) than Defence pacts (338).

Table VI shows the average proportion of system dyads subsumed by alliance relationships. The patterns here do not differ widely from the patterns on the previous table, except for two notable exceptions. First, there is a slight difference in the average proportion of alliance dyads between the middle (.059) and final periods (.066) Second, the pattern in the defence category shows little difference between the first (.025) and final period (.026). The middle period, in contrast to Table V, contains the highest average in the Defence category.

Table V

Average Proportion of States in Alliances, Defence Pacts, Ententes, and Neutrality/Non-Aggression Pacts by Various Periods of Time.

	Alliances	Defence Pacts	Ententes	Neutrality Non-aggression
1816-1939	.316	.227	.109	.100
1816-1870	.177	.133	.064	.002
1871-1914	.381	.288	.148	.104
1920-1939	.549	.339	.145	.362

Note: Proportion of states in various alliance types do not add up to the proportion in alliances. States participating in several alliances simultaneously are counted only once in the alliance category.

Table VI

Average Proportion of System Dyads Subsumed by Alliances, Defence Pacts, Ententes and Neutrality/Non-Aggression Pacts by Periods

	Alliances	Defence Pacts	Ententes	Neutrality/ Non-aggression
1816-1939	.041	.025	.009	.008
1816-1870	.018	.014	.005	.0001
1871-1914	.059	.038	.013	.008
1920-1939	.066	.026	.010	.029

These findings as a whole indicate substantial differences between

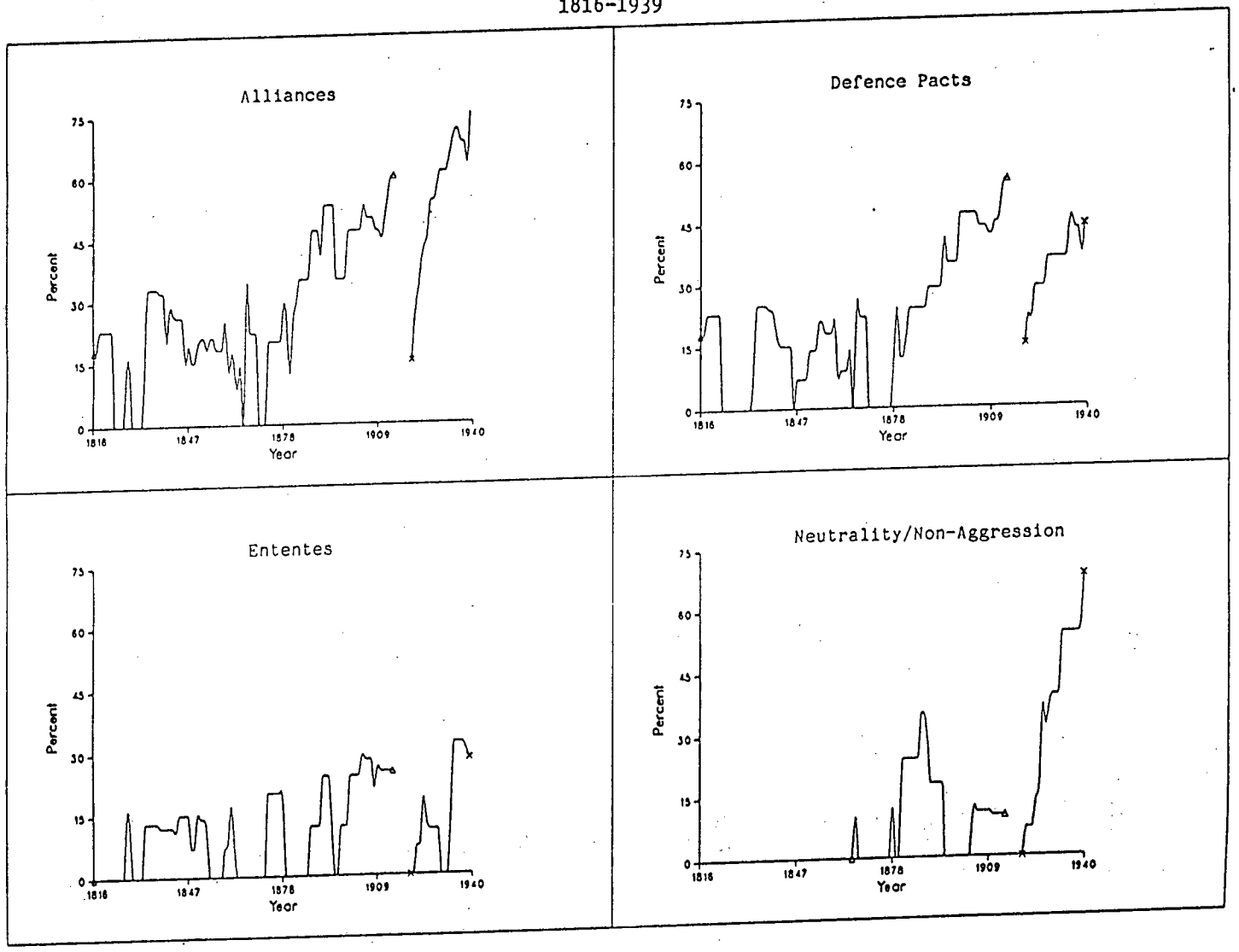
the three periods. However, they do not provide us with a clear indication of the patterns on the two alliance measures over time. Rather than providing other summary statistics, such as minimum, maximum, and standard deviation, to expose variance, Figures 5.1 and 5.2 provide graphic representations for the two measures.

The percentage of states in alliances fluctuates widely over time (Figure 5.1). Conceptualizing the pattern in terms of our three smaller periods, the first period (1816-1870) reveals a general decline over time. The next period (1871-1914) shows a reverse pattern. The largest and steadiest increase is revealed in the final period, surpassing the highest value recorded in the previous period in 1930.

The pattern for Defence Pacts largely replicates the findings for alliances as a whole. Two interesting exceptions are noted. First, the initial period (1816-1870) exhibits more of a horizontal line over time. Second, the rise in the final period is more gradual and limited. The Entente category is marked by significant periods in which states avoid such relationships altogether. The values here tend to fluctuate from zero to a constant level and back again. Finally, Neutrality/Non-Aggression relationships are shown to be a phenomena relevant only to the era after the 1870s. They also appear to be responsible for the significant increase in the values reported in the final period.

Turning to the dyad measures (Figure 5.2), the patterns are similar to those found on the previous measure. However, the patterns here

FIGURE 5.1
Proportion of States in Alliances, Defence Pacts,
Ententes, and Neutrality/Non-Aggression
1816-1939



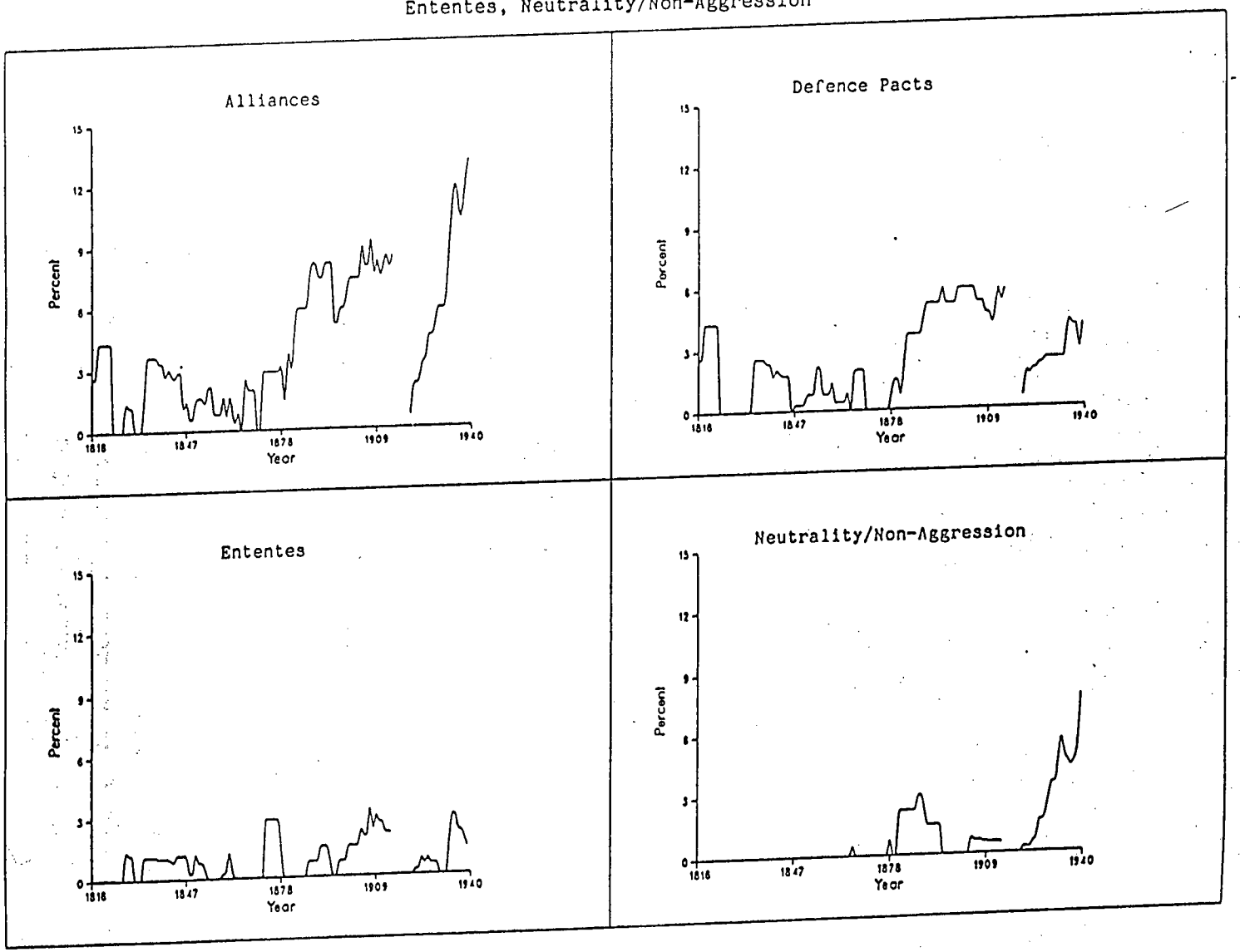
show much less fluctuation. There are also some significant differences. For example, the percentage of Defence Pact dyads in the middle period (1871-1914) levels off, whereas the findings on Figure 5.1 for Defence Pacts reveal a constant increase. Also, Neutrality/Non-Aggression Pacts show a significant decline in the mid-1930s which is portrayed as a leveling off in the previous Figure (5.1).

In conclusion, our measurements indicate not only a sufficient degree of variance in the measures over time, but also some significant differences between the two basic measures of the dependent variable. It is apparent that the two measures are not identical and capture different aspects of the alliance phenomenon. Finally, our findings also provide tentative support for our division of the data set into smaller periods.'[95]

[95] We also tested for the most significant break in the alliance data using an oneway analysis of variance. The highest F ratio was found using 1884 as a break. This findings conflicts somewhat with the arguments made by Singer and Small, as well as several other studies using COW data, which indicate a natural break somewhere in the 1890s. This discrepancy is examined in more detail in the data analysis chapter.

FIGURE 5.2

Proportion of Dyads in Alliances, Defence Pacts, Ententes, Neutrality/Non-Aggression



5.3 POLARIZATION

Polarization represents the final index of the dependent variable. It is a concept which enjoys wide theoretical and empirical application in the field. Despite its widespread use, there is a great deal of disagreement over the definition and measurement of polarization. Three issues, partially inter-related, affect its treatment; two conceptual and one methodological. The first issue is a function of the relationship between the concepts polarity and polarization and the theoretical roots of both. The second concerns the treatment of polarization as a multi-dimensional concept in which socio-economic and specific behavioral patterns are incorporated along with alliances. The third issue stems from the problems associated with developing a sophisticated procedure to measure the complex forms in which polarization can take in the real world.

Any understanding of polarization requires a simultaneous concern for the concept of polarity. How one defines polarity largely determines one's conceptualization of polarization. Both concepts stem from a desire to account for the influence of system structure, defined as the arrangement of actors in relation to one another (Ray, 1980), on the behavior of constituent units. Polarity is the number of key actors or poles which reside at the top of the system's social hierarchy. In its simplest form polarity is equated to the number of Great Powers. Polarization is the extent to which the remaining

states are drawn towards system poles and the resultant the pattern of bonds between poles and others states at any particular point in time; a simple physics analogy.

However, a problem arises out of this treatment of polarity and polarization. Several scholars (Haas, 1970; Bueno de Mesquita, 1973) argue that a system pole is not directly equivalent to a Great Power. They argue that a pole may also be several Great Powers linked by an alliance bond. Thus, the adjustment of polarity for alliance linkages between Great Powers provides a more accurate picture of the state of affairs.

Haas (1970) defines a pole as a significant center of military power or capabilities. Given that military capabilities are the basic attributes of a Great Power, it follows that two Great Powers allied together will logically appear as a single center of power to both observers and actors alike. Similarly, Bueno de Mesquita (1973) argues that states in alliance can no longer be treated as autonomous actors. The foreign policy options of these states are limited due to the demands of their alliance commitments. Thus, a true measure of polarity must begin with an assessment of the actual number of autonomous centers of military power.

Underlying these arguments is a separate body of theory. This body of theory concerns the relationship between polarity and system stability as debated originally by Deustch and Singer (1964) and Waltz (1967),[96] and briefly discussed above. A underlying reason for

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[96] Stability in this debate is generally defined as the absence of large scale war. The problem of polarity discussed here and arguments to expands its operational measure are a function of this

adjusting polarity for alliances between Great Powers, relative to this theoretical debate, is a function of a lack of variation in the historical record. The dominant data base for testing the polarity-stability relationship is the modern state system and its European predecesser (circa 1500-Present). This system, with the exception of the post-World War Two era, has a multipolar structure. Even though the contemporary bipolar era provides some basis for comparative analysis, any findings from this era are confounded by the presence of nuclear weapons. It is difficult to separate out the independent effects of bipolarity and nuclear weapons on stability (Levy, 1983). 1983).[97] Thus, to resurrect the theoretical and empirical value of polarity for purposes of this body of theory, it is necessary to alter the definition of a pole. However, in so doing, serious conceptual problems arise relative to Balance of Power theory.

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definition of stability. Moreover, this body of theory has led researchers to include the distribution of capabilities as a element of the independent variable. For example, both Bueno de Mesquita and Wallace integrate this element into their respective measures of polarity and polarization. In so doing, they are attempting to test a body of theoretical propositions largely independent of Balance of Power theory.

[97] As noted in Chapter Three, Levy's proposal for polarity differs significantly from the positions cited above. He argues that polarity represents the distribution of military power among the Great Powers, relatively independent of the number of Great Powers. This operational definition is similar to that body of work in the field which conceptualizes structure in terms of the rise and fall of system hegemons (see Modelski and Morgan 1985; Gilpin, 1981; and Thompson, 1986). The problem with Levy's approach, as well as the hegemon proponents, is their ahistorical results. For example, they argue that the post-Napoleonic era exhibits a unipolar structure, which reflects the global power of Great Britain, rather than the European structure. To argue that this era is unipolar is to fly in the face of history.

The adjustment of polarity for alliance linkages results in the treatment of alliance groups as equivalent to national actors. As Fedder (1968) points out, states entering into alliances are not transformed into coalition actors. They retain their individuality. Such an adjustment may also result in the treatment of two distinct systems as structurally identical. For example, a two power system is structurally identical to a five power system in which each of the powers is aligned into one of two alliance groups. (Levy, 1985:48).[98]

Finally, and perhaps most important, the methodological/empirical problem of identifying a system pole as distinct from a simple alliance cluster exists. Bueno de Mesquita's (1973) second attribute of pole identification is "the degree to which foreign policies of nations within a cluster are similar to each other, and the degree to which the foreign policies of nations in different clusters are dissimilar" (188).[99] The greater the similarity within and dissimilarity between clusters determines the reliability of state commitments to the various clusters. It is thus an indirect measure of the actual

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[98] This does not mean that one should ignore the effect of such structural influences on behavior. It only points to the grave conceptual error of using polarity to describe this structure.

[99] One must be careful in assessing Bueno de Mesquita's argument. He identifies three attributes of polarity of which the first is the number of non-aligned Great Powers and alliance groups between Great Powers. It is difficult to know the relationship between this attribute and the second attribute cited above. That is, one does not know if poles are identified prior to the examination of similarity/dissimilarity or are a simultaneous function of both attributes. If it is the former, then the smiliarity/dissimilarity attribute is actually a polarization measure and should have been identified as such. I assume that the latter is the case for the purposes of illustration here. The statistical technique employed by Bueno de Mesquita in this realm will be briefly discussed in presentation of our measure of system polarization where it more aptly belongs.

loss of decision-making autonomy.

However, similarity/dissimilarity tells us little about the actual degree of state commitment to an alliance cluster. Furthermore, there is the obvious empirical problem of what degree of similarity/dissimilarity differentiates a simple cluster from a pole. Initially, it would depend on the type of alliance commitment. Defence pacts are likely candidates for treating a cluster as a pole. Yet, as Kann (1976) notes, defence pacts tend to have a built in tendency towards the reduction of member commitment whereas ententes have a tendency to increased commitment. The problem is more evident in the example of pre-World War One Europe. Is the Triple Entente a cluster or a pole? Certainly, Britain's commitment to France is relatively firm, but its commitment to Russia is weak. While Bueno de Mesquita's measurement technique is a significant advance in the field, it does not provide us with a clear picture of system poles as distinct from clusters. Not only does the ability to actually identify a pole become extremely difficult in above formulation, but polarity and polarization become enmeshed in conceptual 'confusion'.[100]

The second concern regarding the treatment of polarization is also partially related to the polarity-stability theoretical propositions. Polarization is moved out of the strict realm of alliances to encompass other aspects of state to state relationships. These aspects are largely socio-economic and include attempts to incorporate specific

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[100] Wallace (1985) raises questions about the actual value of identifying system poles. These questions, I believe, are largely a function of the problems identified above regarding the movement of polarity into the realm of alliances and polarization.

state behavior into polarization (see Rapkin, et.al., 1979).[101] In so doing, polarization is equated to the generic category of alignment. Moreover, support for this interpretation is found in the contemporary era of international politics. The rise to preeminent status of the Soviet Union and the United States and the appearance of their respective alliance systems is accompanied by an overlapping set of socio-economic links within each alliance and the total absence of such links across alliances (Wallace, 1985).

Although the formulation of polarization to account for this aspect of post World War Two era appears useful, the majority of historical cases show little covariation between alliance bonds and socio-economic links (Wallace, 1985). Also, Balance of Power theory leads to expect little, if any, effect from socio-economic ties. States are motivated on pure capability considerations and even in the realm of the actual partners chosen one would expect that such links would have little influence.[102] Finally, by maintaining a distinction between polarization, defined with strict reference to alliances, and socio-economic bonds, one can more accurately assess their individual contribution in such areas as stability without engaging in further conceptual confusion.

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[101] The Rapkin et.al. study incorporates the elements of conflictal and cooperative behavior in measuring polarization. Within this category one can include also Wallace's (1973b) first study of polarization which included membership in International Governmental Organizations and Diplomatic Exchanges.

[102] As noted earlier, both Holsti et.al. (1973) and Walt (1987) find that ideology plays only a weak role in alliance formation, while Buzan (1983) points out that economic relationships have a different dynamic than political/security ones.

In conclusion, a pole is operationally defined as a Great Power. Polarization is defined as the degree to which lesser states have alliance bonds with Great Powers as well as the degree to which such bonds exist among Great Powers. In the extreme case of high polarization, a system would exhibit two alliance groups centered on a Great Power or set of Great Powers in which every other state is exclusively linked to one of the two groups through the most formal type of alliance; a defence pact. At the other end of the spectrum, a system in which no alliance ties exist would be the lowest level of polarization. In between these extremes there is a complex scale of polarization which must be adjusted for the number of poles, the types of alliances between states, and the exclusiveness of the resulting groups or clusters. It is this complexity that has hindered the development of an adequate statistical technique to measure and provide an interval level scale of system polarization, and represents the third issue of concern.

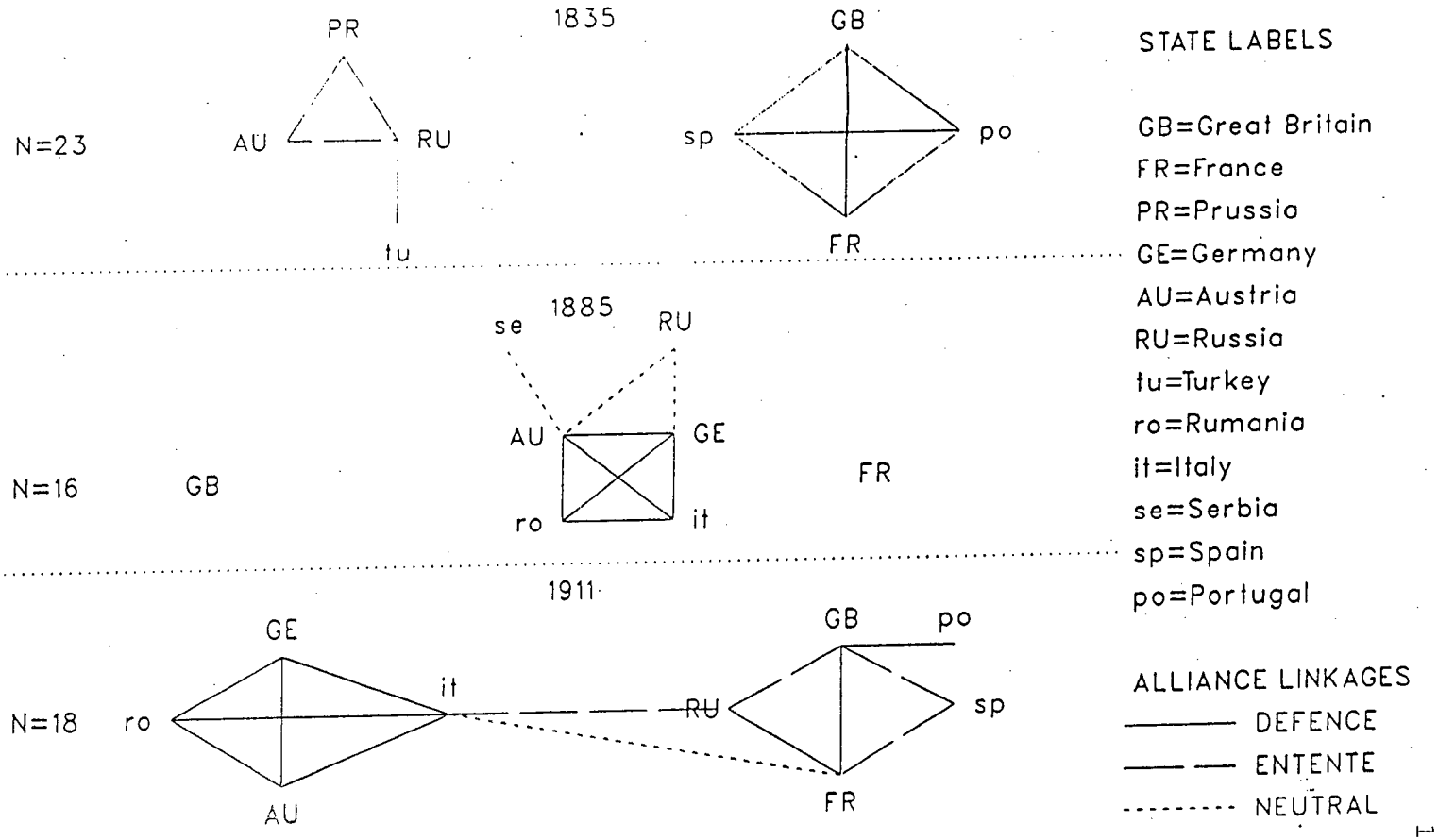
Two techniques dominate attempts to provide a measure of system of polarization. The first technique, developed by Bueno de Mesquita (1973), uses a form of hierarchical clustering, typal factor analysis, to identify clusters of states based on the similarity of alliance bonds among states. The second technique, developed by Wallace (1973b), uses Small Space Analysis (SSA-II) to create a n-dimensional geometric map of states based on the commonality of alliance bonds. A polarization score is available by identifying geometric configurations and measuring the distances between the center and the points surrounding it within the relevant space.

The fundamental problem with both techniques results from their inability to accurately represent the phenomenon relative to the historical record. Wallace (1985:103-104) identifies distortions stemming from Bueno de Mesquita's use of a similarity coefficient and his decision to allow membership in only one cluster for any individual state. Wallace (108) also notes that his technique distorts reality due to the effect of alliance size and the non-allied Great Powers on the resulting measure. Finally, Garnham (1985) identifies fundamental differences between the findings of the two authors. These differences indicate that the two measures are incommensurate.

At the root of the problems is the numerous and complex shapes which polarization may be manifested at any particular point in time. This complexity leads us to adopt a simpler, albeit 'softer', means to measure polarization. Polarization is schematically represented. Figure 5.3 shows three different cases of polarization drawn from the alliance data. As evident, the degree of polarization varies significantly among the three cases. The lowest degree of polarization is exhibited in 1885. Although four states are tied closely together with two additional states linked to the cluster, two of the Great Powers have no alliance links at all. In contrast, both 1835 and 1911 show all the Great Powers with more than one alliance linkage. In comparing these two cases, 1911 exhibits the highest degree of polarization. The intra-cluster links are tightly bonded by predominantly defence pact relationships, even though weak inter-cluster linkages are present. Although inter-cluster linkages are absent in the case of 1835, one of the clusters consists only of entente linkages.

FIGURE 5.3

Schematic Diagrams of System Polarization



This figure shows the complexity of scaling polarization. At most, one could develop an ordinal scale of polarization. However, for our purposes such a scale is unnecessary.[103] To test the third hypothesis, a comparison of distribution scores with major shifts in system polarization, represented schematically, will be used. Of course, the findings will be less rigorous than in the case of our other hypotheses. Nonetheless, they will provide us with valuable evidence on the relationship between the distribution of capabilities and polarization.

[103] The development of such a scale for use in the field at large would require an inter-coder reliability test to create a measure of inter-subjective agreement. The costs of such a test are beyond the needs of this study and are left to future research.

Chapter VI

DATA ANALYSIS

This chapter presents the empirical evidence on the relationship between the distribution of capabilities and the various measures of the dependent variable as identified in Chapter Five. The initial discussion examines various problems related to the use of linear regression as a tool for summarizing the relevant relationships. The remainder of the Chapter is divided into four sections. The first two hypotheses, as restated below, are tested in the first and second sections. The first section presents the results from the basic regression analysis with reference to the system as a whole and to various smaller temporal periods. The second provides the results from the regressions using the transformed data sets. The transformations are a product of the elimination of auto-correlation identified in the raw data sets. The third section explains differences found in the relationships among the various periods. It also examines the influence of war as an intervening variable. The fourth and final section tests the hypothesis that there exists a relationship between the distribution and polarization. This test is based on a visual comparison of changes in alliance patterns at the system level with movement on the distributional indices.

The first hypothesis posits a direct or positive linear relationship between distributional inequality and the presence of alliances.

The second hypothesis posits similar relationship, but limits alliances to one particular type: defence pacts. In terms of the two basic measures of the dependent variable, a greater proportion of system members and system dyads will be found in alliances/defence pacts when inequality is high. Conversely, fewer states and dyads will be involved in alliances/defence pacts when inequality is low. In the extreme case, alliances/defence pacts will be completely absent from the system when capabilities are equally distributed among the Great Powers.

These hypotheses are tested using two distinct measures of the independent and dependent variables respectively. The independent variable, the distribution of capabilities, is measured using both the four power, as well as the traditional five power set of states as identified in Chapter Four. The dependent variable, as noted above, consists of the proportion of states and the proportion of dyads in alliances as a whole and in defence pacts only.

Regression analysis is a powerful procedure which summarizes the relationships among ratio scales. It produces summary statistics which describe the direction, strength and significance of a relationship between variables. It has, however, certain limitations which must be recognized in its use relative to the procedure itself and the type of data employed in this study. In summarizing the relationship between two or more variables, the statistical result is determined on the basis of the range of observed values within the data sets (Younger, 1979:166-167). The result does not necessarily represent the relationship between the variables given a set of values outside of

Table VII

Minimum/Maximum Distribution Scores
and
Underlying Great Power Shares

	Score	Great Power Shares	
Four Power			
1893	.055	Great Britain	.27
		France	.22
		Russia	.23
		Germany	.27
1823	.223	Great Britain	.18
		France	.22
		Russia	.43
		Austria	.19
Five Power			
1893	.132	Great Britain	.25
		France	.20
		Russia	.21
		Germany	.25
		Aus/Hun	.09
1833	.255	Great Britain	.14
		France	.26
		Russia	.37
		Prussia	.08
		Austria	.16

this range. Thus, to generalize findings to all values or cases for the two variables can only be speculative in nature. One has no statistical assurance that the relationship will be replicated for all theoretically possible values of the respective variables.

With this in mind, it is useful to discuss briefly the range of values within the respective data sets. For the two indices of the independent variable, this range includes neither an extreme degree of inequality nor perfect distributional equality (Table VII). However, one should not expect the indices to encompass these extremes. Given our definition of polarity and Great Powers, extreme inequality would imply a structural transformation as capabilities become concentrated in the hands of one or two states. A multipolar system is thus transformed into a unipolar or bipolar one. At the other end of the spectrum, perfect equality is also unlikely. Differential rates of growth over time among the Great Powers, along with the measurement procedure itself, ensure some degree of inequality.

Recall that the theoretical range of the index is from 0, where each Great Power holds an equal amount of capabilities, to 1.0, where all the capabilities are held by a single Great Power. Given this range, a reasonable representation of both inequality and equality is present within the two indices. At the highest levels of inequality, .223 and .225 on the two data sets, the difference in Great Power shares between the strongest and weakest is .25 and .29 respectively. Between the top two Powers, this difference is .21 and .23. Turning to the lowest levels of inequality, the difference between strongest and weakest is .05 and .16. However, the large difference between top and bottom on the five Power index is a function of Austrian weakness at the time. Excluding Austria, the difference is only .04.

On the dependent variable, the proportion of states in alliances and defence pacts also represent a wide range (see Figure 5.1 and

5.2). On the former, the range is from 0 to .76. On the latter, it ranges from 0 to .55. Although the maximum value does not reach one, it is likely that every system member will ever have an alliance regardless of the distribution. For example, certain states, such as Switzerland, have historically followed a policy of neutrality. Also, most alliances contain a target state which reduces the maximum proportion expected on the above measures.[104]

However, for the dyad measures, the ranges are quite limited. They range from 0 to .13 for alliances, and from 0 to .06 for the proportion of defence pact dyads in the system. But, at no time can one expect the dyad measure to reach a high proportion of total system dyads because of the nature and purpose of alliance. Alliances, as noted by Liska (1962), are rarely for, but generally against another state. Being against another state, certain alliance dyads are naturally precluded by the formation of an alliance. Moreover, the exclusion of second order dyads, defined as linkages between two states through a common ally, also limits the proportion of alliance dyads possible.

While the range of values for the various measures appear reasonable in most cases, the population or universe to which generalizations may refer is an open question. It revolves around the representative nature of the data at hand and it is linked to tests of statistical significance. Linear regression is generally used with sample data drawn from a particular universe. Significance tests are

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[104] It could be argued that a neutral states should be deleted from the study. However, such a decision is based on post facto reasoning. It is assumed that any state could have altered its policy of neutrality to a policy of active alliance participation.

central to the representative nature of the sample. They provide a probability test of the degree of sampling error. The question, therefore, is whether the set of states which provide our observations represent a sample of all states (i.e. Great Powers for the independent variable and all system members for the dependent variable) over time and space?[105]

The majority of researchers using the COW data sets tend to assume that they represent samples, albeit not randomly drawn, of a much larger universe. This universe can be said to consist of any international system which resembles the anarchical state system of Europe. However, previous arguments stressed the relative uniqueness of the temporal and spatial limits of this study. The observations are drawn from an universe whose boundaries were established in Chapter Three. Also, the construction of certain measures are undertaken with reference to the context or historical environment within these boundaries. By definition, the subsequent findings are significant in terms of this universe. But, the findings can <u>not</u> be transferred necessarily to other time and space contexts.

At the heart of the question lies the problem of controlling for other variables which can have an independent affect on the hypothesized relationships. In particular, in defining the system, consid-

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[105] The importance of this issue also concerns the reporting of the significance levels of the regressions. Babbie (1975) points out that significance tests are of little value for population data. The degree of association is significant by definition. He argues that when they are used with population data, they indicate the likelihood that the relationship is a general one over time. I follow the argument that significance tests are of little value with the population data employed in this study and report r and r^2 to summarize the direction and strength of the relationship.

eration is given to the probable influence of two key variables: system structure and technology. The former is concerned with the independent effect of different forms of polarity on behavior. The latter focused explicitly on the affect of nuclear weapons on behavior. Thus, it would appear that generalization is limited to systems with a multipolar structure and non-nuclear technology. But, this does not mean that one should completely ignore the potential application of our findings to other systems with structural and technological differences. Our findings may serve to illuminate existing analysis of the other systems by providing a new perspective from which to examine the phenomena of alliances. In so doing, a new set of questions for research may arise.

A final concern relative to the use of linear regression concerns the type of the data used in this analysis. Cross-sectional data is the most appropriate for regression analysis. In such data, each observation is assumed to be independent of all other observations. However, the observations in our data sets are not necessarily independent because they represent fixed observations over time. This type of data, longitudinal or time-series data, is likely to contain serial or auto-correlation. The values at one observation point in time are partially the function of previous values in time. Unless auto-correlation is identified and removed, regression analysis inflates the strength of the relationships observed.

This problem does not necessarily lead one to reject a regression analysis on the untransformed data. Such an analysis provides an indication of the direction and strength of the relationship between

the variables, even though the strength may be inflated due to auto-correlation. In this sense, it provides a limit or boundary for the relationship. Similarly, the regressions on the transformed data provides another limit. The actual or probable relationship can be said to exist within these limits partially because of the statistical procedure used to remove auto-correlation. This procedure or model is the most adequate and parsimonious of a time series, but not necessarily the 'true' model (McCain and McCleary, 1979:241). In providing statistical, rather than theoretical, assurance of the removal of auto-correlation, the best fitting model is biased towards an overestimation of the 'true' degree of auto-correlation. Thus, the residuals entered into the equation are likely to underestimate the true values. In this sense that the results from employing both from the untransformed and the transformed data are exaggerated, one can treat them as providing general boundaries of the relationship.

6.1 THE REGRESSION RESULTS FROM THE UNTRANSFORMED DATA

The initial relationship between the distribution of capabilities and alliances is examined using a one and two year lag. The lags are used to address the element of time required by elites to identify the state of the distribution, to formulate policy, and, if necessary, to alter alliance behaviour. The major statistics produced by regression, the slope(b), intercept, standard error of the estimate, correlation (r) and determination (r^2) are provided in the tables, although the discussion is largely limited to the latter two statistics. This limitation is based on the relatively easier ability to understand

them for the nonquantitative scholar and the general treatment of statistics as noted in the final chapter. Rather than simply presenting the statistical findings, some scattergrams are also provided. The use of scattergrams, as argued by Tufte (1969), gives one a sense of the relationship between the independent and dependent variables. It also provides an indication about the nature of the relationship and the viability of using a linear equation to summarize it. It is, however, counterproductive to provide scattergrams for all the different combinations, particularly given the multiple time periods in which the first two hypotheses are examined. The scattergrams are limited to the initial plots of the relationship between the two basic measures of the independent and dependent variables respectively (Figures 6.1 to 6.4).

These plots reveal a linear relationship between the distribution and alliance measures. But it is in the opposite direction to the prediction made in the first hypothesis. The proportion of states in alliance and proportion of alliance dyads decline as inequality increases. This inverse or negative relationship is reflected in the correlation coefficients, which range from -.588 to -.607 (Table VIII). The coefficients of determination or proportion of variance accounted for by the equation, range from .346 to .369. Similar results are found when using a two year lag. Here, variance explained ranges from .335 to .369. No significant differences are found between the various combinations of the independent and dependent variable indicators, suggesting a fairly robust relationship.

FIGURE 6.1

Scattergram of 4 Power Index by Proportion of States Allied

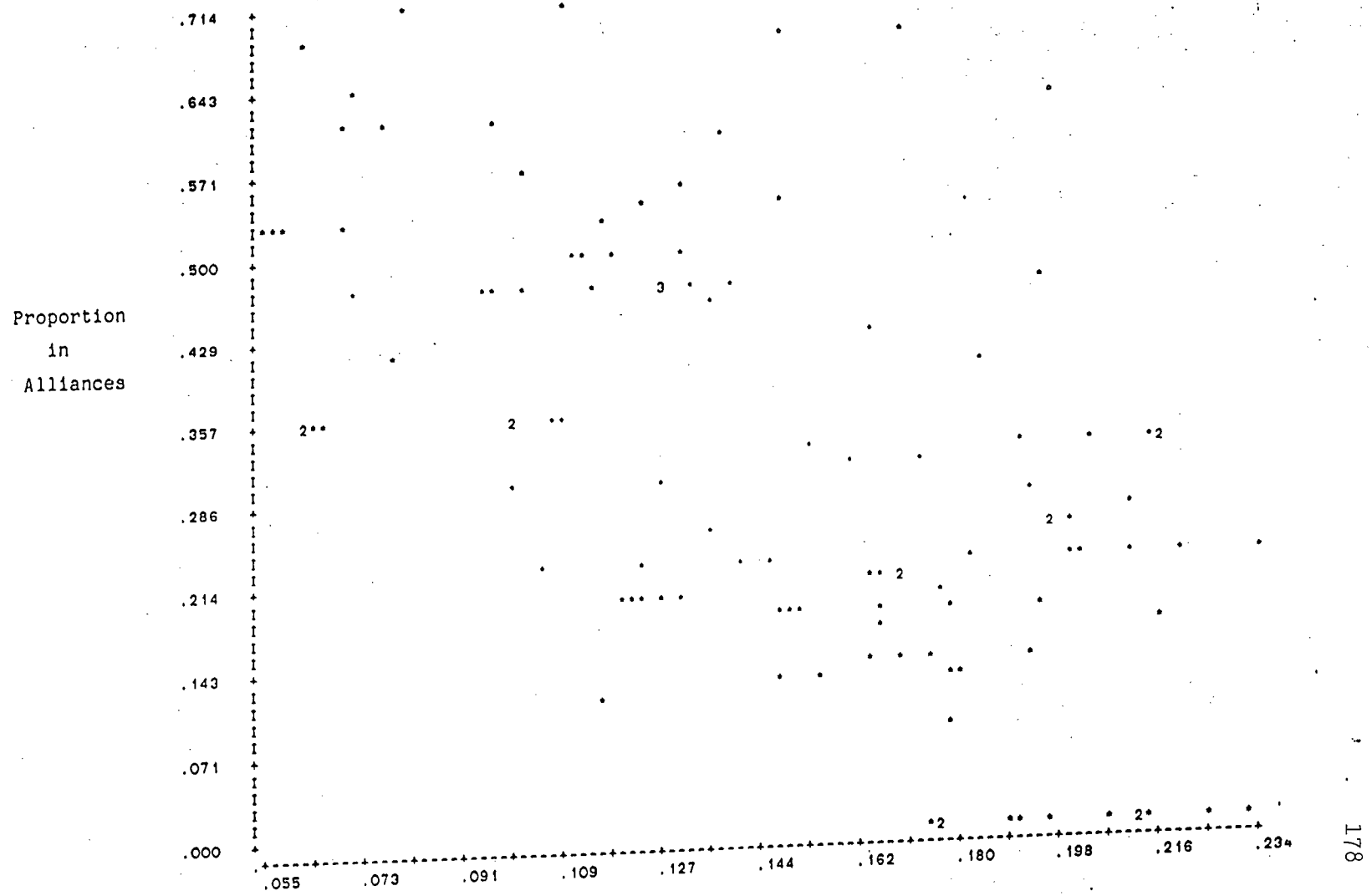


FIGURE 6.2

Scattergram of 5 Power Index by Proportion of States Allied

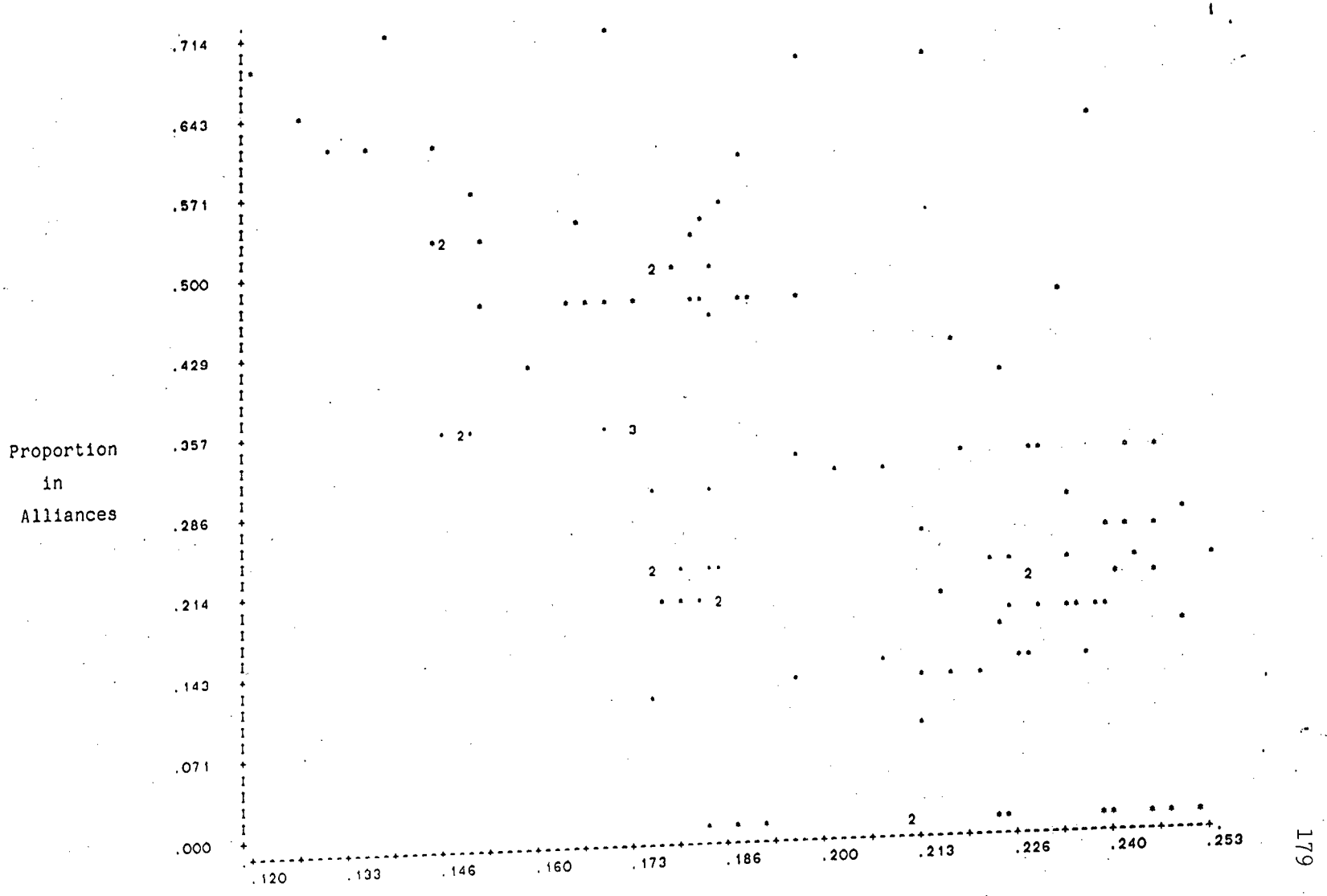


FIGURE 6.3

Scattergram of 4 Power Index by Proportion of DYADS in Alliances

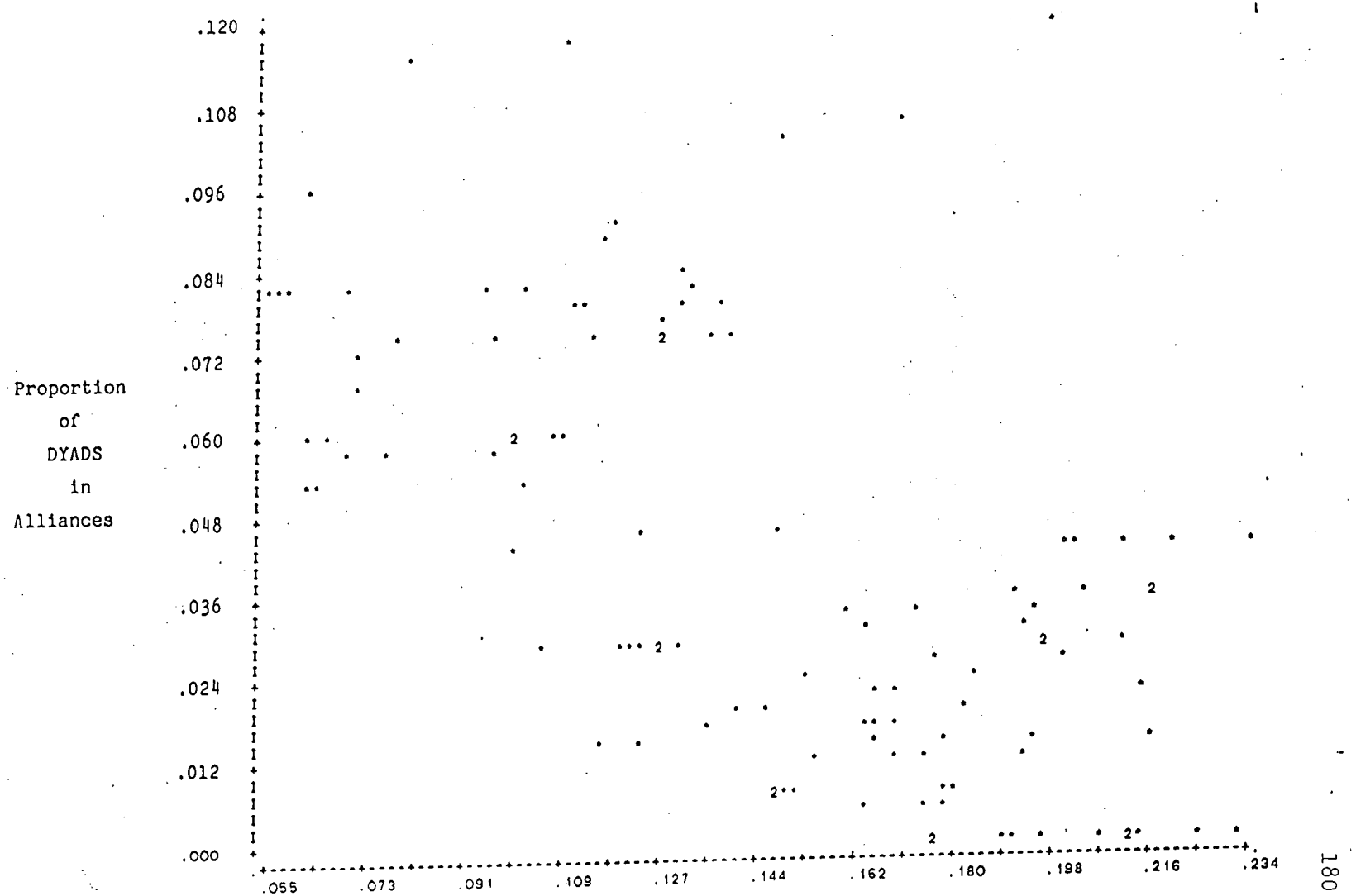
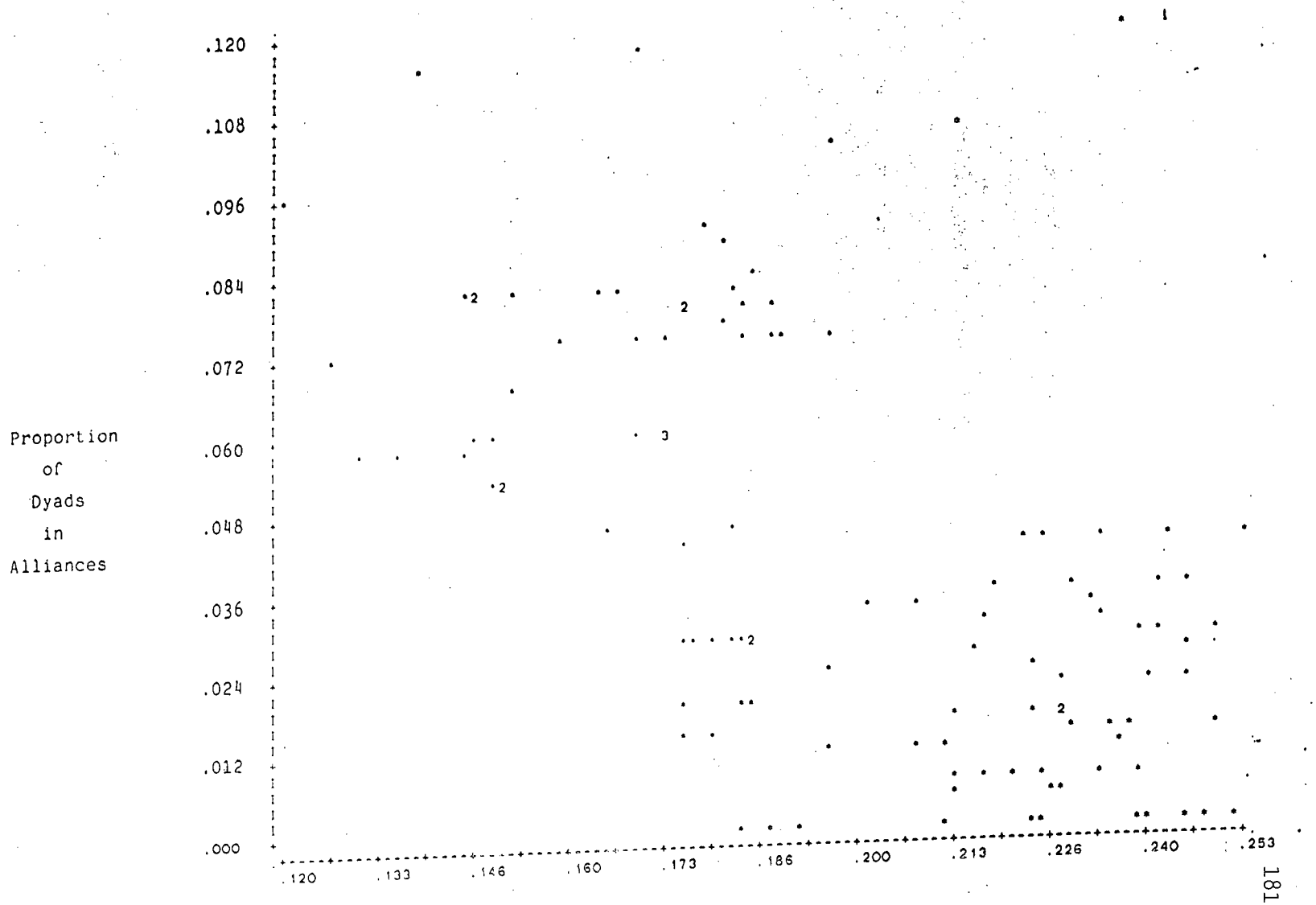


FIGURE 6.4

Scattergram of 5 Power Index by Proportion of Dyads in Alliances



Turning to the second hypothesis, a more definitive test of the relationship can be undertaken. By including all alliances in the first test, the negative relationship may be a function of the inclusion of ententes and neutrality/non-aggression pacts which, in turn, may be unrelated to Balance of Power considerations. Defence Pacts, because they contain a formal security commitment, fit more precisely the role of alliances in Balance of Power theory. In this situation, the previous findings are upheld, albeit slightly weaker (Table IX). The levels of association range from -.481 to -.524 for a one year lag, and from -.510 to -.575 for a two year lag. Again, no significant differences are found between the various combinations employed.

The strong inverse relationship found in the system as a whole is also examined in the various temporal periods identified in Chapter Three. Here, some evidence is found to support the periodization arguments. Focusing strictly on a one year lag,[106] no relationship is found between the various measures of the independent and dependent variables in the period 1816-1848. (Table X) In the period 1848-1870, conflicting results appear. When using the four power index, a strong inverse relationship is present. But, the five power index produces no relationship. An examination of the scattergram for the period 1849-1913 illustrates the reason for this difference (Figure 6.5). On this scattergram, the observations from the period 1849-1870 and 1871-1913 are identified. The observations from the former period are clustered in the lower righthand quadrant. Low levels of alliance

[106] A comparison between a one year and two year lag found no significant differences. Thus, the remaining part of the analysis focuses directly on the findings for a one year lag.

Table VIII

Bivariate Coefficients Between Capability Indices and
Proportion of Sttaes Allied and Proportion of Alliance Dyads
1816-1939

			Slope (b)	Intercept	STD.Error	r	r^2
(T0-T1)	4 Power	Allied	-2.430	.672	.152	-.607	.369
N=113		Dyads	- .393	.099	.026	-.599	.359
	5 Power	Allied	-3.365	.980	.153	-.599	.359
		Dyads	- .543	.148	.025	-.588	.346
(T0-T2)	4 Power	Allied	-2.429	.678	.159	-.588	.346
N=112		Dyads	- .417	.104	.026	-.609	.371
	5 Power	Allied	-3.358	.986	.161	-.579	.335
		Dyads	- .584	.158	.026	-.607	.369

Table IX

Bivariate Coefficients Between Capability Indices and
Proportion of States in Defence Pacts and Proportion of Defence Dyads
1816-1939

			Slope (b)	Intercept	STD.Error	r	r^2
(T0-T1)	4 Power	Defence	-1.674	.470	.131	-.522	.272
N=113		Dyads	- .218	.056	.017	-.524	.275
	5 Power	Defence	-2.227	.664	.133	-.495	.245
		Dyads	- .281	.081	.017	-.481	.232
(T0-T2)	4 Power	Defence	-1.809	.495	.132	-.548	.301
N=112		Dyads	- .242	.060	.017	-.575	.330
	5 Power	Defence	-2.360	.695	.136	-.510	.260
		Dyads	- .310	.086	.018	-.524	.275

participation are accompanied by high levels of inequality. In contrast, the latter period's observations are clustered in the upper lefthand quadrant where high levels of alliance participation are found with low levels of inequality. Together, they produce a strong inverse relationship. This result appears to be a function of a lack of variance on the respective measures.

The measures of both the independent and dependent variables show little variance in the 1849-1870 period. A significant relationship can not be expected in this case. Similarly, variance in the subsequent period (1871-1913) is also small, and produces low levels of association. Combining the two, sufficient variance exists to establish a strong inverse relationship. In sum, the findings provide greater support for an inverse link between inequality and alliance participation. When using the four power index, sufficient variance exists to account for the inverse relationship. Finally, the different results between the two indices in this examination are consistent with the findings across all test periods. The four power index consistently produces stronger negative levels of association. This consistency is due largely to the greater variance on the four power index as shown earlier in Figure 4.5.

Returning to the period (1816-1848), in which no relationship is found regardless of the indices, Figure 6.6 shows that its uniqueness is not a function of the lack of variance. The spread of observations is quite large for this period, and no degree of clustering is evident. It is possible that the findings here are partially a function of a small number of observations, as the case may be for the differ-

Table X

Bivariate Coefficients of Both Capability Indices and
All Measures of the Dependent Variable by Temporal Periods

		Slope (b)	Intercept	STD.Error	r	r^2
1816-1913 (N=97)						
4 Power	Allied	-2.252	.607	.123	-.652	.425
	Dyads	- .399	.096	.021	-.656	.431
	Defence	-1.718	.459	.131	-.525	.276
	Dyads	- .259	.063	.018	-.568	.323
5 Power	Allied	-3.025	.878	.132	-.585	.342
	Dyads	- .588	.154	.032	-.640	.410
	Defence	-2.345	.673	.135	-.478	.229
	Dyads	- .378	.100	.018	-.554	.309
1816-1870 (N=54)						
4 Power	Allied	- .641	.295	.104	-.154	.024
	Dyads	.115	-.003	.013	.210	.044
	Defence	- .556	.233	.092	-.151	.023
	Dyads	.118	-.009	.013	.224	.050
5 Power	Allied	- .128	.205	.105	-.023	.000
	Dyads	.062	.004	.014	.085	.007
	Defence	- .384	.217	.093	-.078	.006
	Dyads	.044	.003	.013	.063	.004
1816-1848 (N=32)						
4 Power	Allied	- .523	.282	.124	-.085	.007
	Dyads	.066	.009	.016	.082	.007
	Defence	.534	.017	.105	.101	.010
	Dyads	.198	-.024	.016	.250	.062
5 Power	Allied	- .693	.339	.124	-.088	.008
	Dyads	- .068	.038	.016	-.065	.004
	Defence	- .216	.172	.106	-.032	.001
	Dyads	.042	.006	.016	.041	.002

Table X

(cont'd)

			Slope (b)	Intercept	STD.Error	r	r^2
1849-1913 (N=65)							
	4 Power	Allied	-2.911	.682	.118	-.683	.466
		Dyads	- .568	.116	.022	-.705	.498
		Defence	-2.090	.505	.139	-.500	.250
		Dyads	- .407	.080	.016	-.688	.474
	5 Power	Allied	-3.436	.954	.134	-.563	.317
		Dyads	- .755	.185	.023	-.655	.429
		Defence	-2.424	.692	.146	-.404	.163
		Dyads	- .527	.127	.018	-.622	.387
1849-1870 (N=22)							
	4 Power	Allied	-2.653	.609	.060	-.621	.386
		Dyads	- .161	.039	.006	-.404	.163
		Defence	-2.454	.545	.059	-.598	.357
		Dyads	- .158	.036	.007	-.388	.151
	5 Power	Allied	.173	.135	.077	.046	.002
		Dyads	- .024	.018	.007	-.068	.005
		Defence	- .205	.187	.074	-.056	.003
		Dyads	- .077	.026	.007	-.212	.045
1871-1913 (N=43)							
	4 Power	Allied	-2.035	.601	.136	-.422	.177
		Dyads	- .334	.095	.023	-.404	.163
		Defence	-1.454	.445	.164	-.265	.070
		Dyads	- .077	.075	.019	-.483	.233
	5 Power	Allied	-2.649	.838	.145	-.258	.067
		Dyads	- .461	.139	.025	-.263	.069
		Defence	-1.676	.576	.169	-.143	.020
		Dyads	- .581	.138	.020	-.388	.151

Table X

(cont'd)

1922-1938 (N=17)		Slope (b)	Intercept	STD.Error	r	r^2
4 Power	Allied	-1.467	.766	.093	-.633	.400
	Dyads	- .194	.093	.034	-.286	.082
	Defence	- .612	.431	.059	-.477	.227
	Dyads	- .029	.031	.008	-.178	.032
5 Power	Allied	-1.584	.856	.099	-.565	.320
	Dyads	- .174	.099	.034	-.211	.045
	Defence	- .604	.458	.062	-.386	.149
	Dyads	- .019	.030	.009	-.010	.009

FIGURE 6.5

Scattergram comparison of 5 Power Index by Propertion of States Allied
by Select Time Periods, 1849-1870, 1871-1913

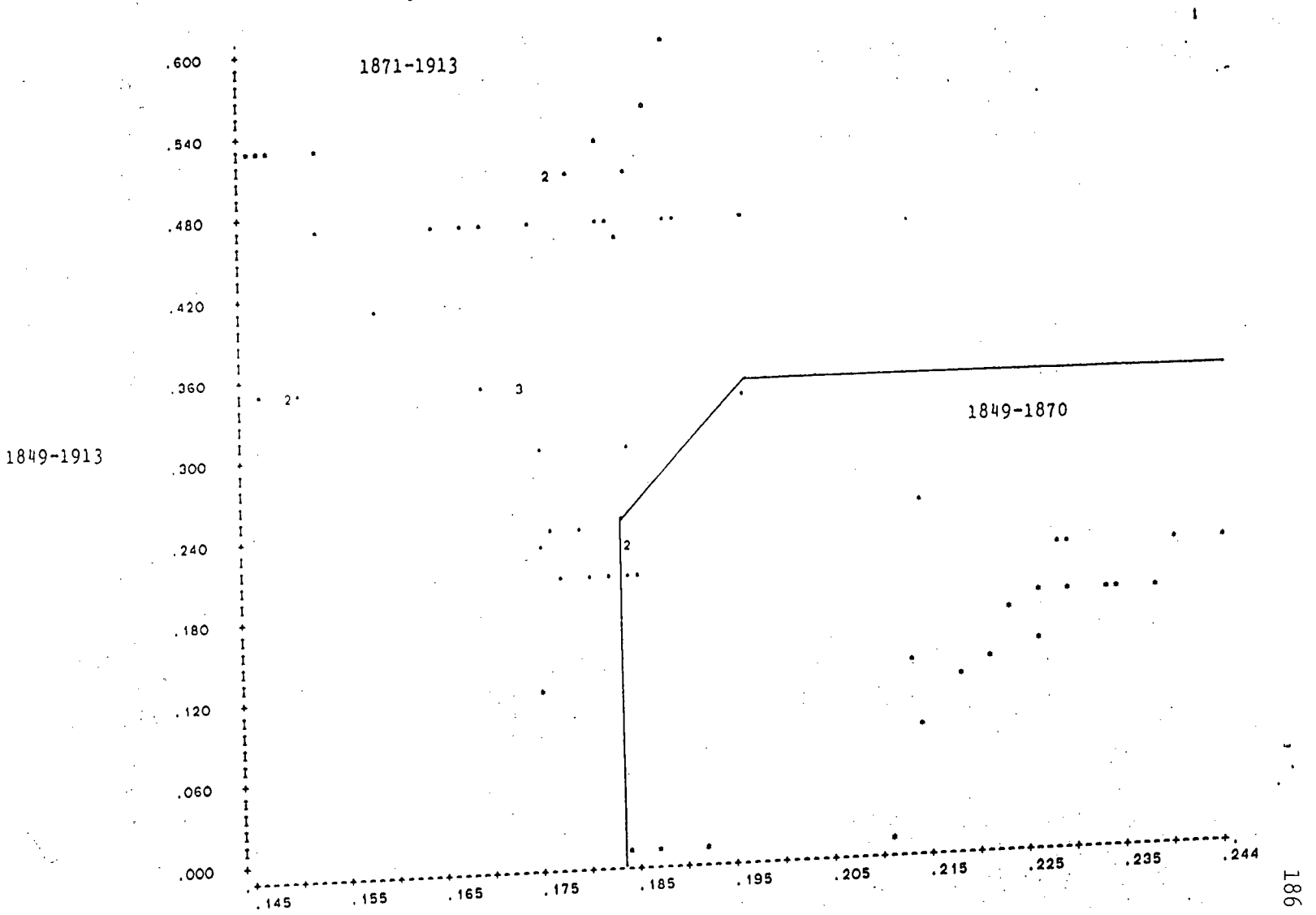
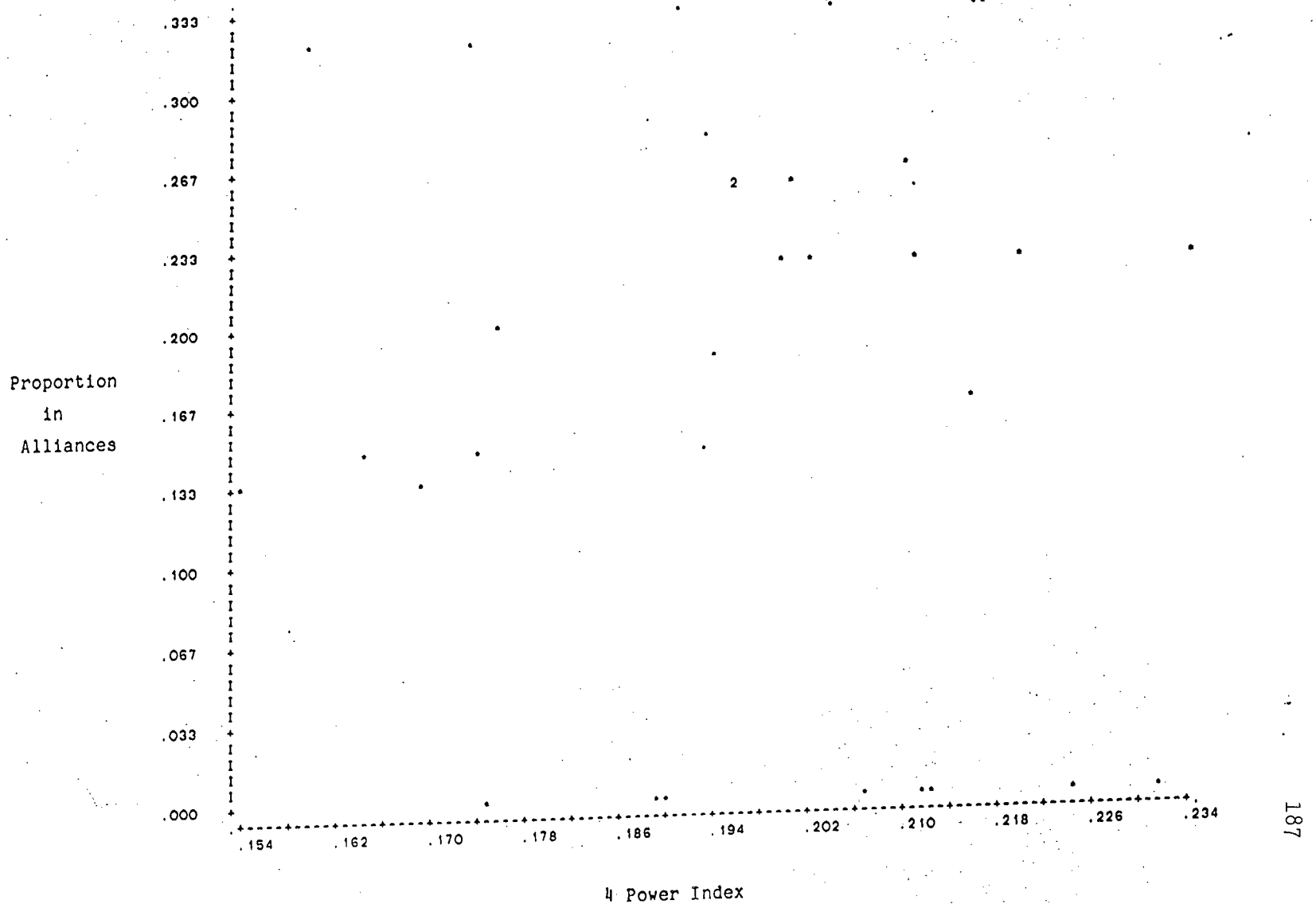


FIGURE 6.6

Scattergram of 4 Power Index by Proportion of States Allied 1816-1848



ent results within the period 1922-1939. However, the period 1816-1848 may be more explicable from a theoretical and historical perspective. As subsequently argued, the absence of a relationship may be a function of the decline in the utility of force during this period and, thus, the declining relevance of the distribution in explaining alliances.

The evidence supporting a temporal break in 1848/49 raises a question about the inter-century break reported by many studies of the COW project. Table XI reports the findings from such a test. They show dramatic, but inconsistent, differences between the period 1849-1899 and 1900-1939. The former period exhibits the strongest inverse associations to date. Negative associations also dominate the 1900-1939 period. However, these associations are extremely weak in some cases. In fact, the relationship between the five power index and proportion of defence pact dyads exhibits a sign change. This change, as well as the general decline in level of association, is a function partially of the inclusion of observations from the Interwar period where relatively weaker levels of association are found in some of the combinations. It also appears that observations from the 1900-1913 era have some impact. They serve to weaken further the strength of negative association reported for the Interwar period across the majority of combinations.

A probable explanation of the differences found between the state and dyad measures of alliance participation is changes in the prominence of multiple alliance/defence pact membership. Prior to 1900, the majority of states belong to at least one alliance. New alliances

Table XI

Bivariate Coefficients for Inter-Century Break

			Slope (b)	Intercept	STD.Error	r	r^2
1849-1899 (N=51)							
	4 Power	Allied	-2.863	.627	.078	-.846	.716
		Dyads	- .555	.105	.014	-.873	.763
		Defence	-1.990	.434	.087	-.702	.493
		Dyads	- .396	.072	.014	-.829	.687
	5 Power	Allied	-3.164	.855	.109	-.653	.426
		Dyads	- .700	.166	.018	-.769	.593
		Defence	-2.071	.596	.104	-.510	.260
		Dyads	- .492	.114	.014	-.718	.516
1900-1938 (N=31)							
	4 Power	Allied	-1.289	.705	.086	-.499	.249
		Dyads	- .199	.098	.025	-.280	.084
		Defence	- .678	.486	.072	-.337	.113
		Dyads	- .061	.046	.015	-.151	.023
	5 Power	Allied	-1.654	.837	.084	-.521	.272
		Dyads	- .156	.101	.026	-.185	.034
		Defence	-1.380	.468	.077	-.154	.023
		Dyads	.027	.034	.016	.054	.003

formed between 1900 and 1913 do not affect the state measure, only the dyad measure which is sensitive to multiple alliance membership. With the general increase of inequality on both indices during this period (see Figure 4.5), weaker levels of association are expected. Similarly, most states enter into alliances in the first half of the Interwar period when the indices are declining. While the proportion of states in alliances/defence pacts holds relatively constant in the remainder of this period, major changes occur in the area of multiple membership, which accounts for weaker negative associations when employing the dyad measures. Above all, there is some support for the inter-century break argument, but it is limited to the absence of a relationship on only one measure of the dependent variable.

For now, the evidence supports two tentative conclusions. First, there is an inverse association between inequality and the prominence of alliances in the system. This finding is contrary to the predicted association drawn from Balance of Power theory. Second, a temporal break exists in the system in 1848/49. Prior to this point in time, alliance levels in the system are not related to the distribution of capabilities. After this point, the distribution accounts for a significant proportion of the variance on the measures of the dependent variable.

6.2 REMOVING AUTO-CORRELATION AND THE TRANSFORMED DATA RESULTS

The preceding results are based on the untransformed data. While they indicate a distinct relationship between the distribution and alliances, one contrary to Balance of Power theory, the strength, if not presence, of the negative relationship may be inflated due to the presence of autocorrelation in the data. In simple terms, the observations in the preceding tests are treated as unique. That is, the values at one point in time are not related to previous points in time. In effect, longitudinal or time series data are treated as cross-sectional data. In so doing, the analysis can be conceived as a static one. When one proceeds to eliminate autocorrelation, the static nature of the analysis is transformed into a dynamic one. Each observation represents the distinct contribution of an individual observation or year in this case. This contribution is the amount of change in the data which can be attributed to an individual observation.

Methodologically, the removal of autocorrelation flows from the violation of a key assumption regarding the error terms in a regression models (Ostrom, 1978:12-13) Namely, the error terms of the observations are independent of each other. Generally, the error term represents three factors whose affects are assumed to be small and random. First, the error term represents factors which have been omitted from the analysis for reasons of parsimony but are likely to have some effect on the relationship under examination. Second, it relates to the problems of data collection and measurement. Finally, it is a function of the basic unpredictability and randomness of human

behavior. When autocorrelation exists, the random assumption of the error terms is violated. Observations, and thus their associated error terms, are not independent over time and the violation of this assumption can produce inflated results.[107]

The problem of auto-correlation is not simply confined to the dependent variable. In any time-series data set, in which observations have a constant interval between them, previous values in time are likely to influence temporally adjacent values. In Balance of Power terms, the distribution of capabilities at t may affect simultaneously external behavior, alliances, and internal behavior, the allocation of resources. The presence of alliances at t are likely to affect subsequent levels due to the temporal duration of alliances and/or the contamination effect of alliance/counter-alliance. Thus, the strong negative association may be partially due to the above relationships over time.

There are many procedures used to compensate for the effect of auto-correlation.[108] One of the most powerful and effective is the

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[107] According to Ostrom, the inflation of results can lead to a Type I or Type II error, and thereby incorrect inference which may have substantive policy implications. A Type I error occurs by rejecting the null hypothesis when it is actually true. A Type II error results from accepting the null hypothesis when it is false. In this case, failure to remove auto-correlation may lead to both. First, a Type I error may result by rejecting the null hypothesis that there is relationship between the distribution and state participation in alliances. Second, a Type II error results from accepting the null hypothesis of a negative relationship. Succinctly, the negative association uncovered in the previous section may be only due to auto-correlation.

[108] Singer et.al. (1972) employ a simple procedure in this regard to compensate for auto-correlation. It is simply the altering of the data from a static to dynamic state by using the rough equivalent of the first difference. Ostrom (1978) provides another means linked directly to regression. As shown above, the Box-Jenkins

Box-Jenkins procedure. This procedure seeks to identify and remove autocorrelation by fitting the best ARIMA (auto-regressive-integrated-moving average) model to each time-series of the independent and dependent variable. McClearly and Hay (1980;110) state: "A Univariate ARIMA model is a stochastic or probabilistic description of the outcome of a process operating through time". The effectiveness of this procedure stems from its ability to account for three different types of autocorrelation. Each type is represented by a structural parameter of the model, expressed as the (p,d,q) components. The autoregressive (p,0,0) component represents the impact of previous values on subsequent values which persist over a series of observations, but whose impact diminishes over time. Alliances are likely to contain this type of autocorrelation because of their general restriction to a limited period of time. The difference (0,d,0) component accounts for the presence of a secular trend in the time series. Such a trend is normally found in capability based data. For example, military expenditures, as in the case of government expenditures generally, normally increase every year at a minimum due to such factors as inflation. The final component of the model is the moving average (0,0,q). This process is characterized by the influence of previous values which persist for a finite period of time. This component accounts for the presence of cycles in the data, such as the general notion of the business cycle. This type of autocorrelation is not normally found in the type of data employed in this study.

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procedure is used because of its ability to handle simultaneously different forms of auto-correlation.

As noted earlier, the removal of autocorrelation is a function of the identification of the most appropriate ARIMA (p,d,q,) model. The identification of this model begins with a visual examination of the autocorrelation and partial autocorrelation functions for each data set on a correlogram (McCleary and Hay, 1980; see also McCain and McCleary, 1979). A correlogram is simply a visual map which reveals how the observations in the time series are associated over a series of lags. An example of the correlograms using the proportion of states in alliance time series is provided in Figure 6.7. This map of the autocorrelation and partial autocorrelation functions indicates the most likely ARIMA (p,d,q) model for the time series. The procedure is repeated, using the most likely model, until the correlograms reveal no significant autocorrelation. Autocorrelation is eliminated when the residuals from the model, that is the values of the observations remaining after the application of the model, are not related at the first and second lag and are distributed as white noise. This distribution consists of only random shocks in the time series and thus the absence of any systematic relationship between observations. The existence of a white noise distribution is indicated by a insignificant chi-square statistic, which is produced by the procedure.

As noted above, alliance data is likely to exhibit autocorrelation in the form of the autoregressive (p,0,0) model. Alliances exist for a relatively specific period of time. Given the possibility that several alliances may exist simultaneously and each individual alliance may differ in duration, the impact of previous values on subsequent ones are likely to persist over a series of observations, but decline

FIGURE 6.7

Correlograms of Proportion of States in Alliance Time Series

LAG	AUTO. CORR.	STAND. ERR.
1	0.886	0.091
2	0.804	0.090
3	0.728	0.090
4	0.666	0.090
5	0.641	0.089
6	0.600	0.089
7	0.577	0.088
8	0.524	0.088
9	0.477	0.088
10	0.424	0.087
11	0.371	0.087
12	0.349	0.086
13	0.325	0.086
14	0.327	0.086
15	0.333	0.085
16	0.340	0.085
17	0.339	0.084
18	0.339	0.084
19	0.353	0.083
20	0.315	0.083
21	0.290	0.083
22	0.270	0.082
23	0.266	0.082
24	0.263	0.081
25	0.251	0.081

a) Auto-Correlation

LAG	PR-AUT CORR.	STAND. ERR.
1	0.886	0.092
2	0.090	0.092
3	0.000	0.092
4	0.030	0.092
5	0.156	0.092
6	-0.036	0.092
7	0.065	0.092
8	-0.117	0.092
9	-0.003	0.092
10	-0.071	0.092
11	-0.025	0.092
12	0.067	0.092
13	0.020	0.092
14	0.095	0.092
15	0.085	0.092
16	0.059	0.092
17	0.006	0.092
18	0.059	0.092
19	0.065	0.092
20	-0.213	0.092
21	-0.047	0.092
22	-0.006	0.092
23	0.059	0.092
24	-0.043	0.092
25	0.018	0.092

b) Partial Auto-Correlation

in strength. This form of autocorrelation is evident in the example correlogram (Figure 6.7) for the proportion of states allied, and is found for the remaining time series of the dependent variable. As shown in Table XII, the use of an ARIMA (1,0,0) model is sufficient to produce residual or transformed values in each time series which are distributed as white noise and therefore contain no autocorrelation.[109]

Table XII

Autoregressive Parameters of the Dependent Variable Time Series

	Autoregressive Parameter	Chi-Square (x^2)	Significance
Alliances	.912	6.6	.16
Dyads	.899	4.1	.40
Defence	.951	1.2	.88
Dyads	.908	0.5	.97

[109] At first inspection, the correlogram also supports a first difference (0,1,0) model. The times series is not stationary in the homogeneous sense. However, McCleary and Hay (1980) point out that there is no mathematical difference between a first difference model and autoregressive model in which the autoregressive parameters are nearly equal to 1. As shown in Table XII, the autoregressive parameters for the four time-series sets of the dependent variable approximate this situation. As expected, no significant differences were found when using the residuals from a (1,0,0) or (0,1,0) model in the regression analysis.

Similarly, the best ARIMA (p,d,q) model for the five power data set of the independent variable meets theoretical expectations. This (1,1,0) model, which contains a positive first order and negative second order function, is consistent with capability based data in general (Table XIII). Capability data normally exhibit a trend, such as the general increase in expenditures, as well as military personnel and industrial production over time. These trends are translated in a general sense onto the index, and produce the positive first order or difference component. The negative autoregressive component is consistent with the specific magnitude of changes after the removal of the trend. In simple terms, large changes in the values are followed by smaller changes. Using expenditures as an example, large increases in one year are generally followed by smaller increases the next. The removal of the trend results in a negative relationship between adjacent values.[110]

However, a different model is required to eliminate autocorrelation from the four power time series. This (1,1,1) model requires a moving average parameter, in addition to a first difference and autoregressive component. This moving average parameter represents the existence of a cycle in the time series, which lacks theoretical explana-

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[110] McClearly and McCain (1980) point out that a trend may simply be a drift in the time series. A trend is defined as deterministic in which values are a fixed function over time. For example, military expenditures show a positive trend over time in which increases are expected at a minimum due to inflation. A drift is stochastic in nature whereby future values may vary probabilistically. It is difficult to ascertain whether the data set contains a trend or a drift. The underlying indicators in the measure individually contain a trend. However, whether these underlying trends are sufficient to produce a trend explanation for the index is difficult to ascertain. Nonetheless, a positive function is consistent with the type of data used in such studies.

Table XIII

Parameters of the Independent Variable Time Series

	4Power (1,1,1)	5Power (1,1,0)
Autoregressive	.413	-.327
Moving Average	.853	N/A
Chi-Square (x2)	7.191	7.284
Significance	.08	.12

tion. The source of this cycle appears to be in the first half o the Nineteenth Century (see Figure 4.5 or Figure 6.9). The cycle appears to be roughly ten years in duration. Unfortunately, attempts to remove this cycle using the seasonality procedure in Box-Jenkins was unsuccessful.

A second approach to the problem was the log transformation of the time series prior to the application of the Box-Jenkins ARIMA procedure. McClearly and Hay (1980) point out that such a transformation is necessary when a time series exhibits heterogeneous variance. This type of variance refers to the changes in the basic pattern of the values over time. In our case, the first half of the time series, up to 1870, shows a pattern of peaks and valleys, termed non-stationary variance. After 1870, the pattern is smooth and gradual in nature; stationary variance. However, as in the previous attempt, this solution did not suffice to eliminate the moving average component.

A third approach to the problem consisted of manipulating the time series by examining only the pre-1871 values and disaggregating the indicators. It appears that the moving average component is found exclusively in the military personnel indicator and during the period 1816-1870. This finding may be due to the wide fluctuations in the size of the Russia army during the first half of the Nineteenth century.[111] Thus, the root of the problem may be data reliability.

The decision to use the (1,1,1) model, and the residuals produced by the model in the regression analysis, stems from the need for consistency. To break the data in 1870 and apply two separate models implies a historical divide between the two periods. It is a statistical solution which could introduce more error into the analysis because of the loss of observations.[112] Moreover, our previous findings on the relationship between the distribution and alliances do not support such a break. Thus, the residuals from the (1,1,1) model are employed, with noted caution. The net result,as shown below, reveal relatively stronger associations when using the four power residuals in comparison to the five power residual series. The reliability of the consistently stronger associations remain an open question.

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[111] In examining the reported values for Russian army personnel, little difference is found with values reported for certain years in several historical studies (see Curtiss,1965).

[112] In any transformation of the values to eliminate autocorrelation, at least one, or in some cases two observations are lost. These observations are the initial ones in the time series. Thus, the 1871 break would result in the loss of observations for 1871,1872 along with the loss of observations as noted earlier.

The findings for the initial test of the relationship between the distribution and alliances, when employing the residual or transformed data, are reported in Table XIV. It shows the continued presence of negative relationship between inequality and the proportion of states in alliances and proportion of alliance dyads. However, the strength of the relationship, as indicated by the coefficients of determination (r^2), is very weak. The amount of variance accounted for by the equations range from .002 to .040. Similar results are found when testing the second hypothesis, which limits the dependent variable to defence pacts only (Table XIV). Regardless of the lag employed, the amount of variance explained is insignificant.

The absence of any significant relationship between the distribution and the various measures of the dependent variable is not supported on examination of the various temporal periods (Table XV). Similar to the earlier findings, a significant negative relationship is found in the period 1849-1870. Here, variance explained ranges from .274 to .443 in the case of the four power index, and from .100 to .274 in the five power case. Enlarging the boundaries to include the years prior to World War One, the levels of negative association are much weaker. Testing the period 1871-1913 separately, a weak positive relationship is uncovered. Variance explained ranges from .000 to .098.

Turning to the other two periods of interest, 1818-1848 and 1924-1938, some limited support for the hypotheses is present. In the former case, the direction of the relationship is positive in all test combinations, ranging from .010 to .192. However, the amount of vari-

Table XIV

Bivariate Coefficients of the Transformed Data, All Measures of the Dependent Variable 1818-1938

			Slope (b)	Intercept	STD.Error	r	r^2
(T0-T1) N=111	4 Power	Allied	- .497	.002	.073	-.153	.023
		Dyads	.027	.001	.010	.061	.004
		Defence	- .139	.002	.059	-.053	.003
		Dyads	- .007	.000	.007	-.020	.000
	5 Power	Allied	- .453	.001	.072	-.200	.040
		Dyads	- .015	.001	.010	-.049	.002
		Defence	- .214	.002	.059	-.117	.014
		Dyads	- .025	.002	.007	-.110	.012
(T0-T2) N=110	4 Power	Allied	- .129	.001	.074	-.055	.003
		Dyads	- .040	.000	.010	-.089	.008
		Defence	- .117	.001	.059	-.062	.004
		Dyads	- .012	.000	.007	-.054	.003
	5 Power	Allied	- .283	.001	.074	-.083	.007
		Dyads	- .027	.001	.010	-.086	.007
		Defence	- .192	.002	.059	-.070	.004
		Dyads	- .007	.000	.007	-.021	.000
(T0-T2) N=109	4 Power	Allied	- .209	.001	.074	-.087	.007
		Dyads	- .052	.007	.010	-.111	.013
		Defence	- .031	.002	.060	-.016	.000
		Dyads	- .007	.000	.007	-.039	.001
	5 Power	Allied	.011	.002	.074	.003	.000
		Dyads	.046	.000	.010	-.141	.020
		Defence	.075	.002	.059	.027	.001
		Dyads	- .005	.000	.007	-.016	.000

ance explained, as in most tests employing the transformed data to date, is very small and insignificant. Most important in regards to this period is the consistency of the results in comparison to the earlier findings employing the untransformed data. Together, the temporal uniqueness of this period, at least in terms of Balance of Power theory, is validated.

Turning to the Interwar period, contradictory results are found. A strong negative association (-.483 and -.339) is present only when employing the proportion of states allied measure of the dependent variable. The remaining relationships are positive. The different results may be a function of the inclusion of non-aggression pacts in the measure. These pacts, as shown in Chapter Five, dominate the period. The change from a negative to a positive relationship, when shifting from the state to dyad measure of alliances, implies an increase in the number of alliances participated in by any individual state, but a decline in the number of individual states in alliance as distributional inequality rises. However, caution should be applied to any inferences drawn from the results for this period due to the small number of observations (n=15).

The strong support for a temporal break in 1848/49, and the conflicting results when comparing the periods 1849-1870 and 1871-1913, calls for a re-examination of the Inter-Century break argument. The 1849-1899 period produces a relatively strong negative association between inequality and alliances (Table XVI) Explained variance ranges from .041 to .186. The 1900-1938 period exhibits a weak positive association and replicates the differences identified in the Interwar

Table XV

Bivariate Coefficients of the Transformed Data by Temporal Periods

			Slope (b)	Intercept	Std.Error	r	r^2
1818-1913 (n=96)	4 Power	Allied	- .554	-.005	.075	-.215	.046
		Dyads	- .034	-.001	.010	-.105	.011
		Defence	- .342	-.001	.061	-.165	.027
		Dyads	- .039	-.001	.007	-.153	.023
	5 Power	Allied	- .686	-.004	.076	-.171	.030
		Dyads	- .019	-.000	.009	-.022	.000
		Defence	- .376	-.000	.062	-.116	.014
		Dyads	- .028	-.000	.008	-.068	.005
1818-1870 (N=53)	4 Power	Allied	- .829	-.020	.081	-.331	.109
		Dyads	- .941	-.002	.010	-.144	.021
		Defence	- .661	-.015	.066	-.323	.104
		Dyads	- .057	-.002	.009	-.219	.048
	5 Power	Allied	- .741	-.019	.083	-.211	.044
		Dyads	- .013	-.002	.010	-.032	.001
		Defence	- .482	-.014	.069	-.168	.028
		Dyads	- .031	-.001	.009	-.085	.007
1818-1848 (N=32)	4 Power	Allied	.175	-.016	.076	.061	.004
		Dyads	.079	-.002	.011	.192	.037
		Defence	.356	-.013	.061	.153	.024
		Dyads	.058	-.001	.010	.157	.025
	5 Power	Allied	.034	-.016	.076	.010	.000
		Dyads	.073	-.002	.011	.155	.024
		Defence	.309	-.014	.061	.116	.013
		Dyads	.063	-.001	.010	.147	.022

Table XV

(cont'd)

			Slope (b)	Intercept	Std.Error	r	r^2
1849-1913 (N=25)	4 Power	Allied	- .792	.000	.074	-.323	.105
		Dyads	- .071	.000	.009	-.244	.050
		Defence	- .570	.005	.059	-.292	.070
		Dyads	- .070	.001	.006	-.357	.128
	5 Power	Allied	-1.282	.002	.074	-.283	.083
		Dyads	- .081	.000	.001	-.151	.022
		Defence	- .943	.006	.060	-.265	.070
		Dyads	- .101	.001	.006	-.281	.079
1849-1870 (N=22)	4 Power	Allied	-1.35	.019	.082	-.588	.346
		Dyads	- .105	.002	.008	-.523	.274
		Defence	-1.205	-.010	.065	-.633	.401
		Dyads	- .117	-.001	.006	-.665	.443
	5 Power	Allied	-1.55	.024	.093	-.417	.174
		Dyads	- .103	.003	.008	-.316	.100
		Defence	-1.308	-.015	.076	-.424	.180
		Dyads	- .129	-.002	.007	-.450	.203
1871-1913 (N=43)	4 Power	Allied	.296	.017	.061	.116	.013
		Dyads	.003	.002	.009	.008	.000
		Defence	.606	.020	.044	.313	.098
		Dyads	.023	.002	.005	.112	.013
	5 Power	Allied	- .513	.015	.061	-.085	.007
		Dyads	- .024	.002	.009	-.026	.000
		Defence	.185	.017	.046	.041	.002
		Dyads	- .023	.002	.005	-.046	.002

Table XV

(cont'd)

			Slope (b)	Intercept	Std.Error	r	r^2
1924-1938 (N=15)	4 Power	Allied	- .280	.038	.025	-.483	.233
		Dyads	- .019	.007	.009	.099	.009
		Defence	.094	.017	.032	.138	.020
		Dyads	.013	.001	.005	.127	.016
	5 Power	Allied	- .237	.037	.026	-.339	.115
		Dyads	.081	.007	.009	.349	.123
		Defence	.231	.018	.031	.282	.080
		Dyads	.026	.001	.005	.214	.046

Table XVI

Bivariate Coefficients of Transformed Series by Inter-Century Break

			Slope (b)	Intercept	Std.Error	r	r^2
1849-1899 (N=51)							
	4 Power	Allied	-1.032	-.011	.079	-.399	.159
		Dyads	- .093	-.001	.009	-.323	.104
		Defence	- .794	-.006	.063	-.388	.151
		Dyads	- .087	-.000	.006	-.432	.186
	5 Power	Allied	-1.51	-.005	.081	-.324	.105
		Dyads	- .105	-.000	.009	-.203	.041
		Defence	-1.158	-.001	.064	-.315	.100
		Dyads	- .117	.000	.006	-.323	.105
1900-1938 (N=29)							
	4 Power	Allied	- .298	.032	.028	-.361	.130
		Dyads	.004	.004	.009	.016	.000
		Defence	.105	.022	.029	.128	.016
		Dyads	.010	.001	.004	.082	.007
	5 Power	Allied	- .240	.030	.029	-.236	.056
		Dyads	.076	.004	.009	.246	.061
		Defence	.215	.022	.029	.214	.046
		Dyads	.022	.002	.004	.144	.021

period. However, concern must be given to the reasons behind including pre and post World War One observations together. Initial tests, which supported an Inter-Century break (Singer and Small, 1968; Singer, et.al, 1972), are based on a much larger system, in spatial and temporal terms. In our case, the limitation of the system to Europe and pre World War Two leaves only one single consistent feature or problem between the pre and post World War One; Germany. But, the German problem, while dominant in the years prior to World War One, is only one of several problems in the Interwar period, especially in terms of the problem of Bolshevik Russia. As noted in the next section, other considerations related to this era lead to a consideration of the inter-century break in terms of the years ending with World War One.

It is also possible that the year 1899 is inappropriate. When one compares the findings for the various periods beginning in 1849 with the period 1871-1913, the significant difference in the direction of the relationship implies a temporal break, but not necessarily at the inter-century point. From a historical perspective, it is difficult to find a rationale supporting a break in 1899/1900. In contrast, a case can be made for a temporal break earlier on. Four key historical events can serve to identify four plausible break points. The first is the formation of the Austro-German alliance in 1879; the first of the World War One alliances. The second key event is the collapse of the Three Emperor's League (1885), which had linked Germany, Austro-Hungary, and Russia together, and the appearance of the inherent conflict between Germany's link with Austro-Hungary in the Dual Alliance

Table XVII

Bivariate Coefficients of Transformed Series by Various Late Nineteenth Century Breaks

			Slope (b)	Intercept	Std.Error	r	r^2
1849-1879 (N=31)							
	4 Power	Allied	-1.142	-.020	.081	-.506	.255
		Dyads	- .093	-.002	.009	-.413	.171
		Defence	- .941	-.014	.065	-.514	.264
		Dyads	- .092	-.002	.005	-.564	.318
	5 Power	Allied	-1.670	-.017	.085	-.412	.170
		Dyads	- .111	-.002	.009	-.274	.075
		Defence	-1.399	-.011	.069	-.426	.181
		Dyads	- .132	-.001	.006	-.455	.207
1849-1885 (N=37)	4 Power	Allied	-1.127	-.018	.081	-.473	.223
		Dyads	- .099	-.002	.009	-.392	.154
		Defence	- .897	-.014	.065	-.468	.231
		Dyads	- .091	-.001	.006	-.481	.231
	5 Power	Allied	-1.721	-.013	.084	-.400	.160
		Dyads	- .114	-.007	.009	-.253	.064
		Defence	-1.464	-.011	.067	-.424	.180
		Dyads	- .138	-.001	.007	-.407	.166
1849-1890 (N=42)	4 Power	Allied	-1.058	-.014	.078	-.438	.191
		Dyads	- .094	-.007	.009	-.360	.130
		Defence	- .879	-.012	.061	-.461	.213
		Dyads	- .093	-.001	.006	-.477	.228
	5 Power	Allied	-1.669	-.009	.081	-.383	.147
		Dyads	- .112	-.001	.009	-.239	.057
		Defence	-1.426	-.008	.063	-.415	.172
		Dyads	- .137	-.001	.006	-.392	.153

Table XVII

(cont'd)

			Slope (b)	Intercept	Std.Error	r	r^2
1849-1893 (N=45)	4 Power	Allied	-1.103	-.012	.077	-.447	.199
		Dyads	- .096	-.001	.009	-.369	.136
		Defence	- .877	-.012	.059	-.462	.213
		Dyads	- .093	-.001	.006	-.481	.232
	5 Power	Allied	-1.705	-.006	.080	-.382	.146
		Dyads	- .114	.000	.008	-.242	.059
		Defence	-1.424	-.007	.060	-.414	.172
		Dyads	- .137	-.000	.006	-.391	.152
1880-1913 (N=34)	4 Power	Allied	.305	.018	.059	.105	.011
		Dyads	.017	.002	.009	-.037	.001
		Defence	.631	.020	.042	.290	.084
		Dyads	- .020	.003	.005	-.079	.006
	5 Power	Allied	- .001	.017	.059	-.000	.000
		Dyads	.001	.002	.009	.000	.000
		Defence	.675	.020	.044	.161	.026
		Dyads	- .017	.003	.005	-.035	.001
1886-1913 (N=29)	4 Power	Allied	.213	.017	.055	.080	.006
		Dyads	.013	.002	.009	.029	.001
		Defence	.363	.024	.038	.195	.038
		Dyads	- .035	.003	.004	-.173	.030
	5 Power	Allied	.269	.018	.054	.055	.003
		Dyads	.041	.002	.009	.051	.003
		Defence	.926	.024	.037	.273	.075
		Dyads	.018	.003	.004	.048	.002

and with Russia in the Reinsurance Treaty. The fall of Bismarck and the failure on the part of his successor to renew the Reinsurance Treaty (1889) is the third key event. Finally, the formation of the Franco-Russian alliance (1893) is the final event. With its formation, the bifurcation of the system is completed.

Table XVII reports the results from using the aforementioned four events as temporal break points. Regardless of the break employed, significant differences within each pair are found. However, no major differences are found when comparing the results across the test periods beginning in 1849. As expected, slightly stronger negative coefficients are found in the 1849-1879 period in comparison with the other periods beginning in 1849. More importantly, the findings as a whole differ little from the results from the period 1849-1870. Thus it would appear that not only is the 1899 break misspecified, but also the 1870 break is questionable.

Turning to the findings for the various periods concluding in 1913, positive levels of association between inequality and alliances are found in most cases. However, these levels of association are extremely weak in most cases. The strongest degree of support for the hypotheses is found in the period 1894-1913, and among the proportion of states in defence pacts in general. In sum, arguments which link state behavior to Balance of Power theory for the years leading up to World War One find only a small degree of support from this analysis.

In conclusion, evidence is found to support the existence of two temporal breaks; the first located in 1848 and the second located

within the final two decades of the Nineteenth century. In the second case, there is no clear evidence supporting one specific break point over another. At most, an arbitrary decision can be made in this regard. But, regardless of the decision, the merits of identifying such a break requires some degree of historical explanation. It is to this requirement that the subsequent discussion turns, not only for the specific case discussed here, but also for the various changes established in the relationship between the distribution and alliances.

6.3 HISTORICAL EXPLANATION AND WAR

The preceding statistical analysis provides little, if any, support for the hypothesis that distributional inequality is positively related to alliances. On the contrary, the evidence shows that the relationship, when present, between the distribution and alliances is a negative one. Alliances in general, and defence pacts in particular, are more prominent in the system when the distribution approximates equality. The strength of this relationship varies between the untransformed and transformed data, and across periods. In particular, the evidence points to a relatively strong relationship for the period beginning in 1849 and concluding in the early 1890s. Conversely, the period 1816-1848 consistently shows the absence of any relationship between the distribution and alliances. The evidence also indicates that the distribution, in the relevant cases, is only one factor in the explanation of alliances. Outside of the error encompassed by measurement, a full explanation of alliances, in the sense

of accounting for all the variance, would require the addition of several other independent variables.

It is not the purpose of this study to explore the importance of other variables, with one notable exception. The occurrence or expectation of war is a prominent explanation for alliance formation. Alliances, as agents of capability aggregation, enhance the ability of states to prosecute a war. Thus, war may account for some portion of alliance formation outside of the distribution and may affect the relationship itself. But before analyzing the impact of war, it is necessary to place the conflicting findings from the various temporal periods into historical context where war is shown to play a key explanatory role.

Why does one period (1848-1890s) exhibit consistently strong negative levels of association while the other periods exhibit either no relationship or a relatively weak one? Theoretically, the difference implies the presence of other factors which negates the distributional variable in decisions regarding alliances. Of course, this study provides no evidence to support such an assertion or to support the actual use of the distribution by elites at any point in time. It is not a study which examines directly the actual behavior of individual elites, except in the sense that each observation is the function of a discrete decision by an elite several steps removed. Nonetheless, the findings do suggest the presence of other factors which explain the temporal differences.

These factors relate to the existence of a set of beliefs held by elites across the system leading to changes in security related behavior of which alliances are a central component. These beliefs revolve around the utility of force as a legitimate means to ensure state survival. If force is perceived to have no positive payoffs for security and survival, the scope of behavior available for security purposes is limited and subsequent behavior altered. Alliances, normally integral components in security calculations related to the utility of force, are likely to exist for other purposes. Furthermore, the distribution as a variable in the security/force equation is likely to decline in behavioural relevance.

Jervis (1985), in his study on the conditions necessary for international cooperation, identifies the impact a major systemic war has on subsequent state behaviour and interaction. The costs engendered by such a war make states unwilling to resort to force shortly thereafter. Incentives to maintain good relations are high due to the positive bonds established between members of the victorious coalition and the continued fear of the defeated hegemon. The net result is an increased payoff for cooperation among states. After a period of time, however, the memories of the cost of war, positive bonds, and the fear of the hegemon fade. Cooperation is replaced by competition/conflict and the resurrection of force as a legitimate policy tool.

His conditions for cooperation, or more accurately muted competition.[113] are used to explain two concert periods; 1816-1854 and

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[113] Muted competition is probably a more accurate description of state relationships. The collision of interests occurs within a framework in which the ultimate arbiter, war, is not considered an option. It is not cooperation in the pure sense of states working

1918-1920.[114] The problem, as Jervis recognizes, is the different temporal duration of the two periods. He explains the limited duration of muted competition in the post World War One period by the withdrawal of the United States and Russia from the wartime coalition which reduced the pressure for Anglo-French cooperation. In the case of the post Napleonic period, the formal bonds of the anti-Napoleonic coalition collapse in 1823 and are succeeded by the creation of two alliance blocs representing the Eastern and Western powers respectively. Thus, continuance of positive bonds from the war appear to provide an explanation for only part of the so called Concert period.

While his argument provides a reasonable explanation for the years immediately after 1816, it is questionable for explaining the muted competition over the long term.[115] Yet, he does identify the key element which explains the era of muted competition in the first half of the Nineteenth Century, although relegating it to secondary status.

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towards a common set of goals. Historically, the various conflicts between states in Jervis's Concert period are identical to the areas of conflict which led to war after 1848. The key question, therefore, is why these conflicts produced war in one case, but not in the other.

[114] He also uses the period 1945-1946, which is beyond the temporal boundaries of this study, as another example of muted competition (p. 66). Its short duration is attributed to the division of Germany which removed a major incentive for cooperation between the United States and Soviet Russia, and the development of nuclear weapons which served to limit the danger of war. The absence of bipolarity, nuclear weapons, and a divided Germany in the earlier era (post 1919) necessitated cooperation to gain security. The failure to cooperate, according to Jervis, underlies the instability of the Interwar era.

[115] Jervis does indicate that the period of the Concert of Europe may have only lasted until 1822. The apparent centrality of positive bonds in the short term must be weighed against the exhaustion of state after a major war. Thus, both conditions are likely vital in the short term.

This element is the consensusal belief held across the system which linked war to revolution (Sked, 1979).[116] In varying degrees, the elites of Europe believed that war would cause revolution and revolution would cause war. This was the main lesson of the Revolutionary/ Napoleonic wars. Furthermore, the nature of war as experienced in those years was antiethical to the monarchical powers of Europe. As Howard (1976:94) states: "If military effectiveness on a Napoleonic scale depended on a revolutionary transformation of society as a whole, that was a price which the monarchs of the Restoration were not prepared to pay".[117]

War was not a viable option for elites because of its perceived negative effects on domestic stability. As a result, competition among states, particularly the Great Powers became muted. With a negative view of war, the salience of capabilities in the decision calculus declined because threats to the security of states no longer emanated from the external environment. In other words, shifts in the distribution, which generally indicated the probability of victory or defeat in war and thus security and survival, were of little relevance. The greatest threat came not from other states, per se, but from actions, internal and/or external, which could undermine a

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[116] Sked (p. 12-13) also argues that war weariness and territorial satiation on the part of the Great Powers also supported the absence of war. The notion of territorial satiation is also central to Craig and George's (1983) analysis of the differences between the post Napoleonic and post World War One period. However, one should not overlook the territorial disputes that were patched over at the Congress of Vienna which would lead to war four decades later. For a general discussion of the period see the series of articles presented in Sked (1979).

[117] The classic example of this problem is found in Craig's analysis of state-military relations in Prussia from 1816 to 1848 (Craig, 1954).

regime's existence by revolutionary forces. Alliances were motivated, therefore, for reasons outside the distribution and Balance of Power theory. It was monarchical solidarity against the revolutionary forces of Europe, as embodied in the Holy Alliance, and reactions to it which may provide a more adequate explanation for alliances and the absence of a relationship between the distribution and alliances uncovered in the preceding analysis.

After 1848 and the defeat of the revolutionary tide which swept Europe, the equating of liberalism with revolution was superseded by the equating of liberalism with nationalism (Langer, 1956; Taylor, 1956). Moreover, the defeat of the revolutions, as well as the subsequent Crimean conflict, proved that war could be restricted in scope and not lead to internal unrest and collapse (Bridge and Bullen, 1980). War, as a result, became a positive expression of nationalism and once again a legitimate tool for state policy. With the reemergence of war, the distribution of capabilities once again had salience. Alliances again were explicable in terms of the distribution, but, as the evidence points out, not in the direction of Balance of Power theory.

A similar case can be made for the Interwar period, where conflicting findings were uncovered in the data analysis. World War One had two revolutionary effects. First, it had resulted in the mobilization of the entire range of states resources and society which conflicted with the laissez-faire liberalism of pre 1914 Europe (see Carr, 1942:3-14). Second, the war had produced a revolutionary regime in Russia, as well as a series of abortive revolutions in Europe in gen-

eral. Thus, the legitimacy of war as a policy tool confronted a situation similar to the period following the Napoleonic wars. However, other factors unique to this period also undermined the utility of force, especially among the states opposed to Versailles in the first decade or so after the war. Germany lacked the capabilities to consider the use of force as a policy instrument, and its democratic government sought to legitimize itself from the forces of the left and right. The Soviet Union, fearful of an anti-Bolshevik crusade, was concerned with ameliorating threats to its existence and building its new order. Italy was also confronted with internal problems. The depression in 1929 also acted as an initial force against external elements in state policy. Only with German rearmament and the aggressive behavior of Italy in the mid 1930s were the conditions present for the re-emergence of war as a viable option. Even then, the internal component in terms of the public's willingness to accept war as a legitimate policy tool and the fear of Bolshevism hindered behavior in line with distributional considerations particularly for the West and Great Britain.[118]

Our final concern here is with the apparent temporal break in the 1890s. In the case of the period from 1890 to the outbreak of war in 1914, the preceding argument is of no value.[119] The case for this

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[118] The majority of the literature on British Foreign Policy, especially during the appeasement period stresses the influence of public opinion and the fear of Bolshevism as major impediments to action. With France following Britain's lead, as well as the fundamental left/right divisions in French society and politics, the ability of the west to follow 'Realpolitik' was sharply impaired. See Mommsen and Kettenacker (1983), Fuchser (1982), Jones (1975), and Gott (1967).

[119] An exception is the case of Russia after the disastrous war with Japan in 1904-05. The revolutionary outbreak in Russia may have

break finds support from several studies outside of the COW project (DeWitt, 1979; Choucri and North, 1975; Hinsley, 1973; and Rosecrance, 1963). Common to them is the belief that change was the function of movement away from peripheral or colonial issues and back to central security issues in Europe, and the rapid changes occurring in industrial development at the time.[120] Moreover, by the 1890s the rise of Germany may have been perceived by elites in preponderant terms. In this case, the weak evidence of a positive relationship for the 1890-1913 period would support the predictions made by Balance of Power theory.

However, certain factors weigh against this view. The findings are based on a small number of observations. Evidence exists of a potential collapse of the alliance system apparent in the contradictory links between Italy and the France and Russia respectively. Also, the other new alliance relationships of this period comprise the Balkan states (1912-1913), and the relationship between Britain and initially Portugal, and subsequently France, Spain, and Russia. In fact, the alliance policy of Britain may be a major factor in changing the sign of the coefficients. If so, then Britain may be the only state which actively follows the axioms of Balance of Power theory. It also pro-

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contributed to its unwillingness to use force for a short period of time, particularly during the Balkan crisis of 1908. However, Russia's retreat in this crisis can also be attributed to the lack of military preparedness and recovery from the war, as well as the failure of France to provide unequivocal support. Regardless, Russia is an exception which does not undermine the basic thread of the argument which focuses on states as a group. See Wohlforth (1987) and Sabrosky (1975).

[120] It should be noted that their arguments are based the existence of a break in 1870. Our findings provide little evidence to support this temporal break.

vides an additional reason for directly examining the balancer version

Table XVIII

Beta Coefficients with War as an Independent Dummy Variable

	Beta	T Ratio	Sig.
1849-1913			
4power - alliance	.201	1.116	.28
- all-Dyads	.145	.755	.46
- defence	.081	.458	.65
- defdyads	.054	.315	.76
5power - alliance	.083	.683	.50
- dyads	-.031	-.242	.81
- defence	.059	.478	.63
- defdyads	-.044	-.358	.73
1849-1890			
4power - alliances	.069	.482	.63
- all-Dyads	-.081	-.544	.59
- defence	.052	.365	.72
- defdyads	-.076	-.542	.59
5power - alliances	.106	.711	.48
- all-dyads	-.067	-.472	.67
- defence	.092	.624	.54
- defdyads	-.044	-.297	.77

as related to Great Britain in the next chapter.

The central argument regarding the different findings concerns the viability of war as a policy instrument and this viability as the key explanatory element in the relative importance of the distribution in

state security calculations over time. This argument leads to a final consideration of the independent effect of war on alliances. Table XVIII provides the beta coefficients of the test of war as an independent variable. The results only cover the relevant years of negative associations between the distribution and alliance measures.[121] In this analysis, years exhibiting war are coded as one and the remaining years are coded as zero. The results show no significant relationship between war and alliances, even though the majority of cases are positive in direction. The weak findings may be, in part, a function of the small number of years in which war occurred in the system. Nonetheless,[122] it appears that war as a legitimate tool of state policy throughout the system is central to the utility of the distributional variable, but war as a phenomenon does not override the negative relationship between distributional inequality and the prominence of alliances.

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[121] The relationship was also tested using the untransformed data sets and the entire system. No evidence was found to support war as a significant independent explanation for alliances.

[122] Naturally, this does not mean that elites did not seek alliances in a situation of war or its expectation. France in 1870 provides a clear example of the search for allys (Taylor, 1954). However, for a variety of reasons, France was unsuccessful. One of these reason may relate to the distribution's effect on elite alliance decisions.

6.4 POLARIZATION

The final hypothesis tested in this thesis posits a direct relationship between distributional inequality and polarization. The concept of polarization refers to the type of pattern produced by alliance linkages at the system level. A highly polarized pattern or system is characterized by the presence of two clusters of states containing formal alliance linkages among all states within each cluster and the absence of any inter-cluster linkages. This type of pattern is expected at high levels of distributional inequality. Before examining this hypothesis, it is necessary to query whether previous findings should alter expectations. Specifically, does the evidence supporting a negative relationship between distributional inequality and the presence of alliances dictate an a priori reformulation of the polarization hypothesis?

The simple answer is no. The previous tests, and hypotheses, employed measures related to proportions of states and dyads in alliances. In contrast, the dependent variable here is concerned with the pattern produced by the alliances. Regardless of the proportion of states/dyads in alliances, this pattern may fluctuate in response to the distribution. The relationship identified earlier may only indicate that the number of states/dyads in alliance declines with rising inequality, when the distribution is temporally relevant. But, this decline may be partially due to decisions by some states to abstain from alliance relationships with the net result being the appearance of a pattern in which the remaining states in alliances are polarized into two groups. Conversely, large numbers of states/dyads in alli-

ances at low levels of inequality may produce a pattern ranging from several clusters to a single cluster in which states are tied together by second order linkages. In effect, the polarization hypothesis can not be rejected on the basis of the earlier findings which employ dis-

Table XIX

State Abbreviations

Great Powers

AU-Austria(Hungary)	FR-France
GE-Germany	GB-Great Britain
IT-Italy(1920-1939)	PR-Prussia
RU-Russia	

Lesser Powers

alb-Albania	aus-Austria
bad-Baden	bav-Bavaria
bel-Belgium	bul-Bulgaria
cze-Czechoslovakia	est-Estonia
fin-Finland	gre-Greece
hun-Hungary	it-Italy
lat-Latvia	lit-Lithuania
mod-Modena	par-Parma
pol-Poland	por-Portugal
sar-Sardinia	ser-Serbia
sp-Spain	tuc-Tuscany
tur-Turkey	wur-Wurttemborg
yug-Yugoslavia	

tinct measures of the dependent variable.

The examination of the polarization hypothesis consists of a visual comparison of shifts on the distribution indices over time with sche-

matic representations of alliance patterns. While this procedure lacks the precision of statistical analysis for summarizing relationships, it does provide a graphic picture of not only specific comparisons in time, but also across temporal periods. The presentation is divided into seven periods. The schematic diagrams of alliance patterns are sub-divided, as necessary, to capture major changes within each period. The only exception is for the three Figures (6.12 to 6.14) representing the Interwar period. On each of these Figures, one diagram is presented containing all alliance relationships and a second is based on defence and entente relationships only. The proliferation of Non-Aggression relationships during this period as a whole necessitated the division to ensure an adequate portrayal of the underlying patterns. In all cases, the various divisions are undertaken either for purposes of clarity or historical accuracy.

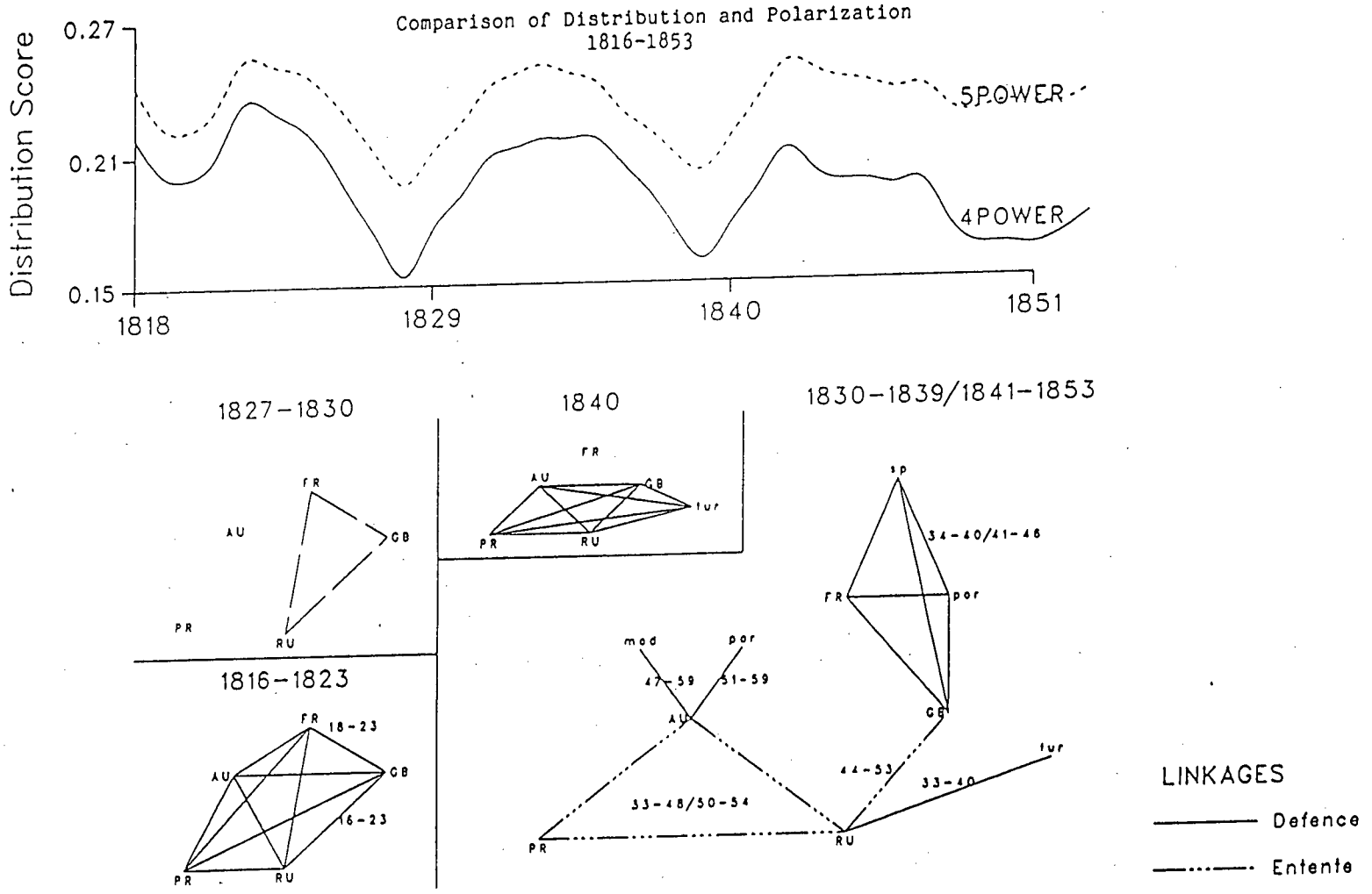
Four additional notes are required to facilitate interpretation. The distribution scores must be examined not only with reference to movement within each period, but also relative to the preceding and succeeding periods. The Great Powers are identified by capital letters on the schematic diagrams. The legend for state abbreviations is provided in Table XIX. Also, state positions on the schematic diagrams are held constant throughout all Figures, with the exception of certain minor powers whose positions change for purposes of clarity. Finally, the temporal duration of each linkage is provided for most cases. No dates are included when a linkage is formed prior to the period under examination and continues beyond it. Single dates indicate the termination date of a linkage formed in an earlier period.

Attention to these dates are vital to ensure that the apparent pattern produced by the diagram is not misinterpreted.

The examination begins with the period 1816-1853 (Figure 6.8). Four diagrams of alliance patterns are presented. Two cases reveal a high level of formal bonding among the Great Powers; 1816-1823, and 1840. The former represents the continuance of the anti-Napoleonic alliance, along with the addition of Bourbon France in 1818. The latter concerns a general agreement among the Great Powers, with the notable exception of France, over the internal threat to the Ottoman Empire. The third case (1827-1830) represents the limited entente between three of the Great Powers. The final diagram (1833-1840;1841-1853) provides the only evidence of polarization. Two exclusive clusters of Great Powers are present until 1844. At this time, polarization declines with the appearance of an inter-cluster link and dissolves largely with the termination of the Anglo-French cluster in 1846.

In comparing these patterns with changes on the distribution, some evidence is available to support the hypothesis. The formation of the two clusters, in 1833 and 1834 respectively, occurs at a relative high point of distributional inequality. This high level of polarization continues despite a major decline in the degree of inequality. The decline in system polarization, beginning in 1844, occurs at a point of relative stability on the distribution, although the presence of one cluster continues for the remaining years of the period. Finally, the lack of polarization in earlier years, even though inequality is high, may be attributed to aforementioned Jervis argument on the

FIGURE 6.8


Comparison of Distribution and Polarization
1816-1853
Distribution Score
0.27
0.21
0.15
1818
1829
1840
1851
5POWER
4POWER
1827-1830
FR
AU
GB
PR
RU
1840
FR
AU
GB
tur
PR
RU
1830-1839/1841-1853
sp
34-40/41-46
FR
por
GB
mod
por
47-59
51-59
AU
44-53
33-40
tur
33-48/50-54
PR
RU
1816-1823
FR
18-23
AU
GB
16-23
PR
RU
LINKAGES
Defence
Entente

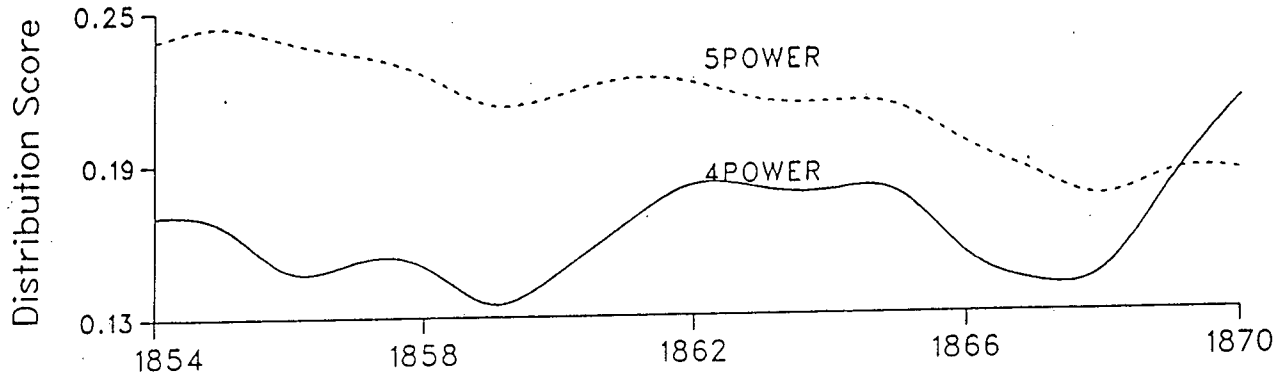
effect of systemic war on behavior. In sum, support for the hypothesis resides primarily in the formation aspect of the exclusive clusters. The duration of this relatively high level of polarization can be attributed to a lag based on a degree of uncertainty about the direction of the distribution over the long term. If this is assumed, greater support for the hypothesis is warranted.

The next period (1854-1870) exhibits a relationship not between inequality and polarization, but between polarization and war (Figure 6.9). The period includes four major wars; Crimea, Italian Unification, Austro-Prussian, and Franco-Prussian. It is also the era of the offensive alliance (Hinsley, 1967). The Crimean era shows Russia isolated against the remaining Great Powers. During the war of Italian Unification, Austria with its minor allies is confronted by the Franco-Sardinian relationship. In 1866 and 1870, Austria and France respectively face Prussia and its minor German allies. In the latter three cases, the remaining Great Powers remain largely on the sidelines.

Taken as a whole, alliance patterns for the period show only a slight degree of polarization. At no time does one find significant mutually exclusive clusters, unless one considers Russian isolation as equivalent to a cluster. Interestingly, these patterns occur at a relatively high level of inequality within the period. However, this level of inequality is low relative to the period examined here. In a sense, one should not expect any large degree of polarization because of the long term pattern of the distribution.

FIGURE 6.9

Comparison of Distribution and Polarization
1854-1870



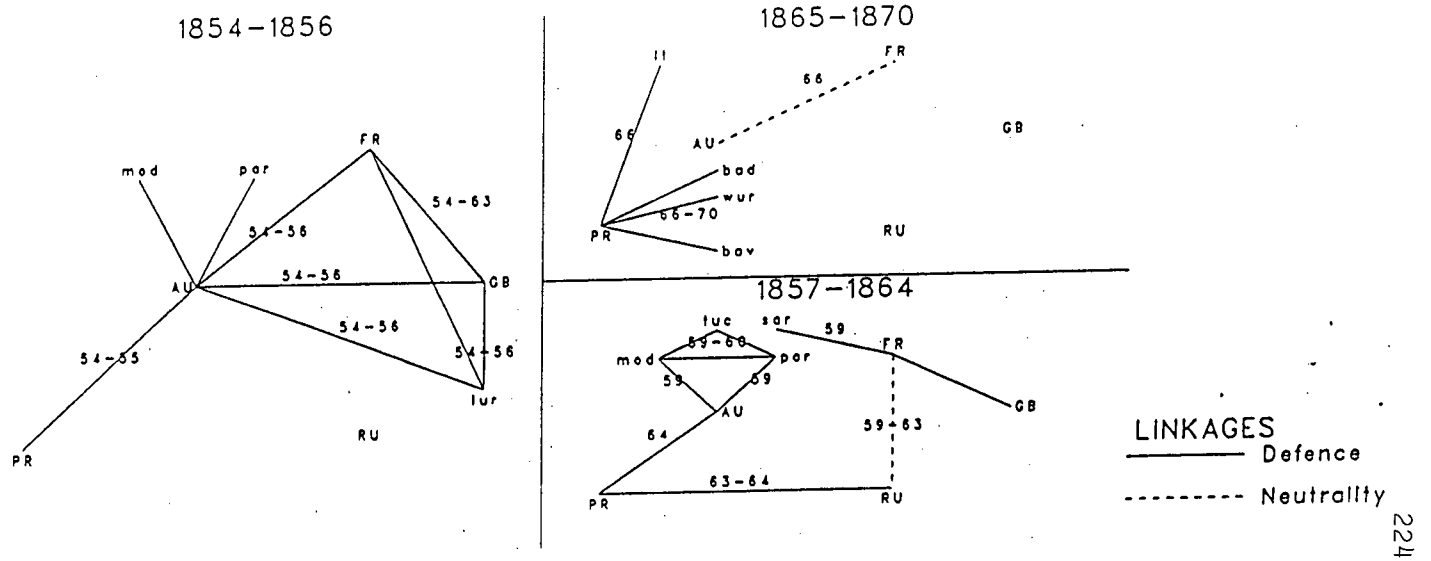


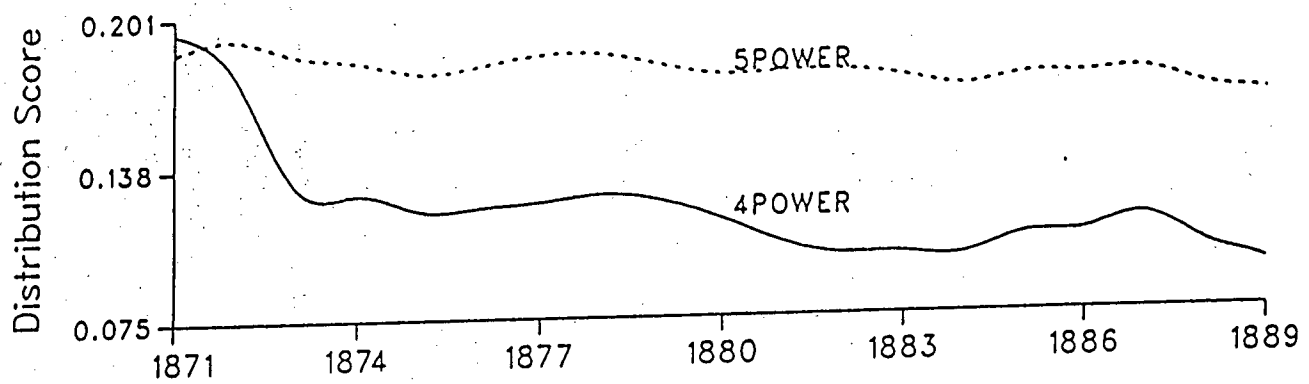
Figure 6.10 covers the era generally described in history as the Bismarckian period. During this period, the distribution exhibits a gradual decline towards greater equality. As predicted by the hypothesis, little evidence of polarization is present. The first part of the period, 1871-1878, shows only one cluster of states; the Three Emperors League consisting of Germany, Austro-Hungary and Russia. The second part, 1879-1890, provides a graphic representation of the diplomatic isolation of France, the presence of alliance linkages among the remaining Great Powers, and the emergence of the first permanent defence pact. Finally, the final decade of this period shows the appearance of the neutrality pact as a major type of alliance.

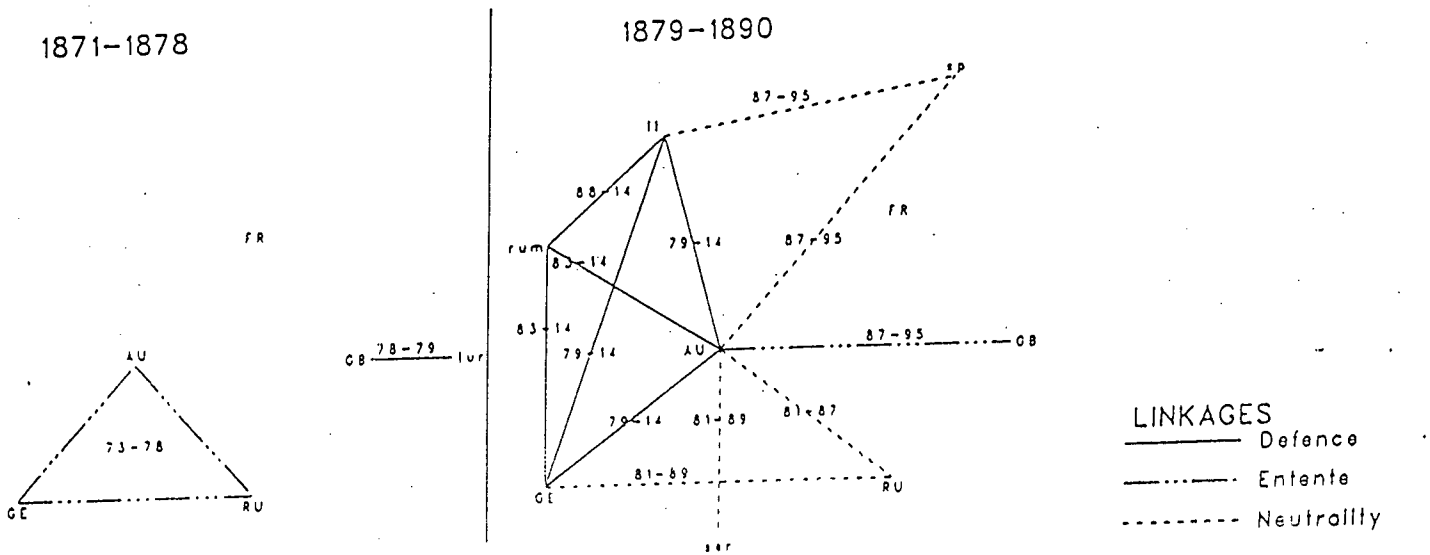
The pattern of the 1880s changes dramatically in the 1890s (Figure 6.11). A second cluster begins to appear with the Franco-Russian entente in 1891, followed by its formalization into a defence pact in 1894. At the same time, linkages between Russia and its earlier allies disappear, with the notable exception of a short lived neutrality relationship with Austro-Hungary (1897-1908). Other changes of significance during this decade include the termination of British and Spanish ties to the various members of the Triple alliance. Finally, Britain enters into a formal defence relationship with Portugal, its traditional continental ally, in 1899.

Interestingly, the appearance of a second alliance cluster occurs at the lowest point on the indicies. Only British alliance behavior, in completing the extent of polarization prior to World War One, is consistent with the hypothesis. It concludes an entente with France

FIGURE 6.10

Comparison of Distribution and Polarization
1871-1890





(1904) shortly after a large increase in the level of inequality. Following a slight decline on the index, Britain enters into an entente with Russia and subsequently formalizes its relationship with France. At the same time, Spain also join this cluster through an entente relationship with both France and Britain. However, rigid polarization as envisioned in the definition does not result. Two inter-cluster linkages, centered on Italy, appear at the turn of the century and continue for the remainder of the period.

Due to the outbreak of war in 1914, one can only speculate on the changes in alliance linkages and the direction of the distribution index. Given the changes which did occur in the first years of the war, it is possible that rigid polarization would have occurred with the defection of Italy and Rumania to the Triple Entente. Conversely, Russian industrialization could have altered the direction of the index towards greater equality. In this case, a significant change in the pattern of alliances away from polarization may have resulted.[123]

Putting the above features in perspective, the highest degree of inequality is still significantly less than levels attained in the first half of the Nineteenth century. However, it is unlikely that these earlier levels are relevant in the comparative sense. Taking 1871 as a reasonable starting point, a clear evolution in alliance

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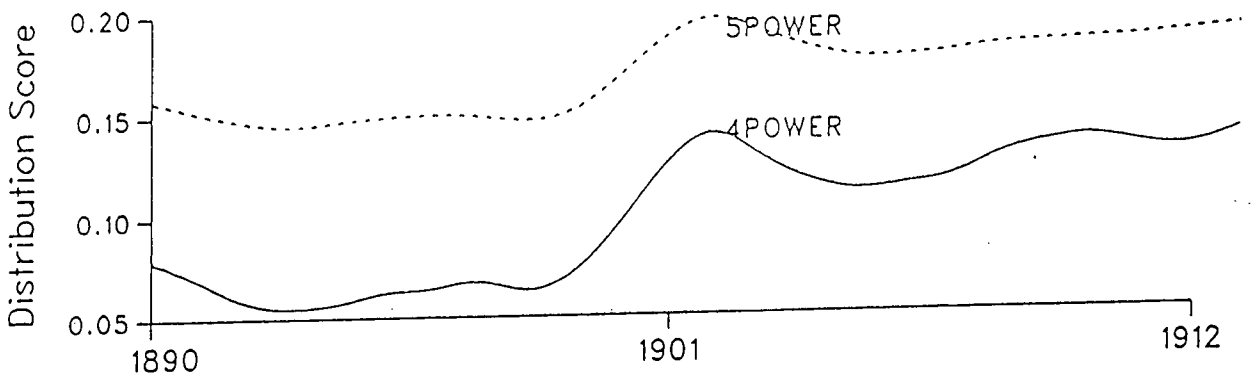
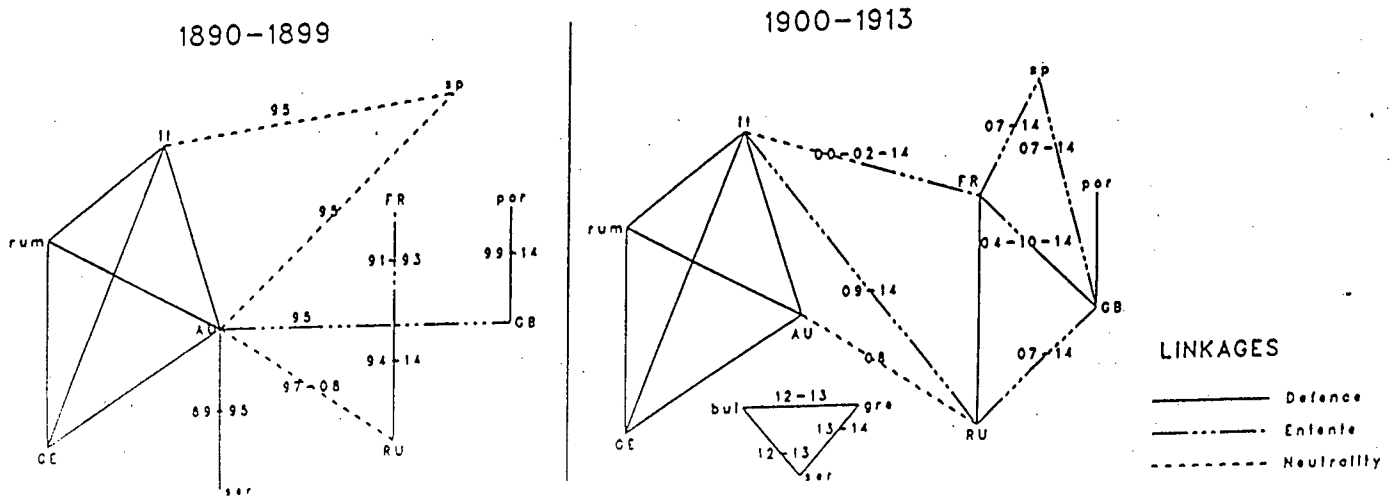
[123] It could be argued that the direction on both variables can be estimated from the Interwar period, after German rearmament. However, such an estimation is likely to be highly misleading because it assumes that the war had no major lasting effect on behavior. As shown in the discussion below, features of the period partially replicate patterns found for the period 1871-1914 taken as a whole.

FIGURE 6.11

Comparison of Distribution and Polarization
1890-1913



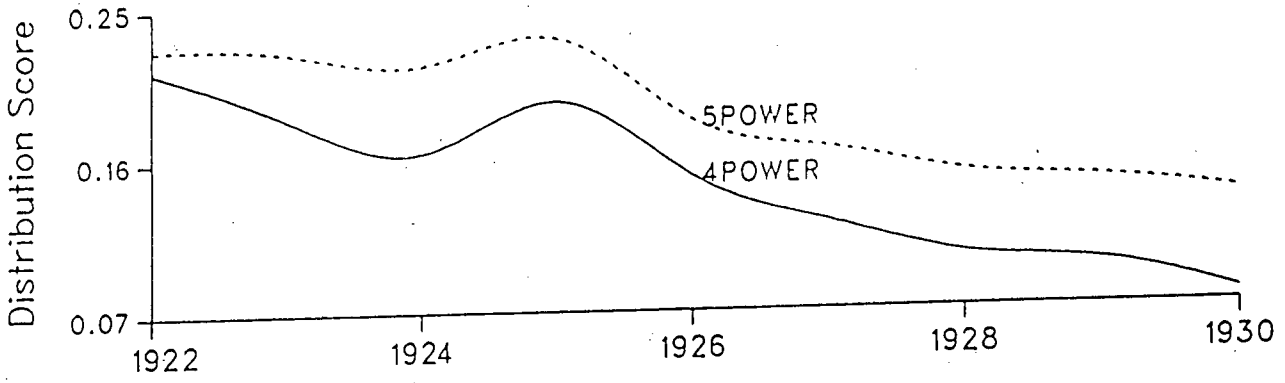


patterns is evident through an era in which the distribution index roughly follows a U style pattern. Contrary to the hypothesis, polarization begins to appear at the low point of the curve. It is possible that the beginning of polarization is a function of an expectation among certain elites on the subsequent direction of the index. If so, then some support for the hypothesis is present. It is also clear that the alliance behavior of Britain, as manifested at the turn of the century, is consistent with Balance of Power theory and completes the movement towards greater polarization. Finally, the expectation of war as an explanation for pattern change gains little support. To argue otherwise is simply to posit that war is possible at any time in an anarchical system. It is possible that Britain's adherence to the Franco-Russian cluster may relate to increasing expectations of war between the two alliance clusters. However, this argument must be weighed against traditional British concerns regarding the maintenance of the states system in Europe as a pre-requisite of its security.

Turning to the Interwar period, the first decade reveals a sharp decline on the index (Figure 6.12). The Four and Five Power scores decline .137 and .091 respectively. Alliance patterns show the bulk of defence pacts forming at the higher levels of inequality. Non-Aggression relationships appear as the index declines. A slight degree of polarization is present. France represents the heart of a single cluster of states consisting of its immediate and secondary allies in Central and Eastern Europe. Germany and Russia are weakly linked through an initial entente, followed by a Non-Aggression pact, but

FIGURE 6.12

Comparison of Distribution and Polarization
1920-1930



1920-1929

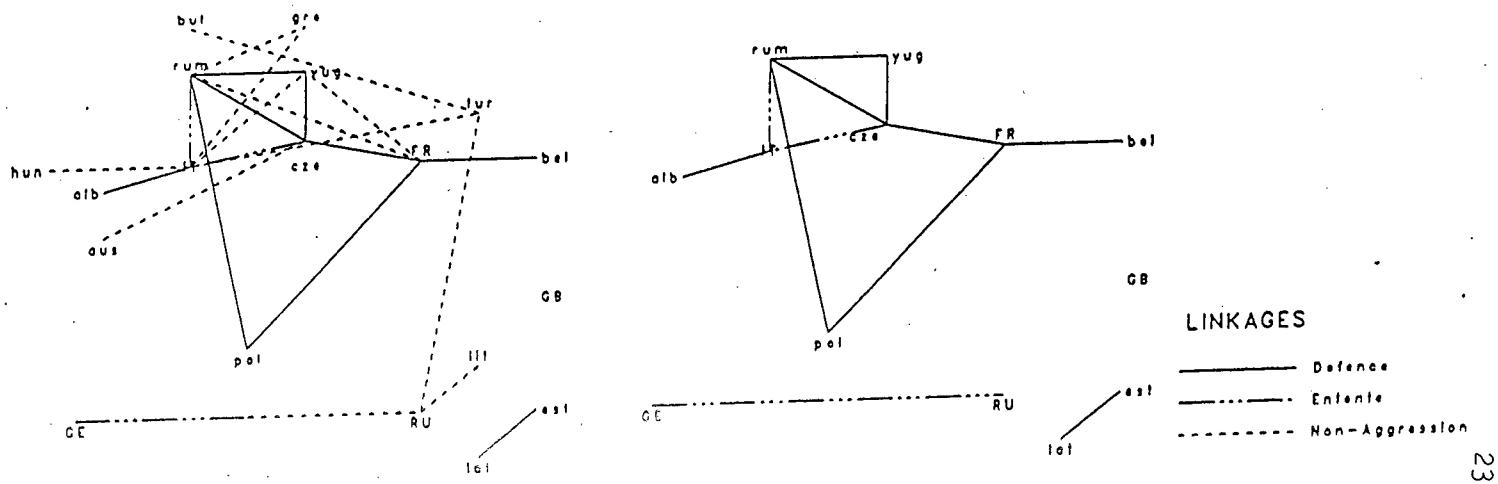
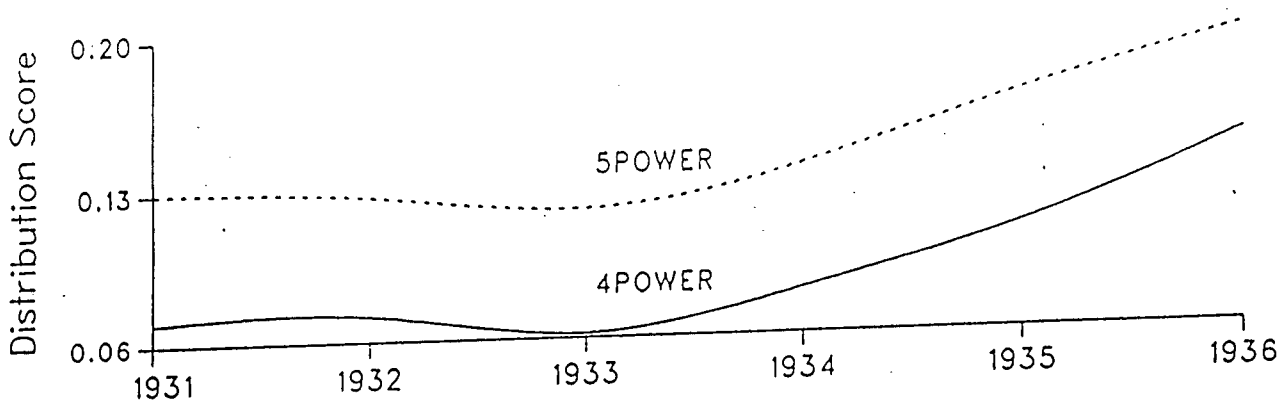
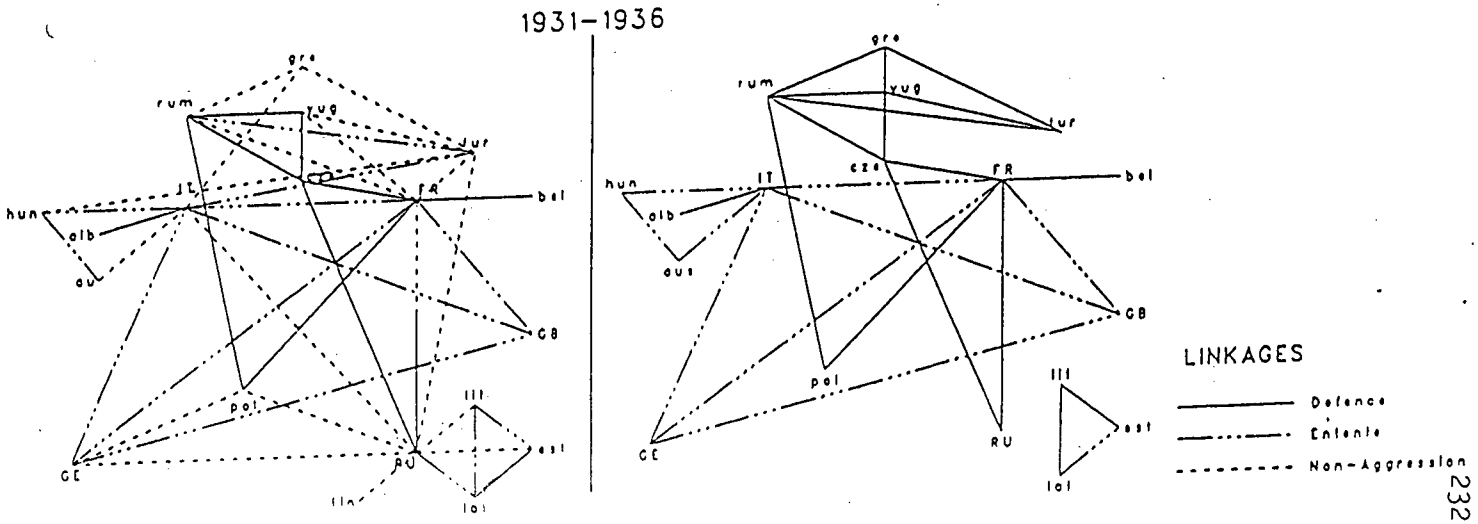


FIGURE 6.13

Comparison of Distribution and Polarization
1931-1936





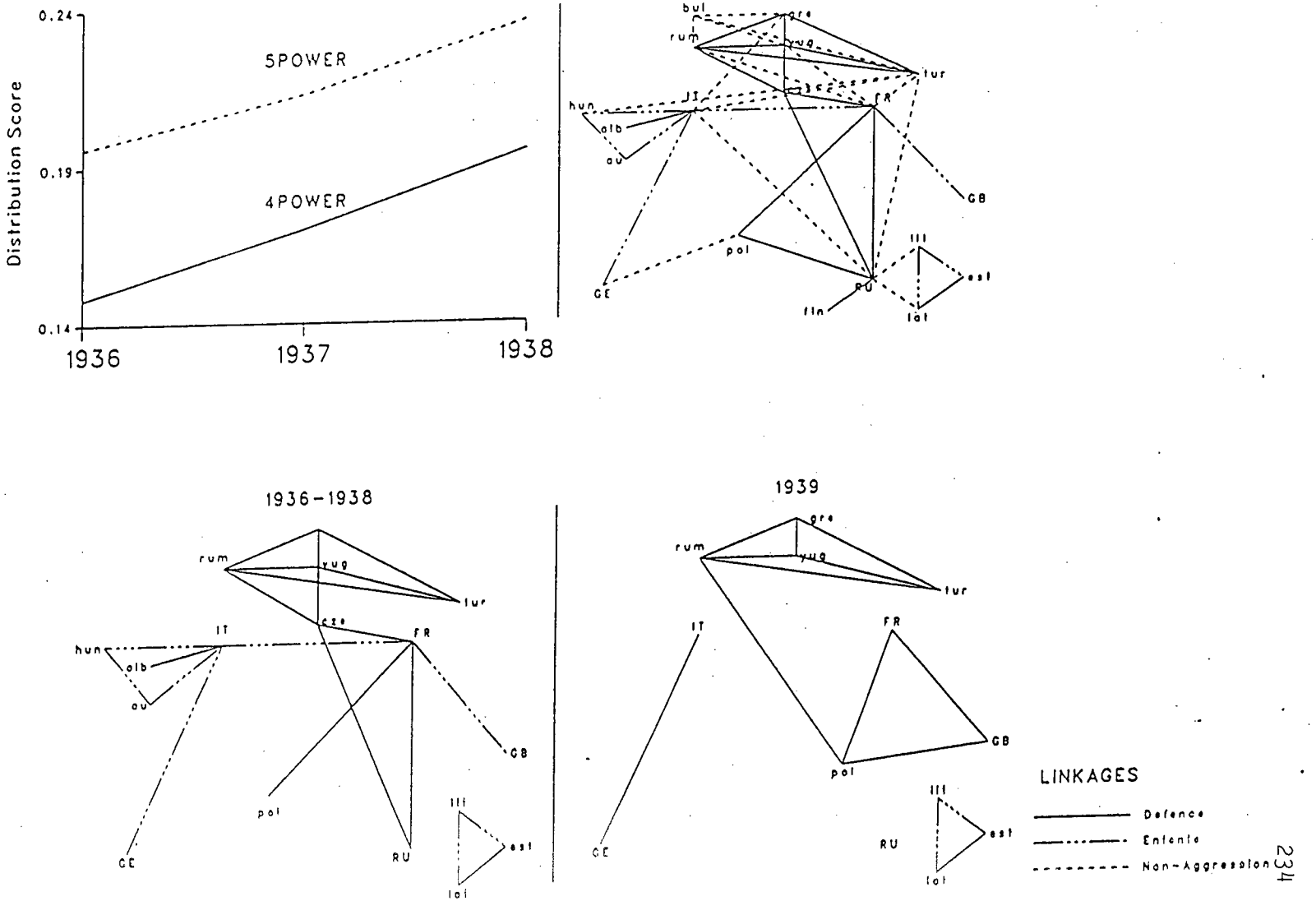
is terminated. However, Russia defects from the French cluster following the Munich episode. Given the secret protocol of the Russo-German Non-Aggression pact, which serves to distinguish it from other Non-aggression Pacts of the period, the system is fully polarized in late 1939. In this case, one must attribute polarization to the expectation of war. In fact, the expectation of war appears to be the dominant factor in explaining the changes which occur from 1936 to 1939.

Taking the period as a whole, the pattern resembles the one found for the period 1871-1914. Both indices follow a U shaped pattern. A defeated state, Germany in the Interwar period and France in the 1871-1914 period, is initially isolated and confronted by an overwhelming cluster of states in alliance. This occurs at lower levels of inequality. Both break out of isolation to participate in an opposing cluster, although France does so at a low point, whereas Germany does so at a high point on the indices. Finally, Great Britain, largely aloof from alliance relationships for the bulk of both periods, moves into first an entente, followed by a defence relationship with one of the clusters, thereby completing the extent of system polarization.

In contrast, the years after the Napoleonic era follow a different path. France, initially isolated, becomes a member of the dominant cluster. Fluctuations on the indices have little initial effect on alliance patterns in the system. Polarization appears at a high level of inequality, but continues through a significant decline. The

FIGURE 6.14

Comparison of Distribution and Alliance Patterns
1936-1939



breakdown of polarization appears at a point when the indices are relatively stable. Finally, alliance patterns in the 1850s and 60s appear to be a function of a series of limited wars which swept the system.

In sum, the above evidence provides further support for a significant change in the constituent nature of International Politics during the midpoint of the Nineteenth Century. As argued earlier, this change may be a function of the utility of war as an instrument of state policy. If this is correct, one can conclude that evidence regarding the relationship between the distribution and polarization is likely to be contradictory. The findings for the first part of the Nineteenth Century should be different from other periods.

Treating the remaining years as part of a single period, one can not conclusively conclude that polarization is a direct function of high levels of distributional inequality. This relationship is confounded by the problem of war, its occurrence and/or expectation. As expected, war is preceded by the strongest indications of polarization. At the same time, both of the systemic wars are preceded by ever increasing levels of distributional inequality. Perhaps most importantly, evidence in this discussion appears to support the unique behavior of Britain as the balancer. It completes the degree of polarization at points when inequality is increasing significantly. As such, is is necessary to examine this evidence in a more substantive manner for empirical and theoretical purposes.

Chapter VII

THE CASE FOR THE BALANCER VERSION

Contrary to manual version of Balance of Power theory, empirical evidence previous chapter lends support to a negative relationship between distributional inequality and alliances, given temporal considerations outlined previously. At the same time, analysis of this evidence points towards the possibility that a single actor, Great Britain, may behave according to the properties of the semi-automatic or balancer version. It is the purpose of this chapter to test this version in terms of British alliance behavior. Recall that the semi-automatic version of Balance of Power theory posits that balances, defined as equilibrium in the distribution, are the product of the behavior of a single actor: the balancer (Claude, 1962). This actor intervenes to restore relative equality in a situation where another state, because of its capability superiority relative to all others, threatens to attain hegemony in the system. The means by which the balancer restores equality is primarily through alliances with one or several weaker powers.

A state must meet two necessary conditions to play the role of the balancer. These conditions are fulfilled, if not derived from, the historical case of Great Britain. First, the balancer must be isolated in the geographic sense from the other actors in the 'system'.[124]

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[124] Isolation refers to the presence of the English Channel separating Great Britain from the continent. Other geographic impediments, such as mountains and large rivers, could also provide some degree

The result of this isolation, or insular status, is the absence of the immediate threat posed by a physically adjacent state. To achieve this relatively unique security condition, the insular state must also have no territorial possessions or goals on the major continental land mass.[125] Second, the balancer must be not only a Great Power, but also a Power which ranks at or near the top of the hierarchy of Great Powers. This ranking, and the capabilities which underlie it, enables the balancer to affect significantly the distribution through alliances with other Great Powers.

Conceptually, the net result is a distinct security condition for the balancer in comparison to continental powers, which produces a merger of its self-interest with collective or system maintenance interests. Returning to the uncertainty element attached to the general debate on the influence of the distribution on behavior, equality between two physically adjacent states provides either with a rela-

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of insular status. However, the costs these entail are not of the same magnitude as the Channel. Rivers are readily bridged and mountains can be crossed through key passes or flanked. Finally, distance, as in the case of Russia, also can be treated as an impediment. But, its benefit is offset by the easy invasion routes into Russia and the central importance of the European part of Russia. Again, distance is not in the same class as the English Channel. Whether technology has overcome the Channel is part of the discussion in the subsequent concluding chapter.

[125] Great Britain contradicts this condition to some degree. In the Eighteenth Century, the ruling monarchy also possessed the German state of Hanover. Great Britain also controls Gibraltar which sits astride the European and African land masses. Nonetheless, with Britain's defeat in the Hundred Years War and its relinquishing of all claims to the French crown, Britain lacked any major territorial ambitions on the continent. It did, however, follow a policy of promoting independence for the lowlands across the channel. This policy is not inconsistent with the above assertion. Threats to the independence of these countries, Belgium and the Netherlands, coincide with the presence of a system preponderant (eg. Spain,France and Germany in the past). The classical historical analysis continues to be Dehio (1955).

tively equal chance of victory or defeat in a situation of war. But, equality between an insular and continental state does not produce an equal chance of victory. There exists a bias in favor of the defender. In a symmetric sense, either state must have greater military resources to overcome the geographic impediment.

All potential threats to the security of the insular state, regardless of the particular continental actor, confront the added cost entailed by geography. As long as the continent remains divided among competing and relatively equal Powers, the security of the insular state is not threatened. In contrast, equality among the continental Powers is likely to undermine their individual security. It produces a situation whereby the equal chance of victory/defeat creates an positive payoff to the state that strikes first. Going first increases the odds of victory. Assuming that this impetus to strike first is perceived by all, the result is a constant high level of fear, tension, and insecurity among equal continental Powers.

Equality among the continental Powers is their least optimal level of security. But, it is the optimal level for the insular state. Only if the continental states unite in a coalition excluding the insular state, a highly improbable scenario given the conflicts which naturally arise among them out of shared borders, or a single Power rises to a preponderant status on the continent does the security of the insular Power decline. With the rise of a preponderant, which by definition is likely to have the capabilities to overcome the geographic impediment, the security of the insular state is threatened. At the same time, the preponderant has the capabilities to threaten

the existence of the other continental states. This ability to threaten both the insular state and the other continental states produces the merger between the former's self-interest and the collective interests of the members of the system as a whole: the maintenance of the state system.

In response to the emergence of a preponderant, the insular Power seeks an alliance with the other Great Powers on the continent. In so doing, it seeks to balance the strength of the preponderant by combining its capabilities with the capabilities of other Great Powers. But, this response reduces the security of the strongest Power. Whereas the strength of the preponderant enhances its security relative to its continental neighbours, because the odds of victory in war are in its favor, the entry of the insular Power results in a decline in the preponderant's security. The security of preponderance is replaced by the insecurity of equality produced by the alliance between the insular Power and another continental Power(s). In a deterministic manner, the preponderant is pushed towards eliminating, either through threats or force, any potential or existing alliance partners of the insular Power.

This clash between the preponderant and the insular Power is the reason for the merger of the latter's self-interest with system maintenance. In gaining allies on the continent, the insular Power is providing greater assurances that the system will not be transformed, even though the possibility of such a transformation is, in part, the function of the existence of an insular Power. In preserving and enhancing its security, which is at the root of its behavior, the

insular Power is also preserving the state system. But in so doing, it is also attempts to initiate a return to a situation which produces insecurity among the continental powers.[126]

In relation to the continental Powers, equality produces insecurity. The equal chance of victory/defeat resulting from equality among dyads creates the atmosphere of uncertainty and fear which leads them towards alliances. Alliances are sought as a means to create greater certainty and to increase capabilities through aggregation with an ally. While the actual choice of an alliance partner is determined by a welter of variables, the underlying motive is security related and distributionally based. At levels of inequality, which indicates the presence of a preponderant, alliances among continental states/Powers may have less utility in the security sense. For some states, their weakness relative to the strongest Power is not likely to improve through an alliance with another weak state. Moreover, such attempts may provoke the preponderant into direct action. The certainty, produced by inequality, may provide greater security for all. The strongest has no basis for fear because of its superiority. The weak, while at the relative mercy of the strong, is moved towards more accommodating behavior to avoid any confrontation.[127]

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[126] The dilemma may provide an additional explanation for war which goes beyond value-laden assessments related to which state is responsible, which dominated the post World War One era. The contradictory security goals of the preponderant and insular Power leads to a clash of arms. This dilemma is addressed in the subsequent concluding chapter.

[127] This argument draws partially from the Preponderance of Power or Power Transition theorists (Organski, 1968; Organski and Kugler, 1980). It should be noted that their work does not consider alliancs, only war as the dependent variable.

However, this situation brings the balancer into play. Its search for allies is successful because of its significant capabilities. Weak continental Powers are willing allies because such an alliance enables them to prosecute their interests more readily. They are willing to sacrifice the relative safety of weakness for the insecurity of equality produced by their alliance behavior. In effect, the fear produced by equality is preferable to trusting one's security to the good will of others. In this sense, the second assumption of Balance of Power theory remains germane to all states.

The balancer is always sought as an ally, but is only available and willing when the distribution indicates the appearance of a system preponderant. This basic assertion is simply a reformulation of the semi-automatic version of Balance of Power theory with reference to earlier findings regarding alliances. A simple hypothesis is available for testing this assertion:

H4: There is a direct/positive relationship between distributional inequality and the presence of the balancer (Great Britain) in alliances with continental states.

In testing this relationship, certain changes are made in variable construction and statistical procedure. First, the independent variable, the distribution of capabilities, is based only on the capabilities of the four traditional continental Powers. The balancer's (Great Britain) prime concern is with the distribution on the continent which provides an indication of the presence of a preponderant. Thus, its own capabilities would be ignored. The specific indicators

and formula used in calculating the continental distribution are identical to earlier procedures outlined in Chapter Four. The resulting distribution for the system is provided in Figure 7.1. Second, the dependent variable becomes categorical. Years in which Britain participates in a continental alliance are coded as 1. All other years are coded as 0. In addition, the dependent variable is manipulated to account separately for years in/out of defence pacts, Great Power alliances, and Great Power defence pacts. These manipulations permit a more detailed analysis of the relationship hypothesized above.

Third, the statistical procedure entitled Probit is used to summarize the relationship between the variables. This procedure or model is necessary because of the constraints placed on linear regression by a 1/0 dichotomous dependent variable (Aldrich and Nelson, 1984:24-26). Probit produces estimates highly similar to regression. It provides an estimated coefficient which is similar to the slope (b) of regression. Several peusdo r^2 are also available from the procedure. While their accuracy is questioned, they do provide a useful summary statistic which has interpretive value. The Cragg-Uhler r^2 statistic is employed in this regard. Finally, a significance test, the log-likelihood ratio, is also reported. This test is similar to the chi-square (x^2) statistic, and can be interpreted as such.

The results for the various tests are presented in a manner similar to the previous chapter. First, the results obtained by using the untransformed data are provided for the system as a whole, and by the various temporal periods. This presentation is repeated on the transformed data after the removal of autocorrelation. An ARIMA (1,1,0)

Figure 7.1
Distribution Scores for Continental Powers
1816–1938

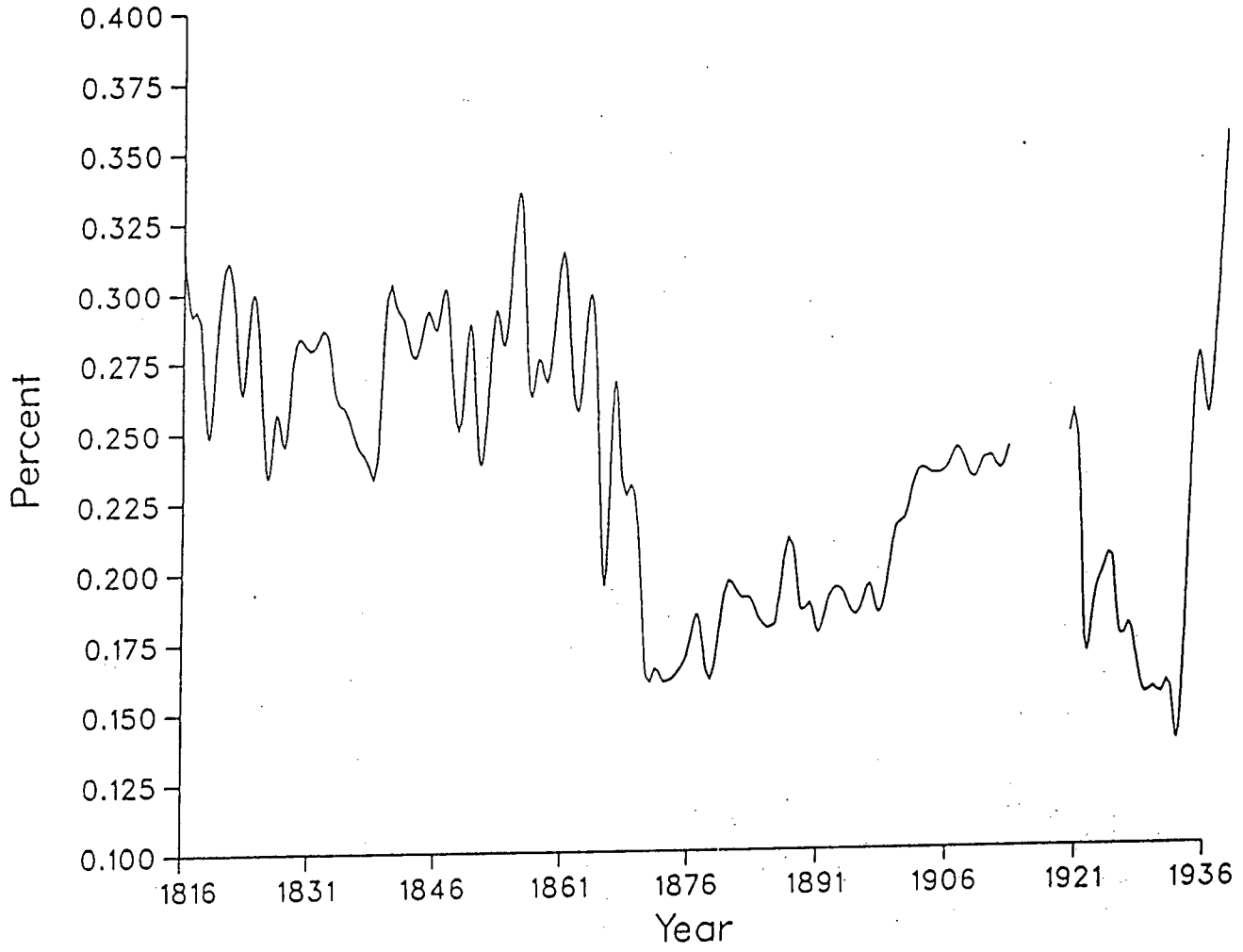

Table XX

Auto-Regressive Parameter for the Independent Variable

	Continental (1,1,0)
Autoregressive	-.43
Chi-Square (x^2)	4.57
Significance	.33

model provides the best fit for the independent variable (Table XX). As noted in the earlier discussion on ARIMA models, this model, containing a positive first order and a negative second order function is intuitively plausible for a capability based index. However, the dependent variable is not transformed. To do so would simply alter the nature of the measure and thereby undermine the value of the analysis. While the net result does leave some degree of auto-correlation in the analysis, it is preferable to an atheoretical solution to the problem.

The results for the system as a whole provide support the hypothesis (Table XXI). In all cases, a significant positive relationship is found between inequality and British alliance participation. The strongest relationship is present in the case of Great Power defence pact years (23.81). The remaining three cases show little difference

Table XXI

Probit Results Employing the Untransformed Data
1816-1939

	Estimated coefficient	Log Likelihood	Sig. (1 d.f.)	Cragg-Uhler r^2
Alliances	13.14	24.16	.001	.253
Defence	12.32	22.83	.001	.240
G.P. Alliances	14.99	32.11	.001	.320
G.P. Defence	23.81	45.77	.001	.469

in the strength of the coefficients. They range from 12.32 for defence pact to 14.99 for Great Power alliance participation. In terms of variance explained, the values range from ..240 to .469, suggesting a fairly robust relationship.

Significant positive relationships are also found in the various temporal periods, with one notable exception (Table XXII). In the 1816-1848 period, no relationship is found when employing either alliance case, and only weak insignificant ones are produced in the other cases. cases.[128] Elsewhere, Great Power defence pact years generally exhibit the strongest coefficients. They range from a low of 20.33 (1890-1938) to a high of 35.37 (1849-1889). Interestingly, these two extremes exist in the two periods used to test the Inter-Century break

[128] All of Britain's alliances were with Great Powers during this period. Thus, the Coefficients are identical for both alliance and defence pact cases.

Table XXII

Probit Results, Untransformed Data by Temporal Periods

	Estimated coefficient	Log Likelihood	Sig. (1 d.f.)	Cragg-Uhler r^2
1816-1848 (n=33)				
Alliances	.13	.00	.95	.000
Defence	4.51	.19	.50	.007
G.P. Alliance	.13	.00	.95	.000
G.P. Defence	4.51	.19	.50	.007
1849-1938 (n=84)				
Alliances	14.07	18.72	.001	.267
Defence	14.21	18.43	.001	.275
G.P. Alliance	16.22	24.00	.001	.333
G.P. Defence	27.24	31.36	.001	.539
1849-1913 (n=65)				
Alliances	12.22	9.92	.001	.191
Defence	14.45	13.71	.001	.252
G.P. Alliance	15.63	15.53	.001	.284
G.P. Defence	28.70	26.28	.001	.540
1816-1889 (n=74)				
Alliances	13.11	15.71	.001	.257
Defence	13.47	15.18	.001	.250
G.P. Alliance	17.39	24.12	.001	.372
G.P. Defence	22.21	26.83	.001	.414
1849-1889 (n=41)				
Alliances	12.92	9.77	.001	.285
Defence	13.13	9.28	.001	.295
G.P. Alliance	18.51	16.78	.001	.456
G.P. Defence	35.37	22.10	.001	.640
1890-1938 (n=43)				
Alliances	23.50	14.65	.001	.391
Defence	20.50	12.69	.001	.349
G.P. Alliance	18.53	10.90	.001	.299
G.P. Defence	20.33	7.51	.01	.347

argument. In the former period, general alliances provide the strongest coefficient, although the actual difference among all four cases is not substantive. However, the difference does not provide any evidence supporting the Inter-Century break argument for British behavior.

Table XXIII

Probit Results, Transformed Data
1816-1939

	Estimated Coefficient	Log Likelihood	Sig (1 d.f.)	Cragg-Uhler r^2
Alliances	11.98	6.81	.01	.08
Defence	5.35	1.40	.20	.02
G.P. Alliance	9.90	4.56	.05	.06
G.P. Defence	4.06	0.74	.30	.01

In all cases, a strong and significant positive relationship is found. Only in the 1816-1848 case is the presence of a temporal break found in the aggregate analysis replicated.

After the removal of auto-correlation from the independent variable, a positive relationship continues for the system as whole (Table XXIII) But, only the general and Great Power alliance cases produce significant results. Here, the estimated coefficients are 11.98 and 9.90 respectively, even though the amount of variance accounted for is minimal. Nonetheless, these results reverse the pattern uncovered

earlier where the two defence pact cases provided the strongest levels of association.

The findings for the system as a whole are generally echoed in the various temporal periods (Table XXIV). The relationship between inequality and British alliance participation remains positive. Significant findings are limited to the general and Great Power alliance cases in two periods only. In the period 1849-1938, the coefficients are 13.32 and 10.99 respectively. They are only slightly lower than the coefficients reported for the same cases in the untransformed examinations. In the 1890-1938 period, the figures are 75.16 and 22.13 respectively. These values are substantively stronger than the coefficients found in the earlier tests, with the former being the strongest coefficient produced from all the tests. More important, they provide the only significant amount of variance explained in all the tests employing the transformed values, .446 and .196 respectively. Finally, an interesting change appears in the 1818-1848 period. Here, the strength of the relationship in the case of alliances is also stronger than the results from the earlier test. The coefficient is 8.16 in the former case and .13 in the latter. However, the insignificance of these findings does not lead one to reject the mid-Century break argument in its entirity.

Taking the findings as a whole and following the maximum/minimum argument outlined in the previous chapter, the empirical evidence tentatively supports the relationship outlined in the hypothesis. British alliance participation is positively related to distributional inequality on the continent. It appears to follow the dictates of

Table XXIV

Probit Results, Transformed Data, by Temporal Periods

	Estimated Coefficient	Log Likelihood	Sig. (1 d.f.)	Cragg-Uhler r^2
1818-1848 (n=30)				
Alliances	8.16	.56	.50	.020
Defence	4.64	.21	.70	.009
G.P. Alliance	8.16	.56	.50	.020
G.P. Defence	4.64	.21	.70	.009
1849-1938 (n=80)				
Alliances	13.32	6.18	.05	.100
Defence	6.04	1.36	.30	.023
G.P. Alliance	10.99	4.40	.05	.072
G.P. Defence	5.26	.83	.50	.018
1849-1913 (n=65)				
Alliances	5.50	.60	.50	.012
Defence	6.42	.77	.50	.016
G.P. Alliance	1.57	.05	.90	.001
G.P. Defence	1.90	.06	.90	.001
1816-1889 (n=74)				
Alliances	3.79	.41	.70	.008
Defence	2.86	.23	.70	.004
G.P. Alliance	4.84	.67	.50	.012
G.P. Defence	4.04	.45	.70	.009
1849-1889 (n=41)				
Alliances	1.42	.04	.90	.001
Defence	1.19	.02	.90	.001
G.P. Alliance	2.99	.16	.80	.005
G.P. Defence	3.24	.16	.80	.006
1890-1938 (n=43)				
Alliances	75.16	15.10	.001	.446
Defence	8.57	1.52	.30	.051
G.P. Alliance	22.13	6.14	.02	.195
G.P. Defence	10.97	1.49	.30	.188

Balance of Power as outlined by many historians, although that it is only part of the explanation and its importance can be debated. Even the evidence which indicates the possible absence of this relationship prior to 1849 requires some qualification. This absence may in part be a function of continental elite behavior which influenced the ability of Britain to follow Balance of Power dictates. Bartlett (1979) indicates the plausibility of this line of argument. Speaking about the same period, he states: "It was an unusual period in British foreign policy and so great a measure of influence could not be sustained at so little a cost once European fears of war and revolution began to abate..."(p.63).

In terms of the Inter-Century break (1890), the evidence is limited. It is true that the 1890-1938 period produces consistently strong relationships between British alliance participation and inequality, and the only significant r^2 values when employing the transformed data. However, the difference with the earlier periods is only pronounced in the transformed data tests. It is possible that the difference is a function of the effect of relative equality in the 1870s and 80s. British alliances in these decades, of which there were only two, may have been due to considerations outside of Balance of Power concerns. Only with the rise of Germany, and its recognition by British elites as a threat to their security, does the Balance of Power explanation reassert itself. Relative to the discussion of the Inter-Century break in the previous chapter, it also appears that the change in direction of the relationship in the aggregate analysis is affected by the behavior of Great Britain in this realm. One can conclude that

British alliance participation is partially, but not always, driven by Balance of Power dictates.

Great Britain, in terms of alliance participation, behaves differently than continental states. Its participation can be explained partially by Balance of Power theory, whereas the evidence from the aggregate analysis leads to support another explanation for continental states.[129] This general finding has major theoretical and methodological implications. Has Balance of Power theory lost its utility because of the absence of a balancer as argued by Organski (1968)? In effect, is the theory only relative to a single historical actor within a specific temporal context? Do the findings affect earlier empirical studies, particularly those dealing with war? In so doing, is the aggregate method of analysis undermined? These questions form the central focus of the final concluding chapter.

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[129] The competing theory in the literature is the Preponderance of Power theory, outlined and analyzed by Organski (1968) and Organski and Kugler (1980). However, the formulation of this theory is limited to war as the dependent variable. It has not been examined relative to alliances. Some indication of its possible formulation in this regard is provided in the concluding chapter.

Chapter VIII

CONCLUSION

At the onset of this study a simple question is posed. How important or salient is a single variable, the distribution of capabilities, in explaining state behavior? While behavior is defined in terms of alliances, the question also relates to a much larger body of empirical research at the aggregate or systems level of inquiry. It includes any and all of the studies in which capabilities consume at least part of the independent variable. These studies differ widely in terms of the body of theory which informs them and the stress placed on capabilities. Nonetheless, a common, implicit concern is the salience of this variable in the decision-making calculus of elites over a large period of time and space. Moreover, there is a common assumption within these studies that state behavior is externally driven. That is, the external environment accounts for the major proportion of behavior relative to the internal environment, regardless of differentiations made among various classes of states.

Balance of Power theory resides within this body of research. It provides an explanation of the way in which the distribution affects behavior. It does not tell us whether the distribution is salient, per se. That is an empirical question. Rather, assuming salience, it enables us to predict the direction of the relationship. When its prediction is empirically verified, or, in social sciences terminolo-

gy, one cannot reject the null hypothesis, one can speak of a state(s) following the dictates of the 'Balance of Power'. To speak of balance of power in any other way is to eliminate its theoretical relevance. Thus, the evidence presented in the preceding chapters seeks to answer the questions of salience in terms of the distribution and explanation in terms of the theory.

An important methodological points requires brief consideration before proceeding with the answer to these questions and their implications for research. With the exception of the 'balancer' test, the aggregate analysis undertaken here does not permit any direct inference to the behavior of any individual state at any particular point in time. It is true that given a certain strength and direction of a relationship between two or more variables at the aggregate level, the actors or observations underlying the measures must be acting in the manner uncovered. However, behavior in this manner may vary widely. The strength of the relationship may be stronger in the case of one state, identical for another, weaker for a third, in the opposite direction for a fourth, and so on. Thus the finding at the aggregate level can be roughly conceived in the sense of an 'average' of behavior.

Now given this inference problem between the aggregate and individual level, it could be argued that analysis should be undertaken at the individual level. However, two problems arise in this context. First, both variables, the distribution and alliances, are aggregate in nature. The distribution of capabilities follows from the basic conception of power. It is not absolute power of concern to elites,

but relative power or capabilities. Any measure in this regard demands some reference to other actors. Similarly, alliances, at a minimum, are dyadic affairs. While an individual state may seek an alliance, its ability to acquire one demands the approval of another actor. Again, the phenomenon is biased anyway from the individual to the group. Second, any conception of the 'individual' state requires some theoretical base. For example, the 'balancer' test follows from a specific theoretical formulation which informs both the construction of the independent and dependent variables' measures. Unless each state can meet some specific, and unique, body of theory, the nature of the 'beast' leans towards the system perspective.

Returning to the first question, the salience of the distribution, the evidence is ambiguous. First, there is the distinct differences between the findings when employing the untransformed and transformed data. Naturally, this difference is expected with data based on fixed observations over time. Moreover, the difference is relatively consistent. Employing the transformed data serves to reduce, if not eliminate in most cases, the strength and significance of the relationship. In only one case is this pattern reversed. In testing the 'balancer' hypothesis, the strength and significance of the relationship increases when employing the transformed data for one measure of the dependent variable in the period 1890-1939. This finding brings us to the other interesting result of the analysis as a whole, relative to the above differences. Significant and consistent differences are found when time is manipulated. In particular, the period 1816-1848 reveals that the distribution has salience in all test cases, inclusive of the general and 'balancer' tests.

Now, one's interpretation of this ambiguity, specifically the differences between the untransformed and transformed data, can be treated in two lights. First, consideration may be given to the methodological issue. As indicated in Chapter Six, it is possible to conceive the comparative results in terms of 'limits' of the relationship. The untransformed limit is inflated due to the existence of auto-correlation. The transformed limit, a function of fitting a model to the time series, may result from overcompensation to ensure the removal of the effect. As noted earlier, this model is the most adequate and parsimonious, but not necessarily the true one. Moreover, the treatment of the data sets as a series of yearly, sequential observations is questionable. Within the series, observations for the years 1914-1919 are missing, which violates the underlying assumption. Although Stoll (1984) notes that this violation will not have a great effect, one can not ignore it entirely. Also, the findings regarding temporal changes may be of some relevance. Changes, in the sense of periods, implys to some degree that the observations are not purely sequential to the actors involved.

Second, treatment must be seen in the light of one's interpretation of the 'significance' of quantitative approachs. If one conceives of statistical findings in the <u>hard</u> sense of the natural sciences, one would be led to reject all the hypotheses. However, if one conceives of this type of research in the traditional <u>soft</u> sense, akin to all studies in the field, then the findings have major significance. They indicate not only fluctuations over time, which have cumulative value, but also a possible new perspective, or set of questions for future

research. In exploring a new perspective, the field can not help but benefit, if only to reexamine firmly held beliefs.

If these arguments are accepted, it is reasonable to conclude that the distribution has empirical salience, given temporal considerations, in the alliance/security realm. It also indicates that this variable is only one, and not necessarily the most important, element in this realm. One may dispute the argument used to explain the absence of distributional salience in certain temporal periods, particularly 1816-1848. Nonetheless, the evidence firmly indicates that treating the period 1816-1939 as a logical whole is not useful. Moreover, it shows that the prominent breaks within this period are 1848/49 and 1890/91.

Turning to the second question outlined at the onset of this study, it appears that Balance of Power theory is useful only in the context of the 'balancer' or semi-automatic version. The test of the theory from the 'manual' perspective finds no support. On the contrary, the findings reveal that the majority of states behave in a manner entirely opposite to the prediction. Alliances, and thus the search for allies, are more likely at distributional levels approximating equality. Given that the common element among these actors is their geographic location, with the exception of Great Britain, it would appear that security behavior, at least in terms of alliances, will differ between continental and insular states.

The implication of this inference is threefold. It leads to questions regarding previous studies in this general area of research.

These studies fail to differentiate between continental and insular states. As a result, ambiguous findings on the relationship between the distribution and war may be a partial function of this failure. For example, the Singer et al (1972) study find support for the equality-peace proposition in the Nineteenth Century, whereas Organski and Kugler (1980), using dyadic ratios, find support for the equality-war proposition in the case of Germany in the Nineteenth century. In Chapter Two, brief consideration is given to the Sabrosky (1975) and Kennedy (1984) findings on the relative capabilities of the Great Powers prior to World War One and their relationship to war in 1914. Let us briefly re-examine these differences in light of the apparent distinction between continental and insular states.

Recall that the discussion on the 'balancer' indicates that a situation of distributional equality between it and a continental state creates relative security. The added benefit of the geographic impasse, in this case the English Channel, increases the probability of victory in war for the defender. Equality between two continental states, assuming a contiguous border, gives equal odds of victory or defeat. Moreover, the odds of victory increase if one decides to go first.[130] The result is relative insecurity for these two states because both are biased towards a pre-emption posture.

Now, if one expands the analysis to include all the Great Powers and one assumes relative equality among them, the odds for both the insular and continental states remain relatively the same. Furthermore, equality among several continental powers produces not only the

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[130] For a general discussion of the benefits of pre-emption with regard to surprise attack see Betts (1982).

complex possibilities of alliance relationships, but may also serve to dampen down the likelihood that any war between two Powers will expand to encompass the system. As long as the victor does not press its demands to a point which upsets the general distribution, war between two continental states can be tolerated.

This appears to be the case for the German wars of unification. Both the war with Austria (1866) and France (1870-71) occurs at relative equality between the various pairs. Both do not escalate because the victor, in both cases Prussia, does not press its demands to a point which threatens the general distribution. However, the problem in this regard is the general distribution, which is at a point of comparative inequality, as shown in Figures 4.5 and 7.1. Thus, the answer may lie not only with the limited demands made by the victor, but also by the net effect of the wars on the direction of the distributions. In both cases, the distribution moves downward to greater equality. Moreover, this downward movement increases the fundamental security of Great Britain, and may explain both its unwillingness to become involved in the conflicts, and its relative isolation for the subsequent three decades.

Turning to the situation prior to 1914, inequality is on the increase on both distributions. German preponderance, which the distribution reflects, may produce two contradictory impulses. The first is relative security for the preponderant, in the short term, and stability for the system because German strength deters any aggressive actions from the others. The second is the contradictory increase in British insecurity. Preponderance on the continent appears to provide

Germany with the potential to overcome the geographic impediment. The net result is the rapid escalation of a local war into a system wide war about the very structure of future relations as a whole.

Even in other areas of state behavior the case has some historical validity. German bellicosity rises dramatically with the movement of Britain into first a relationship with France and then with Russia. This bellicosity can be interpreted as Germany's attempt to undermine British actions which are perceived as a threat to German security (see Lebow, 1981). The willingness of France and Russia to respond aggressively to German behavior after the 1908 Balkan affair also may stem from British actions which served to alter the status of the Anglo-French entente.

The net theoretical picture is one of greater complexity in terms of the relationship between the distribution and war. In a situation of relative equality, wars, if they occur, are likely to be limited to continental states with little chance of escalation. In a situation of relative inequality and the existence of an insular Power, war is likely to begin and escalate rapidly to the point where the very survival of the system is at stake. In effect, a 'preponderance of power' explanation will fit the former situation, whereas a 'balance of power' explanation will fit the latter.

Naturally, this brief discussion is not related directly to the empirical findings of this study. It only indicates a potential explanation for the ambiguous findings regarding the relationship between the distribution and war. Fundamentally, it posits a need to

test this relationship by taking into account the possibility that behavior between continental and insular powers in the security are not only distinct, but in possible opposition. In terms of alliances, a different problem arises. There is no theoretical equivalent of Preponderance of Power or Power Transition theory in the alliance realm. Whereas Balance of Power theory can be applied to both war and alliances, preponderance is restricted only to war. However, the discussion in Chapter Seven provides some indication of such a theory for alliances.

The fundamentals of a preponderance of Power theory for alliances can be summarized as follows. The theory is limited to continental states. The situation of relative equality among these states increases insecurity because the probability of victory in war, and thus survival, increases for the state which decides to go first. This insecurity leads states to acquire alliance partners as a means to create inequality or preponderance in their favor. Successful alliances in this regard increase stability and security because the preponderant group is no longer at threat and the weaker states or groups of states can no longer act in a manner threatening the strong. Fluidity, as in the case of Balance of Power theory, is a function of the changing capabilities of states over time.

This theoretical outline raises numerous new empirical avenues for research. It leads one to explore the distribution of capabilities which take into account alliances. Does this distribution create inequality? If not, does it result in unreliable commitments and the likelihood that alliances will dissolve? How does the outsider, the

balancer, affect the relationships? Finally, a general meta-theoretical problem appears. Do we not need to develop a theory which can explain the clash between insular and continental Powers? These questions provide a new agenda for future research which may lead to a new interpretation of the security problem over time.

A final point concerns the issue of contemporary utility. As noted throughout the study, the construction of its temporal and spatial borders occurs with explicit reference to the need to account for the historical record. Also, boundaries followed from a desire to diminish the potential influence of uncontrolled background variables. Thus, direct inference to periods outside these boundaries is of questionable value. However, it is also noted that results, although not directly transferable, may provide a new set of questions or interpretations of other periods in time and space. Fundamentally, one must ask whether the key findings regarding the different security behavior of insular and continental states have contemporary relevance.

Let us begin by noting that these findings place emphasis on geographic location and thus an underlying body of theory known as geopolitics, developed initially by Mackinder.[131] Moreover, one can also note the analogous position of Great Britain in the Nineteenth Century and the United States in the post 1945 world.[132] Both are insular Pow-

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[131] Fro a general discussion of the contemporary value of geo-politics, see Grey (1977).

[132] One should interpret this analogy in the same sense as the analogy based on cycle/hegemon theory. This body of theory is largely economically based in terms of capabilities. As argued earlier on, it contains serious historical problems. The analogy here is strictly geographic in terms of a determinant of security behavior.

ers relative to the European and subsequent Euro-Asian landmass. Also, both reside in a situation whereby their security, and thus the maintenance of the state system, appears at threat due to the presence of a preponderant on the landmass.

Now one could extend the analogy in many ways, both for Great Britain and the United States, and Germany and Soviet Russia.[133] The former pair reveal a comparative reliance on seapower and foreign bases, whereas the latter pair rely on landpower and interior lines. Both Germany and Soviet Russia believe that their status in the system is undervalued and are led to policies which serve to enhance their ability to project power into the peripheries. Both the Great Britain and the United States see such expansion as inherently threatening to their individual security.

Now, this analogy can be made without reference to the evidence reported in this study. At the same time, the analogy can be undermined easily with reference to a variety of factors which are unique between the pairs and in international politics as a whole. However, the evidence here raises two interesting issues which will require future exploration. First, it raises the issue of the tendency to begin interpretations of the contemporary era with the bipolar assumption. Second, it raises the issue of explaining the intensity of the American-Soviet confrontation from a position other than ideological.

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[133] This analogy lies at the heart of the new literature on the origins of World War One (see Kagan, 1987; Lynn-Jones, 1986; Sagan, 1986; Layne, 1981; and Kahler, 1979-80). In terms of contemporary policy, the American Maritime Strategy and Competitive Strategy contains similaritys to a geo-politics/ historical theoretical basis.

Concerning bipolarity, this interpretation has dominated assumptions. In so doing, an underlying 'mirror' image is posited. In a system of two Great Powers, their behavior is predictable by the simplicity of number. One behaves as the other behaves because number, or structure in more formal terms, dictates so. But, a continental/insular assumption not only creates a new starting point which posits uniqueness, but provides a foundation for a body of relevant historical evidence in the shape of Great Britain and its continental rivals over time. The assumption enables us to overcome the general problem of distinguishing between number (bipolarity) and technology (nuclear weapons) as explanations of behavior a la Levy's criticism. It thus becomes a new avenue of positive research which may answer heretofore unanswerable questions, if not raise a entire new set.

The ideological explanation for the intensity of the confrontation can also be re-examined. The intensity may not come from a clash of conflicting social/economic systems, but from a clash of conflicting security demands. The security of Soviet Russia is optimal at relative preponderance in relation to continental threats. Conversely, the security of the United States, as an insular Power, is optimal when the distribution of capabilities is equal among continental Powers. It is the pre-requiste for an American return to isolationism in the same sense of British periods of isolationism. Given the direct opposition of security requirements, behavior for both becomes a classic case of the security dilemma. Each action by one directly conflicts with the security desires of the other. Furthermore, attempts to reach some degree of 'peaceful co-existence' is constantly at

threat due to conflicting security demands, which, in turn, spill over into all aspects of the relationship between the United States and Soviet Russia. If one begins analysis from the insular/continental perspective, perhaps our understanding of the genesis, evolution, and future of the American-Soviet relationship, if not international politics as a whole, can be enhanced.

In summation, this study has moved a distance from the initial concern with the distribution of capabilities and alliances. In the end, it has raised more questions than it has answered. But, perhaps it is the most valuable aspect of the study, if not research in the social sciences as a whole. As noted by a forgotten scientist probably many decades ago, science is not necessarily the search for answers, but the search for new, and better questions.

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