1 Causation and Conflict

A New Age of War

In its accepted legal sense as recognized by international law under the United Nations Charter, there has been no war among men since September 2, 1945, the date of the articles of Imperial Japanese surrender ending World War II. As one deliberate, if crude, means by which political factions, organizations, and governments seek their established ends, however, war has scarcely ceased to exist. Rather, as with all man-made institutions, its conceptualization and codification in the law have simply lagged behind its evolution in fact. In point of fact, if not of law, war has assumed new forms more appropriate to the present era and its predominant features and conditions.

In another era, when the industrial revolution was as yet in embryo, the great German military theorist Karl von Clausewitz observed that

> each age has had its own peculiar forms of war, its own restrictive conditions, and its own prejudices. Each, therefore, would also keep its own theory of war, even if everywhere, in early times as well as in later, there had been an inclination to work it out on philosophical principles. The events in each age must, therefore, be judged with due regard to the peculiarities of the time, and only he who, less by anxious study of minute details than by a shrewd glance at the main features can place himself in each particular age, is able to understand and appreciate its generals.[1]

The industrial revolution has now come to maturity, having itself given birth to a new age containing, in almost absurdly Hegelian fashion, the seeds not only of its own dialectical destruction but even of its cataclysmic extermination. And it contains these in increasing numbers.

This is the central, extraordinary fact of this age, setting human history forevermore apart, in a quantum sense, from what has gone before. One might well expect nuclear weapons, then, to be central to the forms of war peculiar to the present and to the prejudices and restrictive conditions that have and will come to apply to warfare in the last decades of the twentieth century. Indeed, their development has shaped and reshaped national policies, both foreign and domestic. It has forged alliances and undermined them. It has directed and redirected unparalleled resources into research and development of the weapons systems and combat capabilities that follow from the prevailing estimates of the implications of nuclear capability.

Thus, somewhat in the fashion of a strategic reaction formation, the development of Soviet nuclear and hydrogen warfare capabilities was followed by a vast literature on the tactical and strategic problems of limited Soviet–United States military confrontations, especially in Western Europe;[2] on the conditions for their

[1] Karl von Clausewitz, *On War*, trans. O. J. Matthijs Jolles (Washington, D.C.: Infantry Journal Press, 1950), p. 584.
[2] See Morton H. Halperin, *Limited War in the Nuclear Age* (New York: John Wiley & Sons, 1963), Annotated Bibliography, pp. 133–184.

escalation to general nuclear war;[3] and on both the defense measures and the arms control concepts therefore relevant to the United States position in the prevailing international setting.[4] For what could have been more reasonable than to expect that, if these two avowed ideological antagonists were to become involved in a general war, the clash would occur in Central Europe where their continuing armed confrontation was most immediate.

Events in the past decade have made it abundantly clear, however, that general war is far less likely to result from abrasive action in areas of direct confrontation between the great powers than from a series of limited and seemingly rational intensifications of a local conflict in an area of peripheral great-power influence. Such are the conditions of this age that, as increasing détente has been achieved in Europe amid economic prosperity and the nuclear stalemate, events in the "underdeveloped" or "third" world have increasingly embroiled the great powers directly and indirectly in proxy wars for spheres of influence. The war in what was Indochina, for example, has tended steadily and relentlessly, as do all protracted wars, toward its total and absolute expression within existing technological limits.[5] That conflict in particular bears witness to the fact that the present age has spawned its own peculiar form of warfare, one as different from the great interstate conflicts of this century as these were from their own pre-Napoleonic forebears.

In an evolutionary sense, the world wars of this century represent the ultimate, mature expression of their genre: the general war between discrete, legally definable combatants, fought in a specified geographic arena until the outcome was fixed by the relative capacities of the combatants for mobilization, production, and administration of their resources. Now, the postindustrial era "overkill" capabilities have produced a mode of warfare in which, as often as not, the combat zone itself, the sources and avenues of supply, the center of administrative and policy decision, the identity and allegiance of both civilian and military personnel, and the nature and substance of victory defy precise specification and definition. The efficacy of this form of warfare, even in the face of superpower opposition, is now being attested in Vietnam, where the irrelevance and inadequacy of many assumptions deriving from the traditional interstate conflict have long since been demonstrated by U.S. forces.

In a study undertaken in the early 1950s of the conditions per-

[3]See Herman Kahn, *On Escalation: Metaphors and Scenarios* (New York: Hudson Institute, 1965).
[4]See Ernest W. Lefever, ed., *Arms and Arms Control: A Symposium* (New York: Frederick A. Praeger, 1962), Bibliography, pp. 313–331.
[5]See Quincy Wright, "The Nature of Conflict," *Western Political Quarterly*, vol. 4, no. 2 (June 1951), pp. 202–203, for a general discussion of this point.

taining in both world wars, Klaus Knorr found "the determinants of potential military power" to be divisible into three broad categories: the will to fight (that is, motivation or morale), administrative competence, and economic capacity. "The margin of combat superiority which accounts for victory," Knorr suggests,

> may be provided by any, or any combination, of the constituents of military strength, qualitative or quantitative. Yet . . . no net superiority in qualitative attributes can in the longer run make up for a substantial inferiority in the quantity of military manpower and equipment, provided the theater of war permits these to be put to efficient use.[6]

In contemporary and future conflicts that conform more or less to the traditional interstate pattern, it is likely that such statements will remain accurate: numbers and their effective administration will be decisive in any prolonged engagement. The accuracy and hence utility of this easy paradigm is increasingly less clear, however, in a combat situation in which the time, place, and terms of confrontation are not at the discretion of both combatants. If these are always determined by one combatant, his will to survive may well outweigh and outlast any numerical and logistic superiority of his adversary. But even this situation is likely to occur only under certain conditions; that is, will or morale in and of itself is obviously inadequate in the face of superpower logistic capabilities. Clearly, there are certain enabling conditions under which this factor is likely to be of decisive importance in achieving victory, and others in which it may well be of little relevance to the eventual outcome of hostilities.

This study is founded upon precisely this kind of reasoning—that under different conditions the very same act or the very same fact may produce quite a different result. It proceeds from that proposition in the belief that the analysis and understanding of warfare in a new age demand new concepts and new techniques if any extrapolations are to be made from past experience to future situations and events.

A New Direction for Analysis

It is especially ironic, given a scientific and technological establishment capable of producing our present means of war, that the study of war itself—at other than the tactical level—has remained a largely subjective, impressionistic, and unscientific affair. Over a decade ago, this century's preeminent student of war, surveying the requirements for a systematic and continuing program of research on war as an instrument of policy, cited the overriding need,

> first, to develop an analysis which appears to be comprehensive and fundamental, and then to select for detailed study conflict situations concerning which there is data on all the factors which the analysis considers relevant. Comparison of the cases thus analyzed should throw light on the classification of various types

[6]Klaus Knorr, *The War Potential of Nations* (Princeton: Princeton University Press, 1956), pp. 3, 31.

of conflict situations, on the probable course of development of each of these types, and on the stages in the course of the conflict situations studied at which different actions might have changed the course of development. Reciprocally, the study of a considerable number of conflict situations of varied types should throw light on the analysis, indicating relevant factors which have been omitted, and facilitating its continuous improvement.[7]

In a time of revolutionary developments in the technology of warfare, this was a plea for the establishment of the basis for a rigorous, scientific approach to the study of war, the conditions from which it is likely to emerge, the directions it is likely to follow, and the likely agents of its aggravation and amelioration. It was a declaration that the time had arrived for a mode of inquiry free from the preconceptions and assumptions that had traditionally dominated these pursuits, for a temporary injunction in scholarship against the deductive method. It was a plea for the development and application of inductive techniques that might start from concrete reality to identify the significant features of war and so make it more intelligible, if not more predictable. It was, in effect, a call for a radical departure in one of civilized man's oldest and most persistent preoccupations – the study of war.

The aim of this study is to undertake and to establish just such a departure; to bring the methods of science and the hardware of its technology to bear in meaningful and revealing ways upon the structure and substance of conflicts harboring the potential for war. Its hopeful purpose is to construct an objective, systematic, and partially automated program of research to determine the patterns of factors that condition the origin, development, and termination of those conflicts; to explore the contexts within which individual factors operate with specified effects upon their development; to specify the resulting "types" of conflicts that occur in real life; and so perhaps better to understand and deal with their causes and effects as generic phenomena rather than as random, idiosyncratic events.

To this end an analytic system comprised of an integrated and novel set of assumptions, concepts, and techniques has been developed around the requirements and objectives of the "comprehensive and fundamental analysis" called for by Wright. However, where Wright sought a precise statement of the points in the development of conflicts at which policy measures might be taken to alter their development, as well as of the specific policy measures that might achieve this effect, my aim is more modest. Indeed, it is my contention, like that of Clausewitz, that

> a theory need not be a body of positive rules; that is to say, it need not be a guide to action. Whenever an activity has, for the most part, continually to do with the same things, with the same ends

[7]Quincy Wright, "Memorandum on Interstate Conflicts," paper prepared for the Carnegie Endowment for International Peace, New York, December 1955.

and means, although with small differences and a corresponding variety of combinations, these things must be capable of becoming an object of observation by reason. . . . If principles and rules result of themselves from the observations that theory institutes, if the truth of itself crystallizes into these forms, then these principles and rules serve more to determine in the reflecting mind the leading outlines of its accustomed movements than, like signposts, to point the way for it to take in execution.[8]

Rather than a concise policy maker's guide to action in every conflict situation, then, the object here has been to elaborate what might at the most practical level become an "early warning system" for conflict at each significant stage of its development. That goal was pursued by extracting sets of predictive factor patterns from a limited number of historical conflicts through the medium of an analytic system designed specifically for application to today's forms of warfare. At the same time, this effort was experimental and proceeded on the basis of a very limited number of case studies. The analytic system employed was accordingly designed specifically to accommodate the increased number of case studies required to give increased statistical comprehensiveness, precision, and confidence to its results. In this sense, the set of assumptions, concepts, and techniques presented may be regarded as both experimental and expandable.

Before they are elaborated, we may well observe with a prominent student of the subject that among the many theories of conflict "a main dividing line is between those that treat conflict as a pathological state and seek its causes and treatment, and those that take conflict for granted and study the behavior associated with it."[9] With a few notable—and generally maligned—exceptions, the former has traditionally been the more prevalent mode of analysis. As a result, the existing literature on causation and, therefore, on appropriate treatment far outnumbers the rest. In this regard, it is perhaps no longer possible either to discover or to hypothesize a specific cause or underlying source of war that has not previously been cataloged.

Most social scientists have long since accepted the principle of multiple causation, from which it follows that any explanation of armed conflict in terms of a single factor—economic competition, lebensraum, or externalization of internal frustrations—represents a gross oversimplification that is likely to lead to ill-conceived policy action. Indeed, this charge may be leveled at any theory that is comprised of even a few such factors and therefore relegates all the other conditions surrounding the conflict event or outcome to a large and residual category of "other factors." These elements in the causal equation are regarded as both too numerous and too complex to be dealt with explicitly by the theory and are, accordingly, assumed to remain constant

[8]Clausewitz, *On War*, pp. 76–77.
[9]Thomas C. Schelling, *The Strategy of Conflict* (Cambridge, Mass.: Harvard University Press, 1963), p. 3.

for purposes of the main theoretical analysis. Their policy implications in any particular real-life case are left to the intuition and judgment of the analyst. In real life, however, "other things" rarely remain constant. Rather, they are in a constant state of flux with respect to the relationships they bear both to each other and to the factors explicitly accounted for in the theory. Thus they impose rigorous limitations upon specific, concrete generalizations from theory and overwhelming risks upon policy conclusions or practical applications.

All of the classical theories of politics—from Plato to Machiavelli, Marx, and Pareto—may be cited as examples in this regard. All are founded upon essentially deterministic models comprised of a very few variables that are cited as causes. All other factors are regarded as too numerous and too complex in their effects to be dealt with explicitly in the theory, but also as too important to be completely disregarded. While their existence and potential for effect upon the output of the causal model are recognized, their influence as individuals and as a whole is left undefined. This, it may be said, is the equivalent of establishing a logical tree with only its trunk and principal branches defined; the fine and delicate network of secondary and tertiary branches that lend beauty, body, and form to a tree—and, in the case of a theory, practical applicability—are left out. Their existence is recognized; their precise effect is ignored.

Wright observed this fact and established as the "basic conception" of his monumental study of the origins of war the notion that peace is a condition of equilibrium among numerous factors: military, legal, social, political, economic, technological, and psychic.[10] In this view, war is both the result of serious disturbances in this equilibrium and a means for restoring it. After examining the massive body of evidence in support of this conception, he concluded that

> wars arise because of the changing relations of numerous variables—technological, psychic, social, and intellectual. There is no single cause of war. Peace is an equilibrium among many forces. Change in any one particular force, trend, movement, or policy may at one time make for war but under other conditions a similar change may make for peace. . . . To estimate the probability of war at any time, therefore, involves an appraisal of the effect of current changes upon the complex of intergroup relationships throughout the world.[11]

While an equally strong case might be made for the argument that war is not such an aberrational[12] state of affairs but is itself a differing (albeit more infrequent) equilibrium among the same network of factors, Wright's conception of the complex, structural nature of events is illuminating. Having strived to avoid the

[10]Quincy Wright, *A Study of War*, 2nd ed. (Chicago: University of Chicago Press, 1964), pp. 68–69.
[11]Ibid., p. 1284.
[12]Ibid., p. 12. Wright himself uses the term "abnormal" in this connection.

pitfalls of oversimplification of an enormously complex phenomenon, however, he was forced to recognize the fact that non-impressionistic techniques adequate for the systematic manipulation of the number of variables he knew to be operating were not available. He thus confronted what another leading student of international politics and processes has more recently termed the dilemma of social science analysis: "While single-cause analysis is invalid, multiple causation is valid but too complex for scientific treatment, since it is not possible to follow in all their meanderings the *interrelations* among a large number of factors."[13]

The central problem in the development of an empirical theory adequate for the full richness of reality, then, is to determine the particular interconnected and mutually reinforcing combinations, constellations, patterns, or configurations of factors that result in the analytic preconditions of an event or outcome. In short, the effect of the recognition of multiple causality is that the important questions for analysis become the determination not of the influence of particular factors but of the way in which mutual reinforcement operates to create an effectual or enabling pattern. Similarly, the overriding question for policy becomes the determination of the critical or strategic factors that will alter the existing pattern to produce a desired or preferred outcome. For, given a determinate set of factors that define the system in which an event occurs, the difference between an existing and a desired outcome is the difference between the factor patterns that condition their occurrence as distinct (if not independent) events.

This conception of the relationship between multiple causation and patterns of factors constituting the systematic and enabling preconditions of an event is the methodological touchstone of this study. Moreover, it is assumed that, although conflict may be the ordained order of things, conflict of such a magnitude as to involve the possibility of war is not a random (or even frequent) phenomenon and is conditioned in its development by various configurations of particular values of a determinate set of variables. The causes of such conflict are, in effect, both multiple and systematic.

It is my central hypothesis, therefore, that certain precise patterns of factors exist that variously condition the origin, development, and termination of conflict harboring the potential for war; that the factors comprising these conditions are not purely military in nature but are at once social, political, economic, technological, military, and psychological; and, finally, that these conditions may be systematically observed and usefully isolated by objective analytic techniques. It is hypothesized, in effect, that the world in which peace and war occur is not only a complex but also a

[13]Stanley Hoffmann, *The State of War* (New York: Frederick A. Praeger, 1965), p. 273; emphasis added.

comprehensible system of structural parts or variables, and that changes in the state of that system are occasioned by observable shifts in the structural interconnections among the variables. In this view, both peace and war may be regarded as differing equilibria among various values and combinations of the same variables that define the system in which peace and war occur equally, if with differing frequency.

The question remains, however, how such propositions may be analyzed and tested, especially in light of the traditionally frustrating problem of establishing the significant networks of structural patterns that reside among a large set of variables. To that end, a provisional and eclectic theory of conflict, a descriptive model of its significant stages, a technique of data collection, and a method of data manipulation, analysis, and presentation have been developed. Each proceeded hand in hand with the others, imposing in its turn various assumptions, demands, and limitations upon the others, even while itself being selected and refined specifically to complement and accommodate the others. The result, it is felt, is a set of concepts, assumptions, and techniques so integrated and complementary in terms of the analytic objective as to constitute a whole. For purposes of clarity of presentation, I shall make brief note here of the research strategy followed and of the purpose and requirements of each analytic element before it is presented separately and in detail.

Assumptions and Assertions

In the formulation of both the strategy and the tactics of this study, the dominant consideration has been that war and the potential for war simply *are* and, so long as the means for war exist, will be. No amount of institutional safeguards will alter this fact; these devices are merely its evidence. Whenever policy makers feel both constrained with respect to alternative policy options and convinced of its cost effectiveness with respect to established goals, war may reasonably be expected to ensue. Man's capacity for rationalization in the face of any amount of contradictory evidence is such that, once the objective is determined to be worth the candle, sufficient justification will always be found for war.

The increasing urgency of the problem of war in this nuclear age, however, derives from the profound fact that it is

> not a delicate instrument for achieving precise political ends. It is a crude instrument of coercion and persuasion. The violence and destruction of war set off a chain of consequences that can be neither perfectly controlled nor perfectly anticipated, and that may therefore contravene the best laid plans for achieving specific configurations of power and particular political relations among nations.[14]

Regardless of one's purpose, then, the only viable and proper

[14]Robert E. Osgood, *Limited War: The Challenge to American Strategy* (Chicago: University of Chicago Press, 1957), p. 22.

focus for the empirical study of war as an instrument of policy is the effective control of the entire conflict process from which war proceeds. It may be argued in this regard that the determination of the means whereby control is achieved leaves open the larger "value" question of the ends to which knowledge is put.

If, as Quincy Wright suggests, the conditions of war are the absence of the conditions of peace,[15] then it is likely that knowledge of the conditions occasioning conflict at least implies knowledge of both the conditions and the means of its suppression. Of course, the suppression of conflict cannot be said to be always and everywhere a desirable effect. On the other hand, reality is seldom so simple as to admit of direct extrapolation from theoretical knowledge to practical effect. Knowledge implies neither the means nor the will for its own implementation, though it always entails the risk of its own misuse by man. Moreover, it is one thing to establish a conscious policy of conflict suppression and quite another to effect its enduring conditions. Indeed, as Robin Williams has observed in this connection,

> there is a definite possibility that the factors that are most important in producing hostility and conflict are by no means the same as those which are most important for control purposes. Thus, the roots of intergroup hostility may be in the early socialization of children in the home. But this process is so inaccessible to direct external control that other, even seemingly far removed, approaches may be much more promising for immediate action.[16]

The same may be said of the factors most important in producing peace or nonviolent relations. In one context or framework, a specific act or set of actions may produce one effect and, in another, yet a different effect. In the short run, the restriction of civil liberties can provide an enabling environment for suppressing violence; in the long run, such a policy in and of itself can go a long way toward breeding even greater violence. In one context, the assassination of a dictator might effect a peaceful, stable change of government; in another, it might produce civil war. And so on. Only a full appreciation of both the policy implications and the structural interconnectedness of the entire set of conditions of any event can fully convey the dangers of extrapolating directly from conditioning factors to effective control measures. The conditions of peace may well be the absence of the conditions of war; but there is certainly no easy or facile inverse correspondence between them.

This same central purpose of controlling the course of conflict and war guided Wright's proposal of the requirements for a "comprehensive and fundamental" analysis that might provide an effective focus and framework for a continuing program of policy-relevant research. Like that proposal, this study proceeded

[15]Wright, *Study of War*, p. 16.
[16]Robin M. Williams, Jr., *The Reduction of Intergroup Tensions* (New York: Social Science Research Council, 1947), pp. 41–42.

from the assumption that it is possible to define, in terms of a comprehensive list of descriptive characteristics and operating variables, the system within which occur those conflicts involving the possibility and fact of war. Such a list of factors would in itself constitute a provisional and eclectic theory of conflict to be modified and refined through application to actual conflict situations. Indeed, one requirement of any method of data analysis employed in combination with such a theory is that it be capable of facilitating the theory's continued improvement by obviating its sins of both omission and inclusion.

The elaboration of a list of factors found or hypothesized by previous analysts to be influential in determining the course of conflict is no great problem. The literature abounds with such lists. In addition to the traditional historical analyses of war, in the past decade a significant trend has developed toward the empirical analysis of armed conflict and its associated activities and behaviors both within and between nations. Various and increasingly complex statistical techniques have been employed to define various types of conflict behavior and their social, economic, and political indicators.[17] Significant progress has been made in defining meaningful and fruitful dimensions in terms of which to compare such conflicts and the parties to them.[18]

Listing purportedly influential factors is thus no problem: the causes of conflict are virtually infinite. Rather, difficulty is encountered in determining the analytic level at which the causes of conflict will be examined. Just where does one look for the causes of war? The UNESCO Constitution suggests in "the minds of men." Quincy Wright, on the other hand, suggests that such an analysis should be

> emancipated from the preconceptions of international law, organization, and politics, and reach back to the basic psychological, sociological, geographic, demographic, technological, and ethical conditions and variables functioning, not only in the immediate situation or dispute, but also inside the conflicting states and governments, and in the entire field of international relations at the time.[19]

In somewhat less pretentious fashion, and with no claim to exhaustiveness, it is the latter approach that has been attempted here. Recognition has been accorded the fact that a virtually unlimited number of factors or pressures is at all times operating

[17]See, for example, Lewis F. Richardson, *Arms and Insecurity*, ed. N. Rashevsky and E. Trucco (Pittsburgh, Pa.: Boxwood Press, 1960); Rudolph J. Rummel, "Dimensions of Conflict Behavior within and between Nations," *General Systems Yearbook*, 1963 ed.; and Ivo K. and Rosalind L. Feierabend, "Aggressive Behavior within Polities, 1948–62: A Cross-National Study," *Journal of Conflict Resolution*, vol. 10, no. 3 (September 1966).

[18]See, for example, Bruce Russett et al., *World Handbook of Political and Social Indicators* (New Haven: Yale University Press, 1964), and Arthur S. Banks and Robert B. Textor, *A Cross-Polity Survey* (Cambridge, Mass.: The M.I.T. Press, 1963).

[19]Wright, "Memorandum on Interstate Conflicts," p. 2.

on any conflict, pushing it in various directions. It is also recognized that every conflict at any particular instant in time is, as a particular configuration of these factors, a unique phenomenon. Yet it is asserted that it is possible, building upon established concepts and theories, to define a comprehensive (and tentative) conflict "system" within which all conflicts may be said to originate and variously to develop. Within that system, each conflict is, as a particular configuration of factors, unique; but comparisons between it and other conflicts are facilitated by the common dimensionality of the variables used to define them all. A basis is thereby established for determining not only such commonality as exists between conflicts at comparable points in their development but also the types of cases that occur within the system and their usual courses of development under both normal and specified conditions.

Given this comprehensive approach to causation, however, there remains the question of the inclusiveness of the list of variables or factors that define the conflict system and are used in its analysis. Criteria are required if indiscriminate choice is to be avoided. Robin Williams has suggested three such criteria for use in the study of conflict, which have been adopted for the selection of factors included in this study: (1) those of most promise, by means of their focus, for guiding empirical research; (2) those of most probable validity, as adjudged by the consensus among previous and existing researches; and (3) those of most relevance for application to concrete policy problems and activities.[20]

Still there are the difficulties of selecting the specific factors and of precisely formulating them in terms so that the resulting test instrument is equally applicable to all forms of conflict involving the potential for war. For there is no reason to assume that the traditional internal-interstate-colonial, limited-general-total, or other distinctions that have long dominated both conventional and scholarly thought are meaningful, viable, or practical with respect to the policy issue of controlling conflict.

Once formally elaborated, the list of conditioning factors constitutes a test instrument that may be applied to selected cases of past and present conflict at comparable points in their development, thereby establishing a systematic base for analysis of their comparabilities. Two problems remain, however: at what points in their life cycles should this instrument be applied to the conflicts selected for study, and what criteria should be applied in the selection of conflicts for analysis?

To resolve the first problem, a conceptual model was elaborated, founded on the notion that a regular and specifiable framework of stages exists through which all conflicts pass in their life cycles,

[20]Williams, *Reduction of Intergroup Tensions*, p. 50.

the end of each stage being marked by the threshold of the next. The application of the test instrument to each conflict studied at each threshold through which it passed therefore established the basis for determining the patterns of factors, or the conditions, that apply at those critical turning points in the development of conflicts.

This model also served as the basic frame of reference for the selection of specific conflicts to serve as a data base for analysis. A range of cases was selected that would illustrate the various possible modes of passage through the conflict model. A further consideration in this regard was that the conflicts selected for study should include representatives from each of the traditional types of internal, interstate, and colonial conflict noted earlier, so that the viability of these distinctions might be examined. The final major consideration in selecting the conflicts was that those included should represent varying degrees of local rather than general conflicts. The latter flow only from the former and, if the model of conflict employed is appropriate, should be but exceptional, expanded cases of the localized conflicts that afford the analyst greater ease of definition with respect to the geographic boundaries applying, the interests at variance, the issues involved, and so on.

Finally, there remains the problem of determining the significant and meaningful patterns of factors residing in the data base so established, of effectively coming to grips with the dilemma of multiple causation itself. Philosophers of science since David Hume have recognized that what the scientific analyst observes is not causation but repeated coincidence or association between events. The standard statistical means used by social scientists for measuring such association has long been correlation. It has previously been demonstrated, however, that two or more test items can individually or severally have a zero correlation with a criterion, outcome, or event and yet jointly be perfectly correlated with it.[21] This is the essential shortcoming of all correlational techniques in dealing with problems of multiple causation: their operation requires certain highly restrictive assumptions about the manner in which the data describing an event may relate to one another, thereby invoking the serious risk of ignoring meaningful relationships a ong the data and misinterpreting the structure of the event elf or of the system of which it is part.

To circumvent this problem of assuming linearity in a generally nonlinear world, a noncorrelational method of data manipulation and analysis has for the first time been fully developed and programmed for automated use in this study. It is a method capable

[21]See P. E. Meehl, "Configural Scoring," *Journal of Consulting Psychology*, vol. 14, no. 3 (June 1950), pp. 165–171.

of extracting from any body of systematic data on a given set of variables for a defined population (1) the significant patterns of variable values (or individual characteristics) residing in the data base and (2) the objective types of individuals existing in the population defined by that data base. We shall see, moreover, that this method establishes patterns of characteristics in such a way as to yield an objective and comprehensive classification of the events, individuals, or phenomena under examination into a hierarchical structure or series of types. It thereby roughly replicates the process and the results of the system of taxonomic classification developed over centuries in biological studies.

As A. J. Cain has observed, biological species are differently defined on the basis of a comparatively large number of characteristics, some smaller subset of which is used to define genus, and still smaller subsets to define the higher levels of classification.[22] Because only the precise, objective pattern or configuration of characteristics is significant, any given characteristic or factor may contribute to the definition of more than one class at each level. On the other hand, no given individual, event, or phenomenon may be classified into more than one class at any level: while it may be characterized by certain features that contribute to the definition of more than one class, an individual can, as a complete network of features, be fully characteristic of only one. Both man and the gorilla, for example, are characterized by their opposable thumbs. At the first level of taxonomic classification, however, man and the gorilla are members of different species, the characteristic patterns of which are defined in part by the single fact of opposable thumbs. It is only at a more restrictive and abstracted level, the descriptive pattern of which contains fewer characteristics (one being opposable thumbs), that they are placed in the same class for various heuristic purposes.

In combination with the data base established, this mathematical method yields a hierarchy of conflict types at each point that is presumed to be critical in its development. These types derive directly from the empirical patterns of conditioning factors that apply to the individual conflicts examined at those turning points. It may be well, then, to reiterate that the conditioning factors or patterns of factors that are most important in producing conflict are by no means necessarily the same as those that are most important for control purposes. It is unlikely, however, that the two are unrelated. For example, Seymour Deitchman has found that certain configurations of climatological and topographical conditions conspire to the distinct advantage of unconventional forces in time of war.[23] This knowledge may hardly be considered

[22]A. J. Cain, *Animal Species and Their Evolution* (London: Hutchinson House, 1954).

[23]See Seymour J. Deitchman, *Limited War and American Defense Policy* (Cambridge, Mass.: The M.I.T. Press, 1964), chap. 6, "Where They Fight: The Environment."

an advantage in controlling a particular conflict once armed hostilities have commenced. Before that time, however, and in the context of an established network of enabling factors, it could well be of critical importance in estimating both the likely course of a conflict and the likely effects of various policy measures upon it.

Summary

In summary, what has been attempted in this study is the establishment of a systematic, reliable, and automated technique for the purposeful and simultaneous manipulation of an extremely large number of variables. It has been estimated that man himself is capable of manipulating at most one hundred variables at any one time. Indeed, most often his deliberations proceed in terms of a vastly smaller number. Public discussions in the United States of the desirability and effectiveness of bombing North Vietnam, for example, generally proceeded in terms of very few factors: the increasing loss of American lives, the continuing flow of troops and supplies from North to South Vietnam, the effectiveness of aerial bombing in slowing German ball-bearing production in World War II, and its failure to produce British capitulation in the Battle of Britain.

Certainly, a far greater number of factors is involved in this, or any, policy problem. But the mind of man is limited. In the face of complex events, he falls back on assumptions, images, and types that may facilitate decision making but are always of questionable validity. Clearly, his analytic capabilities and therefore his policy decisions are likely to gain in precision and efficacy if these vague notions are tested against objective realities and reformulated in light of the established or customary workings of a larger number of operative variables.

This study has attempted to formulate and construct an integrated program of policy-relevant research that will ultimately permit the simultaneous manipulation of a theoretically unlimited but increasingly incisive set of variables affecting the course and outcome of violent conflict. The ultimate result, hopefully, will be a less impressionistic basis for prediction and a more reliable and effective basis for policy action with respect to conflict than presently exist.