Chapter 1

Introduction

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The Nature of Science

Through the ages, many have written about war, and a considerable amount of this effort has been devoted to understanding why people kill each other. Those of us committed to the scientific study of war believe that part of the reason so little progress has been made in understanding is that inquiry has not followed a sufficiently rigorous method. Philosophical analyses of the physical world, for example, even when conducted by such a brilliant thinker as Aristotle, did not produce a cumulative body of knowledge. A substantial advancement in our understanding came only with the development and application of the scientific method. Only through the use of controlled observation, the collection of evidence, careful inference, and the belief that hypotheses must always be tested before being accepted was progress made. This same kind of rigor and commitment to the truth—no matter which privileged theories are challenged—will be necessary before any real knowledge about war and peace is acquired.

Lewis F. Richardson, one of the first to study war scientifically, expressed these kinds of concerns when he decided to apply scientific methods to this problem. He felt there were many vehemently held opinions about war, its causes, and ways to prevent it but little attempt to subject those opinions to systematic testing to see if they were accurate. In communications with Quincy Wright, another pioneering scholar in the collection of data on war, Richardson (1960a, 1960b) discussed his search for a more reliable answer to the war puzzle based on historical facts rather than intuitive reasoning. He said many people who discuss politics seem more interested in persuading others of the rightness of their cause than in understanding and explaining the recurring patterns of behavior that we observe. As a result, few take the time to carefully study the world in an empirical fashion.

Richardson's argument should make it clear that science is primarily an empirical method of inquiry that can be used to study how the world works. The scientific method cannot tell us what is good or what values should be pursued. Once we have an understanding of how the world works, we may be in a position to make changes so that humans can do things—fly, for example—that they were unable to do before. Pure science can produce an applied science of engineering, and clearly many of the early peace researchers hoped that a scientific study of war would help control and prevent war.

In this way, the normative—what we value or the way we believe people ought to behave—informs the empirical. Normative factors determine the uses to which we might put knowledge, as well as shape what we study and how we define problems, but they should not blind us to the way the world actually works. Nor should our values and beliefs so shape our observations and the way we make inferences that evidence is ignored or consciously manipulated. Because normative issues play such a large role in shaping inquiry, it is important to remember that when we speak of scientific objectivity, we mean simply that scholars should not distort their evidence to fit their beliefs; that is, they should be honest and truthful. We do not mean that science is

neutral in terms of the values its research is used to support. Science has had a tremendous impact on how we live, what we believe, and how we think. All of these things have normative implications, but science itself is not a method for telling us whether these things are good or bad. For that, we must look to other discourses.

At the start, it is important to keep in mind the purpose of the scientific approach. Science aims to uncover general patterns, not the unique. It seeks to uncover the **nomothetic** (from the Greek, *nomos*, meaning "lawlike") rather than the **idiographic** ("the particular"), which falls within the domain of historical descriptions. A scientific study does not attempt to understand the particular causes of a specific war but rather analyzes a large number of wars to identify the conditions associated with war as a general social phenomenon. A scientific approach involves four basic processes: (1) identifying generalizations or empirical patterns, (2) constructing an explanation or theory of the observed generalizations, (3) deriving a testable hypothesis, and (4) testing the hypothesis against empirical evidence.

The earliest stages of a science are usually devoted to identifying generalizations. One way to identify these generalizations is to come up with a verbal statement that describes a general pattern—for example, "rivalry brings about war, not peace." Such a statement might be refined, qualified, and made more precise; with some reflection and study, it eventually becomes a working hypothesis about one of the factors associated with the onset of war. Such statements need not always be verbal; they can also be mathematical, with symbols representing concepts.

For example, the finding that no two fully democratic states have fought an interstate war against each other in history was uncovered by a scholar who paired data on wars with data on states' regime characteristics (Babst 1964).

The crucial point for the scientifically orientated, however, is that the hypothesis can be tested with empirical evidence before being accepted. Ransacking history for anecdotes that support an argument is no substitute for a systematic review of all the relevant evidence (Singer 1969). In this regard, those who take a scientific approach do not object to careful historical analyses of particular wars; indeed, they usually read a great number of them. Nor do they object to case studies or even theoretical history. Their objection is to attempting to establish generalizations through an overreliance on argumentation and armchair philosophizing, as was often done in the 1950s and 1960s. Science outlines a set of criteria for determining which statements will be accepted and rejected. It is a self-imposed system for determining beliefs and knowledge about the empirical world.

Science insists on shifting through the evidence, and this usually involves counting—if for no other purpose, at least to count those instances that support a generalization and compare them with those instances that do not. Much of the research in the early stages of a science, and hence in this book, is confined to just that: seeing how many cases support or fail to support a hypothesis. In the democratic peace literature, for example, scholars have compiled multiple data sets on interstate conflict and regime type to ensure that the early patterns observed by Babst (1964) hold across space and time and with a variety of different measures of these general concepts.

Counting, of course, involves statistics, and there is a popular prejudice against statistics. Some even argue that anything can be proved with statistics or that statistics lie. Of course, statistics do not lie; people lie, and they can use either statistics or words to do so. What separates the sophisticated from the statistically illiterate is that the former can read and tell when statistics are being misused and the latter cannot. Those who are illiterate tend to reject or accept blindly any statistical argument because they are unable to evaluate it or even understand others' evaluations. This book aims to give you the skills necessary to examine the evidence yourself. It progresses from the simple use of percentages to more complicated techniques, such as duration and selection models, teaching you how to read tables and

interpret statistics so that you can evaluate an author's interpretations and conclusions.

Once some generalizations are established, the next step in scientific inquiry is to try to construct an explanation of these patterns. An explanation answers the question "why?" and often takes the form of a causal analysis. While explanation logically follows discovery of patterns, the two often go hand in hand with theoretical hunches suggesting patterns and empirical patterns reshaping theory (Popper 1962). Although the two go together, it is important to understand that the practices that lead to discovery and theory construction are analytically distinct from the philosophical justifications and rules used for accepting or rejecting a hypothesis. The logic of discovery is not the same as the logic of confirmation. Discovery may occur for a variety of reasons—because of a correct view of the world or by serendipity, for example. Confirmation, however, involves following specific procedures to test a hypothesis and assess its adequacy in light of the evidence.

The democratic peace literature provides a nice example of this back-and-forth process. A philosopher, Immanuel Kant, predicted the emergence of the democratic peace before many democracies existed in the world in his 1795 paper, *Perpetual Peace* (Kant 1970, 1991). Once Babst's study was published, other scholars began to confirm the empirical pattern using different data sources. This was followed by a healthy debate about the causal relationship between democracy and peace. Why don't democracies fight wars against other democracies? In this book, we describe a variety of theoretical answers that emerged focusing on institutions, norms, and information.

Once a new hypothesis is developed, it is then subjected to empirical testing. One argument about why democracies do not fight relates to Kant's idea that the citizens in democratic states do not want to pay the costs for fighting wars. This makes democratic leaders more cautious about initiating wars, especially if they want to keep their jobs and remain in office. This theoretical model predicts a new hypothesis that democracies will be more likely to win the wars they fight. They are likely to be more cautious initiators because their leaders will face more severe consequences for failed foreign policies. This hypothesis was subjected to empirical testing, and the analyses supported the claim, with democracies winning more than 80% of the interstate wars they have fought since 1816 (Lake 1992).

The scientific study proceeds in this way as scholars compile new empirical evidence, develop new theories, and test these novel hypotheses with additional data. It is important as well to control for other factors that might cause war, such as relative power or military alliances, to ensure that the key findings we have observed (e.g., the democratic peace) are robust. The best way to learn about the scientific research, in our view, is to actually do it. We hope that the articles presented in this book will serve as useful illustrations of the merits and promise of the scientific approach.

Factors Related to the Onset of War

What do we know about war? How much confidence do we have about our knowledge? These questions guide our inquiry throughout this book. The two questions go together because the scientific approach assumes that we can never be sure that what we think is true actually is true. Science is an open-ended process; it is a way of thinking about empirical truth and searching for it rather than an end or body of knowledge that, once established, is beyond refutation. What we establish today might have to be rejected tomorrow because of new tests or evidence. When we use the word *true*, we must always be tentative. What we really mean is that a hypothesis has passed empirical tests and has not been falsified by the evidence; it is consistent with the evidence. Because of this aspect of science, some scholars prefer not to use terms such as *true* and *false,* substituting *accurate* and *erroneous, adequate* and *inadequate,* or *accept* and *reject*. While these terms indicate the tentative nature of empirical truth, they tend to become functional equivalents of *true* and, as such, can be seen as intellectual euphemisms. For this reason, we will not always shy away from

using *true* and *false*, but readers should be aware of the tentative way in which we employ these terms.

With these caveats in mind, it should be clear that appropriate questions are "What have we learned about war?" and "How accurate are our beliefs about war and peace in light of the evidence?" The past fifty years have seen the testing of a number of popular beliefs about the causes of war and raised serious questions about various explanations of war. Most of these tests, however, have been confined to mapping what J. David Singer (1979) has called the *correlates of war*. In other words, much research has not attempted to delineate the causes of war but simply to identify all factors that seem to correlate with war. Discovering which of these factors associated with war act as causes and which are simply correlates or epiphenomena is something that will require making difficult inferences and is best done once the mapping of correlates is more complete.

Nevertheless, the articles reprinted in this book represent the various empirical patterns and theoretical arguments that have characterized the modern scientific study of warfare. The book is organized around the concept of dangerous dyads and peaceful dyads. The dangerous dyads portion of the book focuses on several factors that Stuart Bremer (1992b) identified as increasing the risks of interstate conflict between pairs of states, including relative capabilities, arms races, alliances, contiguity/territorial disputes, and rivalry. The first part of the book reprints Bremer's "Dangerous Dyads" article and uses this as an organizing schema for the second part. Part II includes articles on territory (Chapter 3), alliances (Chapter 4), rivalry (Chapter 5), arms races (Chapter 6), the steps to war model (Chapter 7), and the diversionary theory of warfare (Chapter 8). Most of the articles adopt a dyadic approach (looking at the relations between a given pair of countries) like Bremer and focus on the factors that increase the risk of militarized conflict between the members of the dyad. The studies analyze violent conflicts such as wars that involve many battle deaths, as well as threats, displays, and uses of force that end short of war, what we call militarized interstate disputes (or MIDs). In addition to showing which factors increase the risks for MIDs and wars, the reprinted articles also give us some sense of the overall size of these risk factors by showing how the probability of conflict changes as the independent variables change. For example, we can compare the probability of war for pairs of states that have ongoing territorial disputes over their shared land border to the probability of war for states that have no border disputes. Bremer's "Dangerous Dyads" model identifies multiple risk factors that make war more likely, and this book illustrates how these various factors interact to generate conflict. This is similar to medical research that might identify a series of risk factors for heart disease (family history, being overweight, poor diet, lack of exercise, smoking, etc.) and then analyze the effect of each variable on the chances for a person to get the disease.

The third part of the book examines the factors that explain why some dyads are able to maintain peace, with an emphasis on the Kantian peace. This research focuses on factors that explain why some pairs of states are more peaceful than others. This includes the three legs of the Kantian tripod for peace (Russett and Oneal 2001): democracy (Chapters 9 and11), economic interdependence (Chapters 9 and 10), and international organizations (Chapter 9). We also include recent empirical work on nuclear weapons (Chapter 13) and power preponderance (Chapter 11) as a potential source of dyadic peace, and we discuss the role of territorial border agreements for promoting future peace between pairs of countries (Chapter 12). The last part of the book examines the consequences of war and identifies factors that promote the durability of peace. We focus on the consequences of war for leader survival (Chapter 15) and the factors that promote more durable peace settlements following war (Chapter 14). After completing the book, readers should have a good sense for factors that increase pairs of states' risks for war and possible solutions to these dangerous situations.