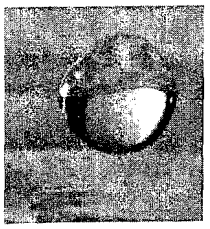


CHAPTER 2

Studying Politics Scientifically

Most Americans like to think that judges in our legal system impartially and fairly follow established law and legal principles when making their rulings. People must wonder, then, why a president's nomination to the federal judiciary so often creates such a ruckus in Congress and the nation as a whole. Consider two editorials about President George W. Bush's nominee for the U.S. Supreme Court, Samuel Alito. In opposing his nomination, *Boston Globe* editors wrote:

> *Judge Alito's judicial philosophy, his written record of court decisions, and his unconvincing, sometimes evasive, answers in his nomination hearings far outweigh the personal appeal. He should not be sent to the Supreme Court, where he could reverse the progress this nation has made toward lifting precisely the kinds of barriers his father struggled to overcome.*[1]

Washington Post editors, however, felt differently:

> *Judge Alito should be confirmed, both because of his positive qualities as an appellate judge and because of the dangerous precedent his rejection would set. . . . Judge Alito is superbly qualified. His record on the bench is that of a thoughtful conservative, not a raging ideologue. He pays careful attention to the record and doesn't reach for the political outcomes he desires.*[2]

Here we have two divergent opinions about the same man for the same office. Yet this difference should perhaps come as no surprise because many political scientists who have studied judicial decision making conclude that, when deciding cases, judges tend to follow their political ideology and beliefs, not abstract legal doctrine. As discussed in Chapter 1, Jeffrey A. Segal and Albert D. Cover found a relationship between justices' personal attitudes and the content of their opinions on civil rights cases.[3] Needless to say, this result contradicts what a lot of people assume about judicial decision making.

The case provides a clear example of the frequent collision between a commonsense or conventional understanding of politics and systematic, empirical inquiry. Such conflict may cause one to wonder "who should be believed." In

this instance the investigators' argument is at once counterintuitive and contentious; counterintuitive because it runs against the popular or commonsense belief that we are a government of laws, and contentious because it opposes other historical and political studies. Thus numerous questions arise: *Why* should we accept Segal and Cover's argument? How did they arrive at their conclusion? Was their method sound? What sorts of evidence support their thesis? Should we take their word simply because the authors are well-known scholars? If someone else examined the problem, would he or she come to the same conclusions?

These questions, in turn, fall under a broader one. In studying political phenomena—an activity that involves claims about how the world *is,* not about how it *should be*—is one way of answering superior to others? In Chapter 1 we implicitly argued that the answer is yes. There we emphasized empirical research methods, a set of procedures that employ scientific principles and techniques. Although this stance, which goes under various names such as positivism, behavioralism, or empiricism, is controversial both in and out of political science, it remains perhaps the dominant approach. But there are other schools of thought that do not fully accept the notion that the science is the most satisfactory method of learning about politics and government. One holds that **interpretation**—or the effort to see how people understand, use, and react to language, symbols, and social institutions and rules—provides a better way. This side claims that politics and other social activities cannot always (or even ever) be satisfactorily studied scientifically. Interpretationists, as they are sometimes called, want to get inside people's heads, as it were, to see how they, not the researcher, comprehend the world. We discuss interpretation as a methodology in a bit more detail later in this chapter. For now we note that the scientific spirit still prevails in the literature and teaching of political science, and our principal goal in this book is to explain its philosophy and techniques.

Yet, since we recognize that science is just one way through which humans acquire knowledge, we must explore how it differs from other types of knowledge. We also discuss important features of the scientific research process as they relate to the study of politics and evaluate arguments against using the scientific method in the study of political behavior and institutions. We conclude with a brief history of political science as a discipline.

Characteristics of Scientific Knowledge

In our daily lives we "know" things in many different ways. We know, for example, that water boils at 212 degrees Fahrenheit and that a virus called HIV causes AIDS. We also may "know" that liberals are "weaker" on national defense than conservatives or that democracy is "better" than dictatorship. In

some cases we know something because we believe what we read in the newspaper or hear on the radio. In other cases we believe it because of personal experience or because it appears to be consistent with common sense or is what a trusted authority told us.

Modern political science, though, relies heavily on one kind of knowledge, knowledge obtained through the scientific process. This way of knowing differs greatly from information derived from myth, intuition, faith, common sense, or authority. It has certain characteristics that these other types of knowledge do not share completely.[4] Scientists believe that their findings are based on objective, systematic observation and that their claims can and must in principle be verified or rejected by observation using a shared set of standards and procedures. The ultimate goal of science, which is not always attained, is to use verified results to construct causal theories that explain why phenomena behave the way they do.[5]

Scientific knowledge exhibits several characteristics. First, as we have just stressed, it depends on **empirical verification.** That is, a statement must be proved true by means of objective observation. *Empirical* means "relying or based on observation or experience."[6] A political scientist uses senses to observe and record phenomena such as political protests, the number of ballots cast in an election, and invasions of the territory of one nation by another and then describes and explains the observations as accurately as possible.

By *verified* we mean that our acceptance or rejection of a statement regarding something "known" must be influenced by observation.[7] Thus, if we say that people in the upper classes vote more frequently than members of the lower strata, we must be able to provide tangible evidence, such as census or poll data, in support of this statement. Similarly, theories of why a phenomenon occurs as it does must be supported by more or less hard evidence and not simply asserted or assumed to be true because someone said so or our instinct tells us so.

The empirical nature of scientific knowledge distinguishes it from mystical knowledge. In the latter case, only "true believers" are able to observe the phenomena that support their beliefs, and observations that would disprove their beliefs are impossible to specify. Knowledge derived from superstition and prejudice is usually not subjected to empirical verification either. Superstitious or prejudiced persons are likely to

RECONSTRUCTED RESEARCH

In this section and also later in the chapter we list and describe various characteristics of scientific activity. These attributes can be thought of as ideals. Not every social scientific statement or procedure meets the criteria listed here. Moreover, empirical research is not a matter of blindly following a predetermined, general set of instructions. And research results are almost always a bit messy and tentative. So you should not expect to find many examples of researchers following a recipe. Nor will you in your own studies always be able to follow a prescribed formula. Intuition, luck, and serendipity are sometimes necessary. What we present here is a reconstruction (or an abstraction) of the principles underlying the scientific research process. If you understand these principles, then political science research will be much easier to read about or undertake.

note only phenomena that reinforce their beliefs while ignoring or dismissing those that do not. Thus their knowledge is based on selective and biased experience and observation. Superstitious people are often fearful of empirically testing their superstitions and resist doing so.

Some philosophers of science, in fact, insist that a key characteristic of scientific claims is **falsifiability,** meaning the statements or hypotheses can in principle be rejected in the face of contravening empirical evidence. A claim not refutable by any conceivable observation or experiment is nonscientific. In this sense, the findings of science are usually considered tentative: they are "champion" only so long as competing ideas do not upend them. Indeed, the philosopher Karl Popper argues that scientists should think solely in terms of attempting to refute or falsify theories, not prove them.[8]

In any event, note that commonsense knowledge as well as knowledge derived from casual observation may be valid. Yet they do not constitute scientific knowledge until they have been empirically verified in a systematic and unbiased way. Alan Isaak notes that commonsense knowledge is often accepted "without question, as a matter of faith," which means that facts are accepted without being established by commonly accepted rules and procedures of science.[9]

In view of the importance of verification and falsification, scientists must always remain open to alterations and improvements of their research. To say that scientific knowledge is provisional does not mean that the evidence accumulated to date can be ignored or is worthless. It does mean, however, that future research could always significantly alter what we currently believe. In a word, scientific knowledge is tentative. Often when people think of science and scientific knowledge, they think of scientific "laws." A scientific law is a "generalization that was tested and confirmed through empirical verification."[10] But these laws often have to be modified or discarded in light of new evidence. So even though political scientists strive to develop law-like generalizations, they understand and accept the fact that such statements are subject to revision.[11]

Sometimes efforts to investigate commonsense knowledge have surprising results. For example, given America's high levels of literacy, the emergence of mass communications, modern transportation networks, and the steady expansion of voting rights for the last two hundred years, we might assume that participation in national elections would be high and even increase as time goes by. But, as the example in Chapter 1 suggested, neither of these conditions holds. Lots of evidence indicates that half or more of eligible Americans regularly skip voting and that the number doing so may be increasing despite all the economic and civic progress that has been made. In the studies described in Chapter 1, all of the researchers subjected their claims and explanations to empirical verification. They observed the phenom-

ena they were trying to understand, recorded instances of the occurrence (and nonoccurrence) of these phenomena, and looked for patterns in their observations that were consistent with their expectations. In other words, they accumulated a body of evidence that gave other social scientists a basis for further study of the phenomena.

Scientific knowledge is supposedly "value free." Empiricism addresses what is, what might be in the future, and why. It does not typically address whether or not the existence of something is good or bad, although it may be useful in making these types of determinations. Political scientists use the words *normative* and *nonnormative* to express the distinction. Knowledge that is evaluative, value laden, and concerned with prescribing what ought to be is known as **normative knowledge.** Knowledge that is concerned not with evaluation or prescription but with factual or objective determinations is known as **nonnormative knowledge.** Most scientists would agree that science is (or should attempt to be) a nonnormative enterprise.

This is not to say that empirical research operates in a valueless vacuum. A researcher's values and interests, which are indeed subjective, affect the selection of research topics, time periods, populations, and the like. A criminologist, for example, may feel that crime is a serious problem and that long prison sentences for those who commit crimes deter would-be criminals. He or she may therefore advocate stiff mandatory sentences as a way to reduce crime. But a test of the proposition that stiff penalties reduce the crime rate should be conducted in such a way that the researcher's values and predilections do not bias the results of the study. And it is the responsibility of other social scientists to evaluate whether or not the research meets the criteria of empirical verification. Scientific principles and methods of observation thus help both researchers and those who must evaluate and use their findings. Note, however, that within the discipline of political science, as well as in other disciplines, the relationship between values and scientific research is frequently debated. We have more to say about this subject later in this chapter.

Even though political scientists may strive to minimize the impact of biases on their work, it is difficult, if not impossible, to achieve total objectivity. An additional characteristic of scientific knowledge helps to identify and weed out prejudices (inadvertent or otherwise) that may creep into research activities.[12] Scientific knowledge

DISTINGUISHING EMPIRICAL FROM NORMATIVE CLAIMS

It is sometimes tricky to tell an empirical statement from a normative one. The key is to infer the author's intention: Is he or she asserting that something is simply the way it is, no matter what anyone's preference may be? Or is the person stating an opinion or a desire or an aspiration? Sometimes normative arguments contain auxiliary verbs, such as *should* or *ought,* which express an obligation or wanting and thus suggest a normative position. Empirical arguments, by contrast, often use variations of *to be* or direct verbs to convey the idea that "this is the way it really is in the world." Naturally, people occasionally believe that their values are matters of fact, but scientists must be careful to keep the types of claims separate.

must be **transmissible**—that is, the methods used in making scientific discoveries must be made explicit so that others can analyze and replicate findings. The transmissibility of scientific knowledge suggests "science is a social activity in that it takes several scientists, analyzing and criticizing each other, to produce more reliable knowledge."[13] To accept results, people must know what data were collected and how they were analyzed. A clear description of research procedures allows this independent evaluation. It also permits other scientists to collect the same information and test the original propositions themselves. If the original results are not replicated using the same procedures, they may be incorrect.

This idea leads to another characteristic of scientific knowledge: it is **cumulative** in that both the substantive findings and research techniques are built upon the results of prior studies. As Isaac Newton famously observed of his own accomplishments, "I have stood on the shoulders of giants." He meant that the attainment of his revolutionary insights depended in part on the knowledge other scientists generated in the previous decades and centuries.

This does not mean that scientific knowledge is accumulated only or primarily through the exact repetition of earlier studies. Often, research procedures are changed intentionally to see whether similar results are obtained under different conditions. Consider an example. Two studies examined the connection between television violence and antisocial behavior among children.[14] In the first study researchers compared aggressive behavior among children in two Canadian towns. One of the towns had TV reception; the other did not. Surprisingly, the researchers found that younger children (ages eleven and twelve) living in the town with access to television were less, not more, aggressive. (Among older children—ages fifteen and sixteen—there was no difference.) This research was subsequently criticized because the two towns were not closely matched socioeconomically and because other factors related to aggressiveness among children, such as differences in school discipline, were not considered. A second study then followed involving children in a single town. The children were divided into "high" and "low" TV viewers. The high TV viewers were found to be slightly more aggressive than the low TV viewers. Yet even this study was flawed, because no attempt was made to assess the amount of violence actually seen on TV by the high viewers. Low viewers could have watched particularly violent programs, so the difference between the groups would have been minimized. The method of measuring aggressiveness also was suspect. But the point is that these supposed deficiencies could readily be detected because the research procedures were clearly described.

Thus shortcomings in a research design often lead others to doubt the results, prompting them to devise their own tests. This would not be possible, however, if researchers did not specify their research strategy and methods. Such descriptions permit a better assessment of results and allow others to

make adjustments in design and measurement when pursuing further study. The results of these new studies can then be compared with the earlier results. This process produces an accumulated body of knowledge about the phenomena in question.

Another important characteristic of scientific knowledge is that it is **general**, or applicable to many rather than just a few cases. Advocates of the scientific method argue that knowledge that describes, explains, and predicts many phenomena or a set of similar occurrences is more valuable than knowledge that addresses a single phenomenon.[15] For example, the knowledge that states with easier voter registration systems have higher election turnout rates than states with more difficult systems is preferable to the knowledge that Wisconsin has a higher turnout rate than Alabama. Knowing that party affiliation strongly influences many voters' choices among candidates is more useful knowledge to someone seeking to understand elections than is the simple fact that John Doe, a Democrat, voted for a Democratic candidate for Congress in 2006. The knowledge that a state that has a safety inspection program has a lower automobile fatality rate than another state, which does not, is less useful information to a legislator considering the worth of mandatory inspection programs than is the knowledge that states that require automobile inspections experience lower average fatality rates than those that do not.

A statement that communicates general knowledge is called an **empirical generalization.** An empirical generalization summarizes relationships between individual facts.[16] For example, the generalization that states with easier voter registration systems have higher turnout rates than states with more burdensome systems connects information about voter registration systems and voter turnout rates in individual states and summarizes that information in a broad proposition that can be used as the basis for policy debate or further investigation.

Another characteristic of scientific knowledge is that it is **explanatory,** that is, it provides a systematic, empirically verified understanding of why a phenomenon occurs. In scientific discourse the term *explanation* has various meanings, but when we say that knowledge is explanatory we are saying that a conclusion can be derived (logically) from a set of general propositions and specific initial conditions. The general propositions assert that when things of type X occur, they will be followed by things of type Y. An initial condition might specify that X has in fact occurred. The observation of Y is

THE USES OF REPLICATION

When picking a research topic, keep in mind a basic premise of scientific investigation: independent verification. If you come across a claim based on research that you find interesting or provocative or contrary to common sense, you might attempt to replicate at least part of the study. Suppose, for example, that a newspaper reports that the public generally favors a certain policy, but you suspect that the results are misleading because of the way the questions were worded or the circumstances in which they were asked. You might be able to replicate the study by using a different set of data. In other words, don't hesitate to study a problem that has already been well researched.

then explained by the conjunction of the condition and the proposition. The goal of explanation is, sometimes, to account for a particular event—the demise of the Soviet Union, for example—but more often it is to explain general classes of phenomena such as wars or revolutions or voting behavior.

Explanation, then, answers "why" and "how" kinds of questions. The questions may be specific, as, for instance, "Why did a particular event take place at a particular time?" or more general, as, for example, "Why do upper-class people vote more regularly than, say, blue-collar workers?" Observing and describing facts is, of course, important. But most political scientists want more than mere facts. They are usually interested in identifying the factors that account for or explain human behavior. Studies of turnout are valuable because they do more than simply describe particular election results; they offer an explanation of political behavior in general.

An especially important kind of explanation for science is that which asserts *causality* between two events or trends. A causal relation means that in some sense the emergence or presence of one condition or event will always (or with high probability) bring about another. Causation implies more than one thing follows another: instead, it means one necessarily follows the other. It is one thing to say that economic status is somehow related to the level of political participation. It is quite another to assert that economics determines or causes behavior. Statements asserting cause and effect are generally considered more informative and perhaps useful than ones simply stating an unexplained connection exists. After all, there may be a relationship between the birthrate in countries and the size of their stork populations. But this connection is purely coincidental. We discuss causality in more detail in Chapter 5.

In this vein, explanatory knowledge is also important because it can be predictive by offering systematic, reasoned anticipation of future events. Note that prediction based on explanation is not the same as forecasting or soothsaying or astrology, which do not rest on empirically verified explanations. An explanation gives scientific reasons or justifications—for why a certain outcome is to be expected. In fact, many scientists consider the ultimate test of an explanation to be its usefulness in prediction. Prediction is an extremely valuable type of knowledge, since it may be used to avoid undesirable and costly events and to achieve desired outcomes. Of course, whether or not a prediction is "useful" is a normative question. Consider, for example, a government that uses scientific research to predict the outbreak of domestic violence but uses the knowledge not to alleviate the underlying conditions but to suppress the discontented with force.

In political science, explanations rarely account for all the variation observed in attributes or behavior. So exactly how accurate, then, do scientific explanations have to be? Do they have to account for or predict phenomena 100 percent of the time? Most political scientists, like scientists in other disciplines,

accept **probabilistic explanation,** in which it is not necessary to explain or predict a phenomenon with 100 percent accuracy.

At this point we should acknowledge that many explanations and predictions in political science are weak or even false. Indeed some have so many counterinstances that they do not seem worthy of the designation *scientific,* and many critics rightfully point out that the social sciences have never come close to the rigor and precision of the natural sciences. For this reason, philosophers and methodologists maintain that social scientists cannot achieve the exactitude and precision of the natural sciences and that instead they should attempt not to explain behavior but to understand it.[17] Needless to say, we do not entirely agree with this view; but later in the chapter we acknowledge that this position has merits.

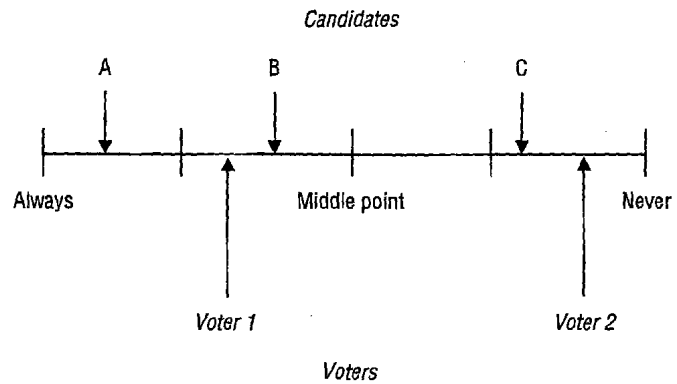
Scientists also recognize another characteristic of scientific knowledge, **parsimony,** or simplicity. Suppose, for instance, two researchers have developed explanations of why some people trust and follow authoritarian leaders. The first account mentions only the immediate personal social and economic situation of the individuals, whereas the second account accepts these factors but also adds deep-seated psychological states stemming from traumatic childhood experiences. And imagine that both provide equally compelling accounts and predictions of behavior. Yet, since the first relies on fewer explanatory factors than the second, it will generally be the preferred explanation, all other things being equal. This is the principle of Ockham's razor, which might be summed up as "keep explanations as simple as possible."

The Importance of Theory

The accumulation of related explanations sometimes leads to the creation of a **theory**—that is, a body of statements that systematize knowledge of, and explain, phenomena. Stated differently, theories help "organize, systematize, and coordinate existing knowledge" in a unified explanatory framework.[18] A theory about a subject such as war or voting or bureaucracy consists of several components: a set of "primitive" terms (words and concepts whose meanings are taken for granted); assumptions or axioms about some of the subject matter; explicit definitions of key concepts; a commitment to a particular set of empirical tools such as survey research (that is, polling) or document analysis; and, most important, general, verifiable statements that explain the subject matter. Two crucial aspects of empirical theory are (1) that it leads to specific, testable predictions and (2) that the more observations there are to support these predictions, the more the theory is confirmed.

To clarify some of these matters, let us take a quick look at an example. The "proximity theory of electoral choice" provides a concise explanation for why voters choose parties and candidates.[19] Superficially the theory may seem simplistic. Its simplicity can be deceiving, however, for it rests on

FIGURE 2-1
Proximities on Abortion Issue



many years of multidisciplinary research[20] and involves considerable sophisticated thinking.[21] But essentially the theory boils down to the assertion that people support parties and candidates who are "closest" to them on policy issues.

Take a particularly simple case. Suppose we consider the abortion debate. Positions on this issue might be arrayed along a single continuum running from, say, "Abortion should always be allowed" to "Abortion should never be permitted" (see Figure 2-1). Proximity theorists believe that both voters and candidates (or parties) can be placed or located on this scale and, consequently, that the distances or proximities between them (voters and candidates) can be compared. The theory's prediction is straightforward: an individual votes for the candidate to whom he or she lies closest.

To expand a bit, theorists in this camp argue (1) that analysts using proper measurement techniques can position both issues and candidates on scales that show how "close" they are to each other and to other objects and (2) that voters vote for candidates who are closest (most proximate) to themselves. People choose nearby candidates out of their desire to maximize utility, or the value that results from one choice over another. Knowing this fact, candidates adjust their behavior to maximize the votes they receive. Adjusting behavior means not only taking or moving to positions as close as possible to the average or typical voter (the so-called median voter) but also, if and when necessary, obscuring one's true position (that is, following a strategy of ambiguity).[22] Figure 2-1, for instance, shows that Voter 1's position is closest to Candidate B's; therefore, Voter 1 would presumably vote for that candidate. Similarly Voter 2 would prefer Candidate C. Note also that Candidate A could attract Voter 1's support by moving closer to the middle, perhaps by campaigning on an "abortion-only-in-certain-circumstances" platform.

The proximity theory has many of the characteristics of an empirical theory. It explains why things happen as they do, and it offers specific and testable predictions. It is also an implicitly causal theory in that it hypothesizes that the desire to maximize utility "causes" voters to support specific candidates. It is general since it claims to apply to any election in any place at any time. As such, it provides a much more sweeping explanation of voting than a theory that uses time- and place-bounded terms such as "the 2006

gubernatorial election in Pennsylvania." In addition, it provides a parsimonious or relatively simple account of candidate choice. It does not invoke additional explanatory factors such as psychological or mental states, social class membership, or current economic conditions to describe the voting act. Most important, although the proximity theory rests on considerable formal (and abstract) economic and decision-making reasoning, it puts itself on the line by making specific empirical predictions.

As a theory, it incorporates or uses numerous primitive or undefined terms such as *issue, candidate,* and *utility.* These words and concepts may have well-accepted dictionary meanings, but the theory itself takes their common understanding for granted. When a theory is challenged, part of the dispute might involve slightly divergent interpretations of these terms. At the same time the theory makes explicit various other assumptions. It assumes among other things that a researcher can place individuals on issue dimensions, that people occupy these positions for reasonably long time periods, that voters are rational in that they maximize utility, and that candidates have objective positions on these issues.[23] Moreover, by assumption, certain possibilities are not considered. The theory does not delve into the question of whether or not a person holds a "correct" position on the scale, given his or her objective interests. Finally, to test the proximity or spatial idea, researchers assume that one can assign individuals meaningful spatial positions by asking certain kinds of questions on surveys or polls.[24] This may be a perfectly reasonable assumption (we touch on that matter in Chapter 10), but it is an assumption nevertheless.

Still, spatial modelers, as they are called, go to lengths to define and explain key concepts. How *distance* is defined is a serious matter because different definitions can lead to different substantive conclusions.[25] And, as we noted earlier, the theory establishes clear hypotheses. Consider, for example, Voter 1 in Figure 2-1. The theory predicts that this person will vote for Candidate B, not A or C, because that candidate is closest. Voter 2, on the other hand, is closest to C and will vote for that candidate. All of these predictions can be checked with appropriate survey data.

No theory rests entirely on "facts" because it invariably contains unproven or unexamined definitions and statements. These assumptions may be based on previous usage and research, but the theory does not address them directly, except possibly to acknowledge their existence. For example, a theory of war might assert that one nation will attack another one if conditions X, Y, and Z hold. In making this argument, however, the theory may use words and ideas (e.g., *aggression, nation state, balance of power*) that go undefined; or it may assume that the best way to see if the conditions apply is to use certain historical documents. Hence, if the theory's main assertion—if conditions X, Y, and Z occur, an armed conflict follows—may fail to explain or predict the

occurrence of a specific war because (1) the theory itself is just wrong, (2) one or more of its underlying concepts or assumptions is incorrect or ambiguous, or (3) both (1) and (2) are correct (the most likely case). This characteristic means that scientific theories are provisional, that is, always subject to revision and change. In fact, according to the philosopher Thomas S. Kuhn, most "normal" activity in science involves checking the adequacy and implications of existing theories.[26] Thus new observations, more accurate measurements, improved research design, and the testing of alternative explanations may reveal the limitations or empirical inadequacies of a theory. In this case, the theory will have to be modified or rejected.[27] One of the excitements of reading scholarly literature is to witness the battle of clashing theories.[28]

Theories are sometimes described by their explanatory range, or the breadth of the phenomena they purport to explain. Usually one does not have a theory of "why George Bush won the 2004 presidential election." (It is, of course possible to find several theories that account for this particular outcome. But note that 2004 election results are an instance, or "token," of the kind of event with which these theories deal.) Instead, a good theory of electoral outcomes presumably pertains to more than simply the 2004 contest but also to other elections in other times and places. In the social sciences, so-called narrow-gauge or middle-range theories pertain to limited classes of events or behaviors such as a theory of voting behavior or a theory about the role of revolution in political development.[29] Thus a theory of voting may explain voter turnout by proposing factors that affect people's perceptions of the costs and benefits of voting: socioeconomic class, degree of partisanship, the ease of registration and voting laws, choices among candidates, availability of election news in the media, and so forth.[30] Global or broad-range theories, by contrast, claim to describe and account for an entire body of human behavior. Hence, we find theories of "international relations" or "the rise and fall of civilizations."[31] In short, theories play a prominent role in natural and social sciences because they provide general accounts of phenomena.[32] Indeed, other things being equal, the broader the range of the things to be explained, the more valuable the theory.

We can see the utility of theory building in the work of Bruce A. Williams and Albert R. Matheny, who evaluated several competing theories in their examination of variations in state regulation of hazardous waste disposal.[33] Regulation of hazardous waste disposal is an example of social regulation, regulation that imposes costs on a specific group to benefit the public or some segment of it. Improper waste disposal imposes costs on the environment and human health. These costs, known as negative externalities, are not reflected in the price of a product. Put somewhat differently, the people who produce and use the products that generate hazardous waste do not pay the costs that arise when improper storage of that waste threatens the community. Avoiding

or preventing negative externalities by requiring safe disposal of hazardous waste means imposing substantial costs on industry. There are at least three theories to explain and predict the amount or nature of waste disposal regulation enacted by the states.

According to economic theory, negative externalities are a type of market failure, because the market fails to deal with the problem in that the price of goods does not reflect their true cost. When this happens, government regulation of the market becomes justified and necessary. The market failure theory of government regulation predicts that social regulation is related to the severity of the market failure and that the costs to regulated industries should be equal to the costs or harms created by unsafe hazardous waste disposal.

Others argue that social regulation corresponds to more than just the presence or magnitude of market failures. They claim that social regulation is the result of political behavior and political influence. This theory predicts that exaggerated claims about dangers imposed by market failures must be made in order to generate public awareness, "moral outrage," and thence support for regulation. Consequently, the resulting regulations impose unnecessarily high costs on industry. The flip side of this theory has industry opposing regulation and dominating the regulatory process by threatening economic slowdown, unemployment, even change of location. The political strength of an industry is related to its importance to the economy and to the level of government considering the regulation. Threats to relocate have a greater impact at the local or state level than at the national level. Thus regulation may be related to conditions of industry dominance, not the extent of market failure or actual pollution.

A third theory states that, although industry dominates the regulatory process, it does not necessarily oppose all regulation. According to this view, industry supports regulation as long as the costs of regulation can be shifted to government and away from industry. This regulatory outcome is called the socialization of the costs of production and is predicted by neo-Marxists, who maintain that many private industries could not make a profit without evading actual production costs. They also argue that effective regulation and avoidance of negative externalities is not possible without fundamental institutional reform of both government and the economy. We have, then, three quite different theories of why and how much government regulation of hazardous waste disposal occurs. Each theory has something different to say about the power of public interest groups and industry groups and the outcome of social regulatory efforts. The conflicting beliefs about the politics they represent fuel many a debate about environmental regulations and the performance of government and the economy. Researchers investigating examples of social regulation may be far more interested in determining which

of these theories seems to fit with the observed data than in the actual amount and consequence of a specific regulatory program. In fact, researchers may become quite attached to a particular theory and be convinced that it is the correct theory.

But theory builders must not forget the basic standards for judging scientific theories: Are assumptions and axioms clearly separated from substantive propositions and hypotheses? Can the claims be verified or falsified? Are they empirical, not normative? Do they provide general explanations and add to existing knowledge? Are their statements transmissible to others? And, are they parsimonious?

Acquiring Empirical Knowledge: The Scientific Method

What produces scientific knowledge? What, in other words, is the type of thinking that leads to knowledge with the authoritative label *scientific*? Is there one valid path to scientific truth or can it be reached from different starting points? In reality, no scientist in the field or laboratory adheres to a prescribed set of steps like someone following a script. They rely on not just formal procedures, but intuition, imagination, and even luck at times. Nevertheless, we may conceptualize what they do by identifying the underlying logic of their activities. Here is a brief reconstruction of an ideal research program:

- Develop an idea to investigate or a problem to solve. A scientist gets topics from any number of sources including literature about a subject, general observation, intuition (or hunch), the existence of conflicts or anomalies in reported research findings, or the implications of an established theory. For example, newspaper accounts suggest that evangelical Christians tend to support conservative candidates because of "moral values." Several research questions are raised by these accounts: Do evangelicals behave in politics differently than do other religious groups? Do evangelicals turn out to vote more in elections where there are distinct differences between candidates on moral issues than in elections where the differences are small?
- Hypothesis formation. After selecting a topic, an investigator tries to translate the idea or problem into a series of specific hypotheses. As we see in Chapter 3, hypotheses are tentative statements that, if confirmed, show how and why one thing is related to another or why a condition comes into existence. These statements have to be worded unambiguously and in a way that their specific claims can be evaluated by commonly accepted procedures. After all, one of the requirements of science is for others to be able to independently corroborate a discovery. If

assertions are not completely transparent, how can someone else verify them? In the preceding example, we might hypothesize that evangelical Christians are more likely than others to base their vote on candidates' positions on moral issues or that evangelical Christians are more likely than other voters to vote for conservative candidates.

- Research. This is where the rubber meets the road: the essence of science comes in the empirical testing of hypotheses through the collection and analysis of data. We need to define in operational and understandable terms the concepts *moral values, conservative,* and *evangelical Christian.* We might, for instance, tentatively identify evangelicals as people who attend certain churches, moral values as attitudes toward abortion and gay marriage, and support for conservatives as voting for Republican candidates for state and national office. It would be possible (but not necessarily easy) to write a series of questions to be administered in a survey or poll to elicit this information. If this operational hypothesis holds water, we would expect certain responses (for example, opposition to gay marriage) to be associated with certain behaviors (for example, voting for Republicans).
- Decision. The logical next step is to see whether or not the observed results are consistent with the hypotheses. Simple in principle, judging how well data support scientific hypotheses is usually not an easy matter. Suppose, for example, we find that 75 percent of evangelical Christians opposed gay marriage and 90 percent of these individuals voted for a Republican House candidate in 2006. So far, so good. But suppose, in addition, that 70 percent of non-evangelicals also oppose gay marriage and that more than 90 percent of these people also voted Republican in the same election. It appears that attitudes might be affecting voting, but this does not necessarily establish a connection between religious preference and political behavior. When it comes to weighing quantitative or statistical evidence, this step requires expertise, practice, and knowledge of the subject matter plus good judgment and is often difficult to teach. Still, chapters in this book are devoted to showing ways to make valid inferences about tenability of empirical hypotheses.
- Modification and extension. Depending on the outcome of the test one can tentatively accept, abandon, or modify the hypotheses. If the results are favorable, it might be possible to derive new predictions to investigate. If, however, the data do not or only very weakly support the hypotheses, it will be necessary to modify or discard them. Let us stress here that negative results—that is, those that do not support a particular hypothesis—can still be interesting or helpful.[34] As we suggested earlier, some scholars such as Popper believe that science advances by disproving claims,

> not by accepting them. Consequently, a valuable contribution to science can come from disconfirming widely held beliefs, and the only way to do that is by replicating or reinvestigating the research upon which the beliefs rest. The key is not so much the result of a hypothesis test as how substantively important the hypothesis is to begin with.

In essence the scientific method entails using quantitative or qualitative data to test specific propositions. But exactly how does one use evidence to establish a hypothesis? What kind of thinking is involved?

Deduction and Induction

Most people probably believe that scientists prove their results. But the term *prove* may be too strong because it suggests that a conclusion cannot possibly be wrong. Of course, in some areas of science, such as mathematics, the proper application of logic guarantees the truthfulness of a proposition. This type of reasoning is called **deduction.** A valid deductive argument is one in which, if the premises are true, the conclusion must necessarily be true as well. The classic example is the syllogism:

All men are mortal.
Socrates is a man.

Socrates is mortal.

The conclusion (the sentence below the line) must be true if the premises (the statements above the line) are true. In this example, if all men are mortal and Socrates is a man, how could he *not* be mortal? Whether or not the premises are true is immaterial to the validity of the reasoning. In a valid deduction, it is the structure of the argument that counts: if the conditions ("All men. . .") are true and the argument is stated correctly, then the conclusion must be true.

As noted earlier, a common application of deductive reasoning is found in mathematics, in which theorems are deduced from a set of premises assumed to be or having been established as true. Deductive arguments find their way into political science, too. Social scientists have attempted to develop many axiomatic or deductive accounts of voting, group and coalition behavior, decision making, or the outbreak of war. For example, voters are motivated to vote on the basis of the costs and benefits to them of the policies espoused by the candidates in an election. If this premise is true and large policy differences exist between candidates in an election, then turnout in the election will be high because voter motivation will be higher than it is in elections in which there are small policy differences.

A more common type of reasoning is **induction.** Induction refers to the process of drawing an inference from a set of premises and observations. This type of reasoning differs from deduction because the premises do not guarantee the conclusion but instead lend support to it. An inductive argument, in other words, does not rely on formal proof but rather gives us (more or less solid) reasons for believing in the conclusion's truthfulness. A common type of inductive argument in the social sciences is one that makes a generalization on the basis of a sample. An argument based on sampling, for instance, has the following general form:[35]

In a particular sample, X percent of A's are B's.

X percent of *all* A's are B's.

One might argue, for instance, that 75 (X) percent of those people in a sample of Americans who attend church more than once a week (A) think that the Bible is the literal word of God (B). Then, you would have some reason to believe (but would not have proved deductively) that in the population as a whole 75 percent of frequent church attendees will regard the Bible as the actual word of God. This is, in effect, the kind of argumentation used by pollsters who want to make a generalization about a population based on the results of a sample. For us to accept the argument, we must have confidence in the sampling and analysis procedures. But even if we do, there is no assurance that the conclusion is true. It might seem probable or likely, but we have not demonstrated it conclusively.

Another type of inductive argument is the use of analogy or similarity to establish a point.[36] Here's an example. Imagine that you have made the following three observations. First, the Bemba of south-central Africa live a life of marginal subsistence consisting of nine months of abundance and three months of hunger. Despite deplorable conditions, there is no outbreak of violence or protest within the tribe during the three-month hunger period.[37] Second, the income of African Americans compared with that of whites of equal education rose rapidly during the 1940s and early 1950s but then declined precipitously so that half the relative gains were lost by 1960. Subsequently, violence broke out among blacks living in U.S. urban areas in the 1960s.[38] Third, political violence in Europe occurred during the growth of industrial and commercial centers, even though alternatives to the peasant's hard life emerged at the same time.[39]

In the first and second case studies, the objective well-being of the population declined, but only in the second instance did violence break out. In the third case study, there was no decline in the objective well-being of the population, yet violence occurred. Let's assume that in seeking an explanation in

the first case, you reason that the cycle of the seasons and its ensuing periods of feast and famine had been experienced for many years and was unlikely to change. In the second case you reason that African Americans expected to maintain the economic gains they had made in the previous decade. And in the third case you reason that during the period of emerging industrialization, all people expected to improve their living conditions, yet some members of society gained much more than others from the increased industry and commerce. Based on this reasoning, you could conclude that the second and third cases were similar because a discrepancy existed between expected and actual conditions, whereas in the first case there was no discrepancy. From this you might conclude that a large discrepancy or gap between expected and actual economic gains causes discontent, which in turn leads to violence. Thus you might develop a theory of relative deprivation from a few observations of specific cases of deprivation and violence.

The Scientific Method at Work

Generally speaking, it is difficult to point to examples of pure induction, since often a researcher starts with a hunch and then collects information that he or she expects will show certain patterns in line with that hunch. While not a full-blown theory, a hunch places the researcher farther along in his or her investigation than observation alone. In practice, science is an iterative process that typically employs several kinds of reasoning and arguments. Thus a researcher may start with a well-established theory and deduce certain phenomena that he or she will attempt to observe. If the observations are not quite what were expected, some modification of the theory will be made and the revised theory subjected to further testing. Sometimes the theory may have to be discarded and, on the basis of observations, a new theory induced.

A good example is found in the work of two researchers studying news coverage and social trust.[40] For some time psychologists Stephen Holloway and Harvey A. Hornstein had been studying social trust by observing the rate at which people returned wallets dropped on New York City streets to the addresses of the owners identified inside. The researchers would periodically drop wallets in various locations and wait and see how many were returned. Typically, half the wallets dropped were eventually returned. However, one day something happened that had never happened before: none of the wallets was returned. This unexpected result led Holloway and Hornstein to search for a plausible explanation. They set out to develop an explanation based on an observation—that is, they proceeded to the process of induction.

It so happened that on this particular day in June 1968 Robert Kennedy, a senator from New York and candidate for the Democratic presidential nomination, was assassinated. The investigators wondered if Kennedy's assassina-

tion could have something to do with the failure to return any of the wallets. Perhaps the news coverage of the event made people upset, mistrustful of strangers, and unwilling to help people they did not know or had not seen. Holloway and Hornstein hypothesized that exposure to "bad" news makes people less socially trusting and cooperative.

To test this hypothesis the researchers devised a series of experiments in which people were divided into two groups and were subtly exposed to "bad" or "good" news broadcasts. Then they were asked to reveal their attitudes toward other people and to play a game with other people that allowed observation of their degree of cooperation. Holloway and Hornstein were testing a general theory with research designed to measure the occurrence of certain predicted observations—that is, they were using deduction.

The experiments demonstrated that those exposed to bad news were, indeed, less socially trusting and cooperative, confirming the researchers' hypothesis. Both induction and deduction had been involved in accumulating an empirical, verifiable, transmissible, explanatory, general (yet provisional) body of evidence regarding an important social phenomenon.

Applying an existing theory to new situations, deciding which phenomena to observe and how to measure them, and developing a theory that explains many more things than the specific observations that led to its discovery are all creative enterprises. Unfortunately, it is difficult to teach creativity. But being aware of the general tenets of science will help make your own evaluation and conduct of research more worthwhile.

Is Political Science Really "Science"?

We have implied throughout this chapter that politics can and should be studied scientifically. Some people question this position, however, because the discipline involves the study of human political behavior, and studying people—as opposed to material objects such as atoms or stars—raises all sorts of complexities. As a consequence, compared with the natural sciences, progress in developing and testing political empirical theories has been agonizingly slow. It is no surprise, then, that scientists and nonscientists alike often observe that both the methods and the content of political science have not come even close to the exactitude and depth of sciences such as biology or physics, and consequently nowhere can we find empirical generalizations with the level of precision and confirmation enjoyed by, say, Einstein's theories of relativity. Moreover, if political science is a science in the same way that the natural sciences are, behavior must ultimately be describable by contingent causal laws.[41] Yet if human beings do not act predictably, or if their actions are not susceptible to description by general laws, political scientists, acting as scientists, encounter serious problems.

We can identify two objections to treating political science as a subdivision of science in general. The first we might term logistical or practical. The other is more philosophical.[42]

Practical Objections

The search for regularities in behavior assumes that men and women act consistently and in a discoverable manner. Nonetheless, even if we accept that individuals are generally predictable, some persons may deliberately act in unpredictable or misleading ways. This problem is occasionally encountered among subjects "cooperating" in a research project. For example, a subject may figure out that he or she is part of an experiment to test a theory about how people behave when put in a difficult or stressful or confusing situation. He or she may then act in a way not predicted by, or in conflict with, the theory. Or the subject may try to conform to what he or she thinks the researcher is looking for. Similarly, people may never reveal what is really on their minds or what they have done in the past or would do in the future. In other words, our ability to accurately observe the attributes of people can at times be severely limited. It is, for instance, frequently difficult to measure and explain illegal or socially unacceptable behaviors such as drug use.

Measurement problems also arise because the concepts of interest to many political scientists are abstract and value laden. Chapter 1 showed that a phrase as seemingly straightforward as "the number of eligible voters" can present problems that affect our substantive conclusions about how civic minded Americans are. Or consider unemployment, a seemingly unambiguous concept. One measure of unemployment takes into account persons who are out of work but actively seeking employment. An argument may be made that such a measure greatly underestimates unemployment because it does not include those who are so discouraged by their failure to find a job that they are no longer actively seeking work. Finding an adequate definition of poverty can be just as difficult, because people live in different types of households and have available different kinds of support beyond just their observed income. What one scholar may feel constitutes poverty another may see as nothing more than acceptable hardship.

Furthermore, political scientists must face the fact that consistent and rational human behavior is complex, perhaps even more complex than the subject matter of other sciences (genes, subatomic particles, insects, and so on). Complexity has been a significant obstacle to the discovery of general theories that accurately explain and predict almost every kind of behavior. After all, developing a theory with broad applicability requires the identification and specification of innumerable variables and the linkages among them. Consequently, when a broad theory is proposed, it can be attacked on the grounds that it is too simple or that too many exceptions to it exist. Certainly

to date no empirically verified generalizations in political science match the simplicity and explanatory power of Einstein's famous equation, $E = mc^2$.[43]

There are other practical obstacles.[44] The data needed to test explanations and theories may be extremely hard to obtain. People with the needed information may not want to release it for political or personal reasons. Or they may not want to answer potentially embarrassing or threatening questions honestly or completely. Pollsters, for instance, find refusal to answer certain questions, such as attitudes toward ethnic groups, to be a major problem in gauging public opinion. Similarly, some experiments require manipulation of people. But since humans are the subjects, the researchers must contend with ethical considerations that might preclude them from obtaining all the information they want. Asking certain questions can interfere with privacy rights, and exposing subjects to certain stimuli might put the participants at physical or emotional risk. Tempting someone to commit a crime, to take an obvious case, might tell a social scientist a lot about adherence to the law but would be unacceptable nevertheless.

All these claims about the difficulty of studying political behavior scientifically have merit. Yet they can be overstated. Consider, for example, that scientists studying natural phenomena encounter many of the same problems. Paleontologists must attempt to explain events that occurred millions or even billions of years ago. Astronomers and geologists cannot mount repeated experiments on most of the phenomena of greatest interest to them. They certainly cannot visit many of the places they study most intensively, like other planets or the center of the earth. And what can be more complex than organisms and their components, which consist of thousands of compounds and chemical interactions? Stated quite simply, it is in no way clear that severe practical problems distinguish political science from any of the other sciences.

Philosophical Objections

Before moving on, we want to emphasize again that the scientific method is not the only path to knowledge. In fact, some scholars believe that because the social sciences attempt to explain human **actions**—that is, behavior that is done for reasons—and not mere physical movement, they face challenges not encountered in the natural sciences. Opponents of the empirical approach claim that scientific methods do not explain nearly as much about behavior as their practitioners think. The problem, one set of critics argues, is that to understand human behavior one must try to see the world the way individuals do. (These are the interpretationists, mentioned earlier.) And doing so requires empathy, or the ability to identify and in some sense experience the subjective moods or feelings or thoughts of those being studied. Instead of acting as outside, objective observers, we need to "see" how individuals themselves

view their actions. For only by reaching this level of understanding can we hope to answer "why" questions such as "why did John vote Democratic in the last election" or "why did this group revolt against the duly elected government?" The answers require the interpretation of behavior, not its scientific explanation in terms of general laws. In short, interpretation means decoding verbal and physical actions, which is a much different task than proposing and testing hypotheses.

Indeed, some objections to the application of science to the study of human behavior go even further for they raise the question of what constitutes scientific knowledge. Empiricists, as we have suggested, take reality pretty much as a given. That is, the objects they study—elections, wars, constitutions, government agencies—have an existence independent of observers and can be studied more or less objectively. But an alternative perspective that since the 1970s has taken root in political science and international relations theory is called the social construction of reality or **constructionism.**[45] Constructivists, as supporters of the theory are called, claim that humans do not simply discover knowledge of the real world through a neutral process like the scientific method but rather create it. In other words, instead of knowing reality directly in its unvarnished or pure form, our perceptions, understandings, and beliefs about many "facts" stem largely, if not entirely, from human cultural and historical experiences and practices. We put *facts* in quotation marks in this context to stress the constructionist belief that what people often assume to be pure facts are conditioned by the observers' perceptions, experiences, opinions, and similar mental states. This position is perhaps another way of saying, "facts do not speak for themselves but are always interpreted or constructed by humans in specific historical times and settings." One version of this position admits that entities (for example, molecules, planets) exist separately from anyone's thoughts about them, but it also insists that much of what people take for granted as being "real" or "true" of the world is built from learning and interaction with others and does not have an existence apart from human thought.[46] Consider the term *Democratic Party.* Instead of having an independent, material existence like an electron or a strand of DNA, a political party exists only because citizens behave as if it did exist. This means that two individuals who come from different social, historical, and cultural backgrounds may not comprehend and respond to the term in the same way. What is important in studying, say, the individuals' responses to Democratic candidates is fathoming their personal beliefs and attitudes about the party.

Constructionist thinking now plays a strong role in international relations theory, where a concept such as anarchy is not considered a "given and immutable" cause of the behavior of states (for example, their desire for security through power politics). Rather, terms like this one have to be understood as what actors (individuals, states) make of them.[47]

The constructionist viewpoint, which comes in innumerable varieties, challenges the idea of an objective epistemology, or theory of knowledge. Such ideas, however, are of a deeply methodological nature and raise deep philosophical issues that go well beyond the task of describing the empirical methods used in the discipline.[48] We thus acknowledge that the scientific study of politics is controversial but nevertheless maintain that the procedures we describe in the chapters that follow are widely accepted and can in many circumstances lead to valuable understandings of political processes and behavior. Moreover, they have greatly shaped the research agenda and teaching of the discipline, as can be seen by looking at the evolution of the field in the twentieth century.

A Brief History of Political Science as a Discipline

Steven B. Smith wrote, "From its very beginnings political science has been a complex disciple torn in conflicting directions."[49] The history of the field can be divided into roughly four periods: the traditional era, the behavioral or empirical "revolution," the reaction to the rise of the behavioral perspective, and the contemporary period of accommodation.

The Era of Traditional Political Science

Traditional political science, which grew out of the study of law, institutions, and ethics, flourished until the early 1960s. It emphasized historical, legalistic, and institutional subjects.[50] The historical emphasis produced detailed descriptions of the developments leading to political events and practices. Legalism, in contrast, involved the study of constitutions and legal codes, and the concentration on institutions included studies of the powers and functions of political institutions such as legislatures, bureaucracies, and courts. In general, traditional political science focused on formal governments and their legally defined powers. Legal and historical documents, including laws, constitutions, proclamations, and treaties, were studied to trace the development of international organizations and key concepts such as sovereignty, the state, federalism, and imperialism. Informal political processes—the exercise of informal power and the internal dynamics of institutions, for example—were frequently ignored.

In the heyday of the traditional approach (roughly 1930 to 1960), the study of politics was usually taught in the history and philosophy departments of colleges and universities. Political theories concerning human nature and politics, the purpose and most desirable form of government, and the philosophy of law were the province of philosophy departments. When separate departments did appear, they were frequently called departments of government, reflecting the

emphasis on formal structures rather than on political processes and behavior. In fact, some universities still have government departments.

Since scientific methodology did not inform most of the study of government, traditional political science was primarily descriptive rather than explanatory. Most of its practitioners did not feel a need to conduct research that had the characteristics of the so-called hard sciences, which were often deemed inapplicable to social behavior and institutions. Critics were later to charge that the traditional school lacked rigor and generality and that, although theorists occasionally came up with intriguing and well-reasoned verbal theories, these discoveries were usually not subjected to rigorous and extensive empirical verification.

The Empirical Revolution

The emergence of the scientific study of politics in the United States after World War II, and especially in the late 1950s, can be attributed to several developments.[51] First, many of the European social scientists and theorists who emigrated to the United States in the 1930s were skilled in the use of new, scientific research methods.[52] Second, war-related social research in the following decade promoted the exchange of ideas among scientifically minded persons from the disciplines of political science, sociology, psychology, and economics. In fact, considerable evidence indicates that the U.S. government looked to colleges and universities for scientific social science research that would be of use in fighting the cold war against the Soviet Union.[53]

In addition, systematic research was aided by two related developments: the collection of large amounts of empirical data and the development of computers to store and process this information. For example, beginning in the late 1930s Paul F. Lazarsfeld pioneered the use of large-scale sample surveys or polls to study voting behavior and continued to refine the technique while working for the federal government during World War II. After the war he applied survey research methods to his study of the 1948 and 1952 presidential elections.[54] In these endeavors Lazarsfeld and others were influenced by the developing field of market research. This development makes sense if one thinks of voters as consumers who must choose among competing products (that is, candidates). Once the use of survey research got under way, the field exploded and is now perhaps the most common source of knowledge about politics in the United States and abroad.[55]

Moreover, as the empirical school ascended, sister disciplines in the social sciences began to investigate political problems and ultimately helped shape the content and methods of political science. A classic example is Anthony Downs's *An Economic Theory of Democracy.* As his title suggests, Downs (an economist) applied many concepts from economic theory to develop a formal

model of voting and party behavior. His reasoning depended on concepts such as "utility maximization" and "indifference." (One surprising conclusion was that under most circumstances it is irrational for individuals to vote in any but the very smallest elections. Similarly, the statistical methods used by economists, called econometrics, also played a critical role in the newer political science. Indeed, statistics is now deemed to be so essential to the field that practically every graduate student must take at least a one-year course in applied statistics. In the same vein, sociology, psychology, and anthropology have all influenced political scientists. Indeed, looking at the sway of other disciplines makes one appreciate the multidisciplinary nature of the field.

The important point, however, is that unlike the traditional school, the newer approach consciously embraces the spirit of scientific inquiry, as illustrated by David B. Easton's influential 1967 article, "The Current Meaning of 'Behavioralism.' "

> *There are discoverable uniformities in political behavior. These can be expressed in generalizations or theories with explanatory and predictive value. Means for acquiring and interpreting data . . . need to be examined self-consciously, refined, and validated. Precision in the recording of data and the statement of findings requires measurement and quantification. Ethical evaluation and empirical explanation involve two different kinds of propositions that, for the sake of clarity, should be kept analytically distinct. Research ought to be systematic.*[56]

Behavioral political science assumes and advocates the search for fundamental units of analysis that can provide a common base for the investigation of human behavior by all social scientists. Some political scientists, for instance, suggest that groups are an important unit on which to focus, while others are more interested in decision making and decisions.[57] Whatever the case, the hope was that units of analysis would be found and examined in much the same way that physicists and chemists focus on atoms, molecules, and the like.

Reaction to Empiricism

From the very beginning of the empirical movement, critics appeared. They pointed to the trivial nature of some of the supposedly scientific findings and applications. Common sense would have told us the same thing, they argued. But, as we explained earlier, there is a difference between intuition and scientific knowledge. To build a solid base for further research and accumulation of scientific knowledge in politics, commonsense knowledge must be verified empirically and, as is frequently the case, discarded when wrong.

Some political scientists were also concerned about the prominence of nonpolitical factors in explanations of political behavior. Psychological explanations

of political behavior stress the effect of personality on political behavior, whereas economic explanations attempt to show how costs and benefits affect people's actions. These competing approaches to understanding political behavior sometimes disturbed those used to studying political institutions or political philosophies. To them it looked as though politics was being taken out of the study of politics.

A more serious criticism of the scientific study of politics is that it leads to a failure to focus enough scholarly research attention on important social issues and problems. Some critics contend that, in the effort to be scientific and precise, political science overlooks the moral and policy issues that make the discipline relevant to the real world. The implications of research findings for important public policy choices or political reform are rarely addressed. In other words, the quest for scientific knowledge of politics has led to a focus on topics that are quantifiable and relatively easy to verify empirically but that are not related to significant, practical, and relevant societal concerns.[58] These worries led to, among other things, the emergence of new or revisionist approaches to political science.

Even as early as the late 1960s the president of the American Political Science Association, David Easton, offered a critique of behavioral or empirical political research. He argued, among other things, that to be more relevant to current issues, political scientists acting as scientists should consider these points:[59]

- Substance should determine technique. For example, the widespread availability of quantitative techniques such as market research tools should not govern the choice of research topics. As the interpretationists maintain, sometimes it is as important to understand attitudes as to measure them.
- The scientific study of politics may conceal a "conservative" bias because it studies institutions and practices as they are, not as they should be or would be under different circumstances. Scientists, as noted earlier, strive to be value free. But is this a proper stance for someone studying despotism or revolution or poverty? Isn't it appropriate to suggest alternatives to the status quo based on values?
- Research must not "lose touch with reality." Anyone who skims articles in *The Journal of American Political Science* might wonder if they concern current government and politics or are a form of higher mathematics. One of the commonest complaints about behavioral research is that it has little relevance to "practical politics," and many observers lament the failure of government or society to benefit from the knowledge and perspectives of political science.[60]

- Even natural scientists have an obligation to think about and improve their communities and nations, especially in times of crises or turmoil. After all, to say, "I'm only concerned with facts," may be to turn a blind eye to injustice.

Political Science Today: Peaceful Coexistence?

During the growth of empirical political science and the reaction it produced, political science became extremely self-conscious about its methods and methodology. Innumerable journal articles and books debated the relative merits of attempting to study politics scientifically. Many of the debates became acrimonious, with the participants charging each other with misunderstanding and misstating each other's positions. Departments at many colleges and universities became bitterly divided between "behavioralists" and "anti-behavioralists." Being associated with one camp or the other could jeopardize someone's job or chances for tenure, and many scholars charged that the major journals in the field—the most important venues for getting published and advancing careers—were being "taken over" by methodological purists. (If you wanted to publish an article on Plato's philosophy of justice, you might be out of luck finding a leading journal that would publish a paper without an empirical, preferably quantitative, slant.) Indeed, this level of discord would surprise those students who believe that scholarship is a calm, dispassionate activity.

Fortunately, although deep differences remain, the field of political science entered a period of truce beginning in the early 1980s. (What is more, the fights are not as public or bitter.) We might, then, think of the current era as eclectic, meaning that although the discipline continues to be divided by empiricism versus interpretative and constructionist schools, the sides seem to live in relative harmony.

On one hand, the empirical or behavioral approach dominates certain subfields such as the study of electoral behavior, public opinion, decision making, policy, and political economy. The research coming from this side has become increasingly technical, especially in its use of mathematics, statistics, and deductive logic; hence, the need for courses and texts in research methods.

On the other hand, the hostile reaction to the emergence and domination of the empirical perspective has brought about renewed interest in normative philosophical questions of "what ought to be" rather than "what is."[61] Beyond this stance, part of the discipline has become receptive to variations of **critical theory,** or the belief that a proper goal of social science is to critique and change society as a whole rather than merely understand or explain it. They feel, in other words, that by simply analyzing a polity as it is amounts to a tacit endorsement of its institutions and the distribution of power. Many critical

theorists argue that proposing and working for reforms are legitimate activities for the social sciences. They therefore analyze institutions, practices, ideologies, and beliefs not only for their surface characteristics but also for their "hidden meanings" and implications for behavior.

Take, for example, the statement "I'm just not interested in politics."[62] An empirical political scientist might take this simply as a cut-and-dried case of apathy. He or she might then look for variables (for example, age, gender, ethnicity) associated with "not interested" responses on questionnaires. Its meaning is simply taken for granted. A critical theorist, by contrast, might ask, "Does this person really have *no* interest in current events? After all, isn't everyone affected by most political outcomes like decisions about taxes, war and peace, and the environment and thus in fact *have* an interest in politics? So, perhaps we have a case of, say, 'false consciousness,' and it is crucial to uncover the reasons for lack of awareness of one's 'real' stake in politics. Is the indifference a matter of choice, or does it stem from the (adverse) effects of the educational system, the mass media, modern campaigning, or some other source?"

Here is another case in point. An important challenge to research in political science (as well as in other social science disciplines such as sociology) has come from feminist scholars. Among the criticisms raised is that "the nature of political action and the scope of political research have been defined in ways that, in particular, exclude *women as women* from politics" (emphasis added).[63] Accordingly, "What a feminist political science must do is develop a new vocabulary of politics so that it can express the specific and different ways in which women have wielded power, been in authority, practiced citizenship, and understood freedom."[64] Even short of arguing that political science concepts and theories have been developed from a male-only perspective, it is all too easy to point to examples of gender bias in political science research. Examples of such bias include failing to focus on policy issues of importance to women, assuming that findings apply to everyone when the population studied was predominantly male, and using biased wording in survey questions.[65]

A related complaint is that political science in the past ignored the needs, interests, and views of the poor, the lower class, and the powerless and served mainly to reinforce the belief that existing institutions were as good as they could be. Concerns about the proper scope and direction of political science have not abated, although nearly all researchers and teachers accept the need to balance the scientific approach with consideration of practical problems and moral issues.[66]

In sum, the widespread acceptance of empiricism has certainly not silenced critical reflection on political science as a discipline.[67] Nor has it prevented the acceptance of alternative methodologies such as interpretation and constructionism. For the most part, however, both empiricists and nonempiricists live with each other peacefully.

Conclusion

In this chapter we described the characteristics of scientific knowledge and the scientific method. We presented reasons why political scientists are attempting to become more scientific in their research and discussed some of the difficulties associated with empirical political science. We also touched on questions about the value of the scientific approach to the study of politics. Despite these difficulties and uncertainties, the empirical approach is widely embraced, and students of politics need to be familiar with it. In Chapter 3 we begin to examine how to develop a strategy for investigating a general topic or question about some political phenomenon scientifically.

Notes

1. Boston *Globe,* "Not Fit for the Court," January 14, 2006. Retrieved January 5, 2007, from www.boston.com/news/globe/editorial_opinion/editorials/articles/2006/01/14/not_fit_for_the_court/.
2. *Washington Post,* "Confirm Judge Alito," January 15, 2006, B06.
3. Jeffrey A. Segal and Albert D. Cover, "Ideological Values and the Votes of U.S. Supreme Court Justices," *American Political Science Review* 83 (June 1989): 557–565.
4. We hasten to add that there is not one, definitive definition or interpretation of science and the scientific method. Philosophers, scientists, and social scientists have argued long and hard about core ideas and propositions. Our listing of the characteristics of scientific knowledge, however, includes widely accepted attributes, even if other writers describe them in different terms.
5. Whether or not political science or any social science can find causal laws is very much a contentious issue in philosophy. See, for instance, Alexander Rosenberg, *Sociobiology and the Preemption of Social Science* (Baltimore: Johns Hopkins University Press, 1980).
6. Alan C. Isaak, *Scope and Methods of Political Science,* 4th ed. (Homewood, Ill.: Dorsey, 1985), 106.
7. Ibid., 107.
8. The most ardent proponent of the idea that science really amounts to an effort to falsify (not prove) hypotheses and theories is Karl Popper. See for example, *The Logic of Scientific Discovery* (New York: Basic Books, 1959).
9. Isaak, *Scope and Methods,* 66; see also 67.
10. Ibid., 297.
11. Remembering that scientific explanations are tentative can help clarify certain current controversies. You hear, for example, the claim that Darwinian evolution is not a fact but merely a theory. This statement is correct on both accounts. Nevertheless, the ideas and predictions of evolutionary theory have been repeatedly tested and confirmed by scientific methods and standards. So nearly every scientist accepts it as the more or less valid account of, say, human ancestry. But they will gladly abandon Darwinism if and when a better *scientific* explanation comes along.
12. Isaak, *Scope and Methods,* 30.
13. Ibid., 31.
14. The studies are reported in H. J. Eysenck and D. K. B. Nias, *Sex, Violence, and the Media* (London: Temple Smith, 1978), 103–104.
15. It may be tempting to think that historians are interested in describing and explaining only unique, one-time events, such as the outbreak of a particular war. This is not the case, however. Many historians search for generalizations that account for several specific events. Some even claim to have discovered the "laws of history."

16. Isaak, *Scope and Methods,* 103.
17. These are the interpretationists mentioned earlier. See, for example, R. G. Collingwood, *The Idea of History* (Oxford: Oxford University Press, 1946). For a good introduction to the distinction between understanding behavior and explaining it, see Martin Hollis, *The Philosophy of Social Science: An Introduction* (Cambridge: Cambridge University Press, 1994), chap. 7.
18. Ibid., 167, 169.
19. Many varieties of this theory exist, but they share the components presented here.
20. Anthony Downs, an economist, provided one of the first explications of the theory in *An Economic Theory of Democracy* (New York: Harper & Row, 1957). His ideas in turn flowed from earlier economic analysis. See, for example, Harold Hotelling, "Stability in Competition," *Economic Journal* 39 (March 1929): 41–57.
21. See James Enelow and Melvin Hinch, *The Spatial Theory of Voting: An Introduction* (New York: Cambridge University Press, 1984).
22. Kenneth Shepsle, "The Strategy of Ambiguity: Uncertainty and Electoral Competition," *American Political Science Review* 66 (June 1972): 555–568.
23. As an example, see Anders Westholm, "Distance Versus Direction: The Illusory Defeat of the Proximity Theory of Electoral Choice," *American Political Science Review* 91 (December 1997): 870.
24. Here is an example: "Please look at . . . the booklet. Some people believe that we should spend much less money for defense. Suppose these people are at one end of a scale, at point 1. Others feel that defense spending should be greatly increased. Suppose these people are at the other end, at point 7. And, of course, some other people have opinions somewhere in between, at points 2, 3, 4, 5 or 6." *American National Election Study (ANES) 2004 Codebook.* Available at Survey Documentation and Analysis, University of California, Berkeley. Retrieved March 12, 2007, from http://sda.berkeley.edu/D3/NES2004public/Doc/nes0.htm.
25. The conceptualization of distance and other matters related to the proximity theory are debated in Westholm, "Distance Versus Direction," 865–873 and Stuart Elaine MacDonald, George Rabinowitz, and Olga Listhaug, "On Attempting to Rehabilitate the Proximity Model: Sometimes the Patient Just Can't Be Helped," *Journal of Politics* (August 1998): 653–690.
26. Thomas S. Kuhn, *The Structure of Scientific Revolutions,* 2d ed. (Chicago: University of Chicago Press, 1971).
27. Ibid.
28. The discussion of voter turnout presented in Chapter 1 provides a clear and important example.
29. A good example is Theda Skocpol *States and Social Revolutions: A Comparative Analysis of France, Russia and China* (New York: Cambridge University Press, 1979).
30. See Raymond E. Wolfinger and Steven J. Rosenstone, *Who Votes?* (New Haven: Yale University Press, 1980).
31. An excellent example of the latter is Jared Diamond's study of the demise of the Mayan, Anasazi, and other societies. See his *Collapse: How Societies Choose to Fail or Succeed* (New York: Viking, 2005), especially part 2; and *Guns, Germs, and Steel: The Fates of Human Societies* (New York: Norton, 1999).
32. Isaak, *Scope and Methods,* 167.
33. Bruce A. Williams and Albert R. Matheny, "Testing Theories of Social Regulation: Hazardous Waste Regulation in the American States," *Journal of Politics* 46 (May 1984): 428–458.
34. An often remarked on characteristic of scholarly journals is that they tend to report mostly positive findings. An article that shows "X is related to Y" may be more likely to be accepted for publication than one that asserts "X is *not* related to Y." Whether or not this practice makes sense depends on the theoretical significance of the findings. If the X-Y relationship is trivial, it probably does not matter much if it is confirmed or disconfirmed.
35. Merrilee H. Salmon, *Introduction to Logic and Critical Thinking,* 2d. ed. (San Diego: Harcourt Brace Jovanovich, 1989), 88–97.
36. Ibid., 80–85.
37. Ted Robert Gurr, *Why Men Rebel* (Princeton: Princeton University Press, 1970), 57.

38. Ibid., 54.
39. Ibid., 51.
40. The wallet-dropping episode is described in Stephen Holloway and Harvey A. Hornstein, "How Good News Makes Us Good," *Psychology Today,* December 1976, 76–78. The results of the subsequent experiments are discussed in Stephen Holloway, Lyle Tucker, and Harvey A. Hornstein, "The Effects of Social and Nonsocial Information on Interpersonal Behavior of Males: The News Makes News," *Journal of Personality and Social Psychology* 35 (July 1977): 514–522; and in Harvey A. Hornstein, Elizabeth Lakind, Gladys Frankel, and Stella Manne, "Effects of Knowledge about Remote Social Events on Prosocial Behavior, Social Conception, and Mood," *Journal of Personality and Social Psychology* 32 (December 1975): 1038–1046.
41. See Alexander Rosenberg, *The Philosophy of Social Science,* 2d ed. (Boulder: Westview, 1998).
42. In fact, there are myriad concerns about the epistemological status of political science, but to simplify matters we use these two broad categories.
43. For further discussion of complete and partial explanations, see Isaak, *Scope and Methods,* 143.
44. See Charles A. McCoy and John Playford, eds., *Apolitical Politics: A Critique of Behavioralism* (New York: Thomas Y. Crowell, 1967).
45. The term *constructionism* encompasses an enormous variety of philosophical perspectives, the description of which goes far beyond the purposes of this book. The seminal work that brought the ideas into sociology and from there into political science is Peter L. Berger and Thomas Luckmann, *The Social Construction of Reality* (New York: Doubleday, 1966). An excellent but challenging analysis of constructionism is Ian Hacking, *The Social Construction of What?* (Cambridge: Harvard University Press, 1999). Equally important, members of this school have widely varying opinions about the place of empiricism in social research. Many constructivists feel their position is perfectly consistent with the scientific study of politics; others do not.
46. See John R. Searle, *The Construction of Social Reality* (New York: Free Press, 1995).
47. Alexander Wendt, "Anarchy Is What States Make of It: The Social Construction of Power Politics," *International Organization* 46 (Spring 1992): 391–425.
48. For an excellent collection of articles about the pros and cons of studying human behavior scientifically, see Michael Martin and Lee C. Anderson, eds., *Readings in the Philosophy of Social Science* (Cambridge: MIT Press, 1996).
49. Steven B. Smith, "Political Science and Political Philosophy: An Uneasy Relationship," *PS: Political Science and Politics* 33 (June 2000): 189.
50. Isaak, *Scope and Methods,* 34–38.
51. Ibid., 38–39. For a history of the development of survey research, see also Earl F. Babbie, *Survey Research Methods* (Belmont, Calif.: Wadsworth, 1973), 42–45.
52. For early American sources of behavioralism, see Charles E. Merriam, *New Aspects of Politics* (Chicago: University of Chicago Press, 1924).
53. See, for example, the excellent collection of articles entitled "Science and the Cold War: A Roundtable," in *Diplomatic History* 24 (Winter 2000). The essay by Jefferson P. Marquis, "Social Science and Nation Building in Vietnam," 79–105, is especially relevant.
54. Paul F. Lazarsfeld, Bernard Berelson, and Hazel Gaudet, *The People's Choice* (New York: Duell, Sloane and Pearce, 1944).
55. It is interesting to note that survey research (polling) is used to study attitudes and behavior in many authoritarian and unstable nations.
56. David B. Easton, "The Current Meaning of 'Behavioralism'," in James C. Charlesworth, ed., *Contemporary Political Analysis* (New York: Free Press, 1967), 16–17.
57. David B. Truman, *The Governmental Process* (New York: Knopf, 1951); and Robert A. Dahl, *Who Governs? Democracy and Power in an American City* (New Haven: Yale University Press, 1961).
58. See McCoy and Playford, *Apolitical Politics.*
59. David Easton, "The New Revolution in Political Science," *American Political Science Review* 63 (December 1969): 1051.

60. See Richard P. Nathan, *Social Science in Government: Uses and Misuses* (New York: Basic Books, 1988).
61. Isaak, *Scope and Methods,* 45.
62. This example is based on an article by Issac Balbus, "The Concept of Interest in Pluralist and Marxian Analysis," *Politics & Society* (February 1971): 151–177.
63. Kathleen B. Jones and Anna G. Jonasdottir, "Introduction: Gender as an Analytic Category in Political Science," in Kathleen B. Jones and Anna G. Jonasdottir, eds., *The Political Interests of Gender* (Beverly Hills, Calif.: Sage Publications, 1988), 2.
64. Kathleen B. Jones, "Towards the Revision of Politics," in Jones and Jonasdottir, *The Political Interests of Gender,* 25.
65. Margrit Eichler, *Nonsexist Research Methods: A Practical Guide* (Boston: Allen and Unwin, 1987).
66. See the symposium "Special to PS: Political Science and Political Philosophy" in *PS: Political Science and Politics* 33 (June 2000): 189–197.
67. For example, see David M. Ricci, *The Tragedy of Political Science: Politics, Scholarship, and Democracy* (New Haven: Yale University Press, 1984).

Terms Introduced

ACTIONS. Physical human movement or behavior done for a reason.

CONSTRUCTIONISM. An approach to knowledge that asserts humans actually construct—through their social interactions and cultural and historical practices—many of the facts they take for granted as having an independent, objective, or material reality.

CRITICAL THEORY. The philosophical stance that disciplines such as political science should assess critically and change society, not merely study it objectively.

CUMULATIVE. Characteristic of scientific knowledge; new substantive findings and research techniques are built upon those of previous studies.

DEDUCTION. A process of reasoning from a theory to specific observations.

EMPIRICAL GENERALIZATION. A statement that summarizes the relationship between individual facts and that communicates general knowledge.

EMPIRICAL VERIFICATION. Characteristic of scientific knowledge; demonstration by means of objective observation that a statement is true.

EXPLANATORY. Characteristic of scientific knowledge; signifying that a conclusion can be derived from a set of general propositions and specific initial considerations; providing a systematic, empirically verified understanding of why a phenomenon occurs as it does.

FALSIFIABILITY. A property of a statement or hypothesis such that it can (in principle, at least) be rejected in the face of contravening evidence.

GENERAL. Characteristic of scientific knowledge; applicable to many rather than to a few cases.

INDUCTION. Induction is the process of drawing an inference from a set of premises and observations. The premises of an inductive argument support its conclusion but do not prove it.