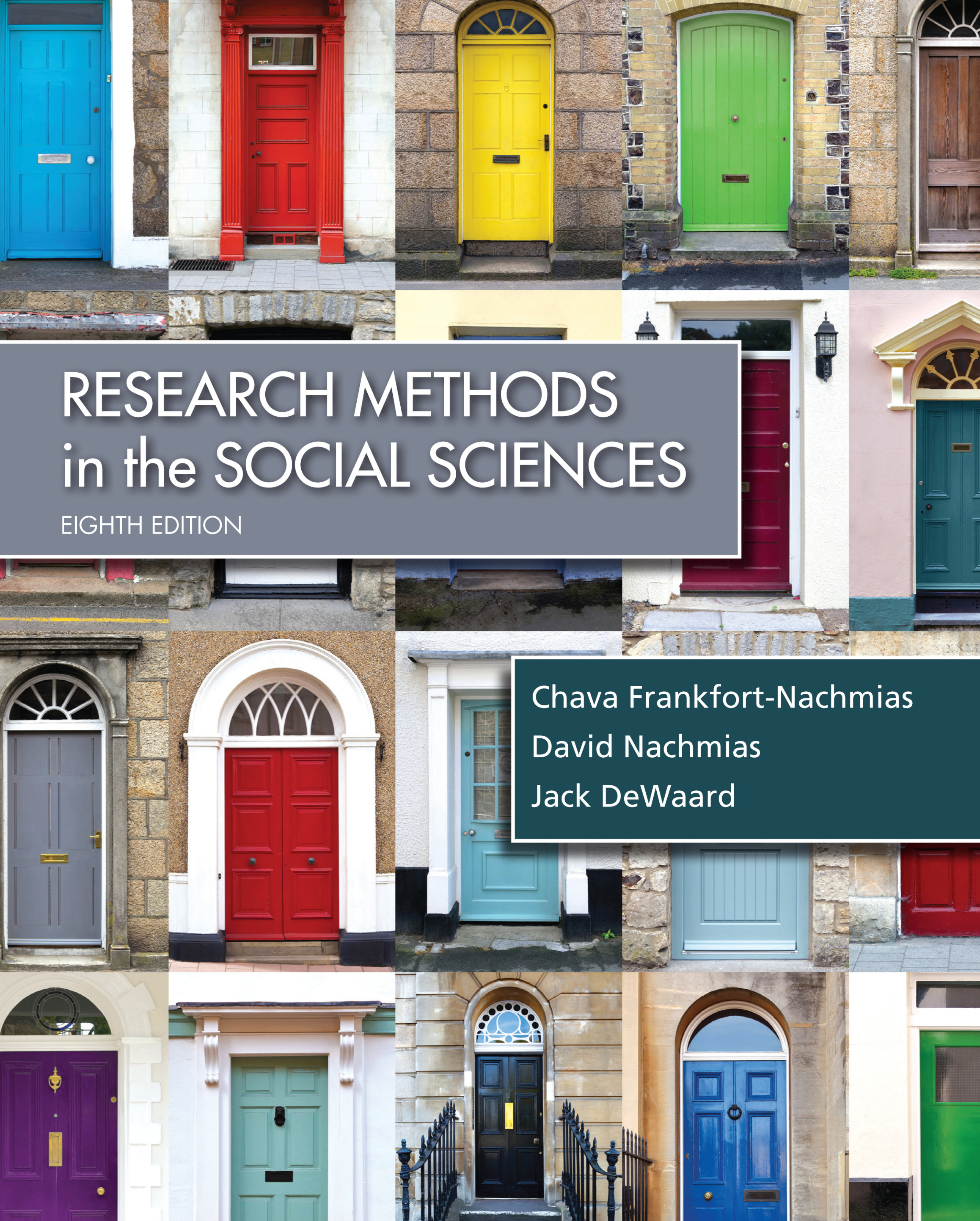

RESEARCH METHODS in the SOCIAL SCIENCES

EIGHTH EDITION

Chava Frankfort-Nachmias
David Nachmias
Jack DeWaard

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Eighth Edition

RESEARCH METHODS in the SOCIAL SCIENCES

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Worth Publishers
A Macmillan Education Company

To our daughters, Anat and Talia

—Chava and David

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Contents in Brief

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Contents

Preface

The goal of the eighth edition of *Research Methods in the Social Sciences*, as in the previous editions, is to offer a comprehensive, systematic presentation of the scientific approach within the context of the social sciences. We emphasize the relationship among theory, research, and practice and integrate research activities in an orderly framework so that the reader can more easily learn about the nature of social sciences research.

In our view, social sciences research is a cyclical, self-correcting process consisting of seven major interrelated stages: definition of the research problem, statement of the hypothesis, research design, measurement, data collection, data analysis, and generalization. Each of these stages is interrelated with theory. The text leads the reader through each stage of this process.

The New Edition

The new edition continues to blend a broad range of classic social sciences research studies with up-to-date examples of contemporary social sciences issues. The additions and changes reflect developments in the field since publication of the previous edition. Major updates and revisions to the eighth edition include the following:

- New Part Openers preview the concepts covered in each of the four major sections of the book.
- Lengthier chapters from the previous edition have been streamlined to highlight central concepts.
- Current and interdisciplinary examples draw from a range of social sciences disciplines, including anthropology, economics, geography, history, political science, psychology, public policy, and sociology, among others.
- Expanded coverage of research methods in the digital age, including the use of the Internet and various computer software packages for retrieving, cleaning, coding, and analyzing "big data."
- Expanded coverage of qualitative research methods, most especially of participant observation and ethnography.

The following updates and revisions have likewise been implemented in each chapter:

- New chapter introductions illustrate the central themes in each chapter, drawing on current topics and research studies, including the use of Twitter feeds in social sciences research, the 2011 revolutions in Egypt and Tunisia (i.e., the "Arab Spring"), and climate change.
- Updated research examples are provided throughout each chapter.
- Chapter examples using data from the General Social Survey (GSS) have been updated to reflect data from the 2012 round of the GSS.
- Expanded "Study Questions" are provided at the end of each chapter.
- New end-of-chapter exercises on "Reading and Writing Research Reports" help students understand and apply chapter concepts to the practice and process of social sciences research.

The Plan of This Book

The book's organization progresses logically from the conceptual and theoretical building blocks of the research process to data analysis and computer applications, offering students a comprehensive and systematic foundation for comprehending the breadth and depth of social sciences research. The book's self-contained yet integrated chapters promote flexibility in structuring courses depending upon the individual instructor's needs and interests. The text adapts easily to two kinds of courses: a basic research methods course or one that covers research methods and statistics sequentially.

Chapter 1 examines the foundations of knowledge, the objectives of scientific research, and the basic assumptions of the scientific approach. Chapters 2 and 3 discuss the basic issues of empirical research and the relationship between theory and research. They cover the topics of concept formation, the roles and types of theories, models, variables, and hypothesis construction. Chapter 4 focuses on ethical concerns in social sciences research and considers ways to ensure the rights and the welfare of research participants, including the right to privacy.

Chapters 5 and 6 present the research design stage. A research design is a strategy that guides investigators; it is a logical model for inferring causal relations. Experimental designs are discussed and illustrated in Chapter 5, and quasi- and pre-experimental designs are examined in Chapter 6. Chapter 7 is concerned with measurement and quantification. The issues of validity and reliability—inseparable from measurement theory—are also reviewed here, together with the issue of measurement error. In Chapter 8, we present the principles of sampling theory, the most frequently used sampling designs, and the methods for estimating sample size.

In Chapters 9 through 13, we present and illustrate the various methods of data collection available to social scientists. A discussion of observational methods, including laboratory experiments, field experiments, and natural experiments, as well as the importance of triangulation are the subjects of Chapter 9. Survey research—particularly the mail questionnaire, the personal interview, the telephone interview, and the online survey—is examined in Chapter 10. Chapter 11 describes and illustrates methods of questionnaire construction: the content of questions, types of questions, question format, and the sequence of questions. Chapter 12 is devoted to the theory and practice of qualitative research, with a particular emphasis on participant observation and field research. In Chapter 13, we discuss secondary data analysis—its utility and limitations, private and public sources of secondary data, methods for searching, and content analysis.

The subsequent five chapters are concerned with data processing and analysis. In Chapter 14, we present techniques of codebook construction, coding schemes and devices, ways to prepare data for analysis, the use of data-analysis software in social sciences research, and communication network linkages. Chapter 15 introduces the univariate distribution, measures of central tendency and dispersion, and various types of frequency distributions. Chapter 16 examines bivariate analysis, focusing on the relationship between two variables. Multivariate analysis is the subject of Chapter 17, which presents ways of analyzing multiple variables with various statistical procedures. Chapter 18 presents common techniques used in constructing indexes and scales; and in Chapter 19, we discuss strategies of hypothesis testing, levels of significance, regions of rejection, and parametric and nonparametric tests of significance.

This text, together with the supporting materials, will help readers move through the major stages of the research process.

Student Online Resources

For the eighth edition, we have created a companion website to allow students easier and more comprehensive access to resources and study aids. The online student resources provide the following study aids for each chapter: Chapter Abstract, Learning Objectives, Key Terms, Flashcards, Web Quizzes, General Social Survey Data Sets, and more.

We have moved a number of elements in the previous edition of the text to the companion website, such as the "Introduction to SPSS" (formerly Appendix A) now found there. This introduction guides students through preparing and executing data analysis using this widely available and often-used software package. The "Additional Reading" sections at the end of each chapter in the previous edition are now located on the companion website as well. The "Sources for Research and Hypotheses" section at the end of Chapter 3 in the previous edition has also been moved online. This section contains a fully revised and updated listing of some of the most useful and current bibliographies, indexes, journals, and statistical source books available for conducting social research.

Instructor Resources

The Instructor Resources to accompany *Research Methods in The Social Sciences* have been expanded in the eighth edition revision. New resources include a Research Spotlight, which provides current and provocative empirical exemplars to illustrate the themes in each chapter and can be used for additional content, discussions, and student readings; new PowerPoint lecture slides for each chapter; and an expanded Test Bank. The Instructor Resources also contain Essay and Discussion Questions, Research Projects, and more.

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Our literary debts are testified to throughout the text. Many students, instructors, reviewers, and colleagues have offered useful ideas and comments since the first edition was published.

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Chava Frankfort-Nachmias
David Nachmias
Jack DeWaard

RESEARCH METHODS in the SOCIAL SCIENCES

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PART I

FOUNDATIONS OF EMPIRICAL RESEARCH

The chapters in this book are grouped into four parts. Together, they illustrate the sequential and often cyclical steps involved in social sciences research. In Part I, we are concerned with the foundations of empirical research in the social sciences. What are these foundations? The short answer is that there are many foundations. A more involved answer is that the foundations of social research are not only diverse but also highly integrated (that is, whole).

Social research cannot and should not be understood or undertaken without reference to early and vigorous debates in the philosophy of science, formal logic, and consideration of different forms of logical reasoning (Chapter 1). Nor can social sciences research occur without a common language in the form of clear and mutually agreed upon concepts, definitions, theories, and models (Chapter 2). To make the connection between the conceptual and observational worlds, social scientists must be equally rigorous in translating the above into a defined set of operations and procedures to specify variables and hypotheses, measure and assess associations, and, ultimately, generate knowledge (Chapter 3). With knowledge creation and dissemination also come important responsibilities with respect to the ethical conduct of research, including protecting research subjects and conducting research and reporting results honestly and openly (Chapter 4).

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CHAPTER 1

THE SCIENTIFIC APPROACH

In 2011, the word "tweet" was formally incorporated into Merriam-Webster's Collegiate Dictionary and defined as "(1) a chirping noise" and "(2) an online post made on the social media site Twitter." What can studies of tweets tell us about the nature and structure of the social world? One recent paper attempted to examine several potential insights.[1] *As part of its efforts to understand how actors other than mainstream media outlets—including participants, ex-patriots, and other interested parties throughout the world—participated in and portrayed the 2011 revolutions in Tunisia and Egypt, the authors drew a detailed picture of the characteristics of these parties, their tweeting behaviors and contents, and their respective audiences (Twitter followers). In the process, the study tracked nearly 1,000 tweeters and more than 400,000 tweets. The study's methodology was interdisciplinary by design and provided a blueprint for understanding the growing importance of social media as a serious avenue for reporting and communication that extends beyond the mainstream media. As these and other researchers continue to analyze this exciting new data source and develop and assess different hypotheses, they will be following the rules of scientific methodology.*

[**IN THIS CHAPTER** we define science in relation to the search for knowledge and proceed to discuss the basic assumptions of science and its aims and the roles of methodology. We define the scientific approach by its assumptions about nature and experience and by its methodology as a set of tools for communication, reasoning, and intersubjectivity. We then discuss the ideas of scientific revolutions and discoveries. Last, we present a model of the research process, the stages of which are discussed throughout this book.

We also ask a number of questions throughout this book: What benefits does the scientific approach offer to people who take an interest in society? How can we acquire knowledge about those aspects of the human experience that are social, political, economic, or psychological? For example, how can the scientific approach help us to understand phenomena ranging from inflation and unemployment to democratic governance and bureaucracy, crime and delinquency, and even self-actualization? Our aim in this chapter is to discuss why and how the social sciences are part of the family of sciences.]

WHAT IS SCIENCE?

Science is a concept that is often misunderstood. Science is hard to define because we tend to confuse the *content* of science with its *methodology.* While science has no specific subject matter of its own, not every study of real-life phenomena is science. Astrologers, for example, seek to establish relationships between significant life events and the positions of the stars in an effort to predict the future, but their goals, and the acts they perform in order to achieve them, do not qualify astrology for admission into the family of sciences. Even if a university establishes a department of astrology and recruits faculty, develops a curriculum, and offers a master of science degree, astrology would fail to qualify as a scientific discipline. Why? Because the methodology used by astrologers is regarded as unscientific. We therefore use the term *science* to refer to knowledge gathered by means of a distinctive methodology, namely a *scientific* methodology.

APPROACHES TO KNOWLEDGE

The word "science" is derived from the Latin word *scire*, which means "to know." And from the Greeks, the science of knowing is called **epistemology.** Philosophers have long wrestled with ideas about how we can know what we claim to know. For example, how does one truly know that the Sun will set each evening? That stepping on the accelerator makes a car go faster? That smoking cigarettes causes cancer? These types of knowledge claims are of a unique kind. When philosophers talk about knowledge, they are referring to **propositional knowledge**—descriptive claims that some state of affairs in the world around us is either true or false. Thus, knowing how to ride a bicycle (referred to as *competence knowledge*) or knowing your classmate's name or favorite color (referred to as *acquaintance knowledge*) is not the object of inquiry.

Like philosophers, scientists are squarely in the business of making propositional claims to knowledge. In some cases, these knowledge claims (but not necessarily the work involved in arriving at them) are very simple statements, such as that the Higgs boson particle exists (versus does not exist). In other cases, knowledge claims concern the truth value of associations and relationships, sequences and processes, and other dynamics in the social world. To take just one example, consider the recent and hotly contested propositional claim by Mark Regnerus that children whose parents have engaged in same-sex relationships tend to be worse off on a number of outcomes compared with children whose parents have not engaged in same-sex relationships:

> Compared with children who grew up in . . . mother–father families, the children of women who reported a same-sex relationship [are] markedly different on numerous outcomes, including many that are obviously suboptimal (such as education, depression, employment status, or marijuana use).[2]

Aside from being highly controversial and potentially misleading,[3] what makes Regnerus's claim propositional is the fact that it is a statement that some empirical phenomenon is true (or false).

Of course, not all propositional claims are equal. Some are better than others. How is this so? It turns out that propositional knowledge is composed of three key ingredients:

- Propositional knowledge is rooted in a set of *beliefs.*
- These beliefs must be *true.*
- These true beliefs must be *justified.*

In Regnerus's case, the motivation for his paper was the idea, the *belief,* that same-sex relationships and parenting might negatively impact children, and the desire to see if this belief was consistent with reality, that is, whether this belief was *true.* He then went to the data and conducted his analysis, the results of which provided him with empirical evidence, or *justification,* for concluding that his belief that same-sex relationships and parenting negatively impact children aligned with reality.

This is to say that we can think of scientists as producers of *justified true beliefs*—that is, as developers and disseminators of **knowledge.** Of the three ingredients listed above, **justification** has historically been the most controversial. In order to understand why, imagine that you and a classmate are asked to predict whether it will rain tomorrow. Based on the fact that it rained today and the day before, you predict that it will rain tomorrow. Your classmate, however, being more technologically savvy than you, pulls out her smartphone and checks the latest weather report. After doing so, she also predicts that it will rain tomorrow. Who has greater justification for their claim? Obviously, your classmate does. She is justified on the basis of evidence from the weather report, while your claim is merely based on a hunch that the future will resemble the past.

How does one obtain sufficient justification for a true belief and thereby acquire knowledge? Early debates in epistemology concentrated on the roles of experience and intuition. **Empiricists** believe that knowledge claims are justified on the basis of our sensory experiences alone—sight, hearing, touch, and so forth. Knowledge of this sort is called ***a posteriori*** (literally, "from the latter") knowledge. **Rationalists,** on the other hand, believe that knowledge claims are justified on the basis of rational intuition—our innate capacity to grasp concepts and ideas regardless of our sensory experiences. Knowledge of this variety is called ***a priori*** (or "from the former") knowledge.

The German philosopher Immanuel Kant (1724–1804) argued for a hybrid of these views.[4] According to Kant, the world around us is chaotic. Our sensory perceptions are what permit us to experience this chaos. Our rational faculties serve to organize this chaos for us in meaningful ways. For example, scientists have repeatedly observed that people with higher levels of education typically have higher levels of political involvement.[5] According to Kant, while our sensory experiences might indicate a close *correspondence* between education and political involvement, it is our rational intuition that allows us to further classify this correspondence as one of *cause and effect.* Although Kant's work has not gone unchallenged, the utility of his approach was to provide an account of knowledge that combined sensory experience and rational intuition in a way that had not been attempted before.

Before we discuss the basic assumptions of science, it is worth noting that epistemological debates have expanded greatly since Kant. For example, the use of game theory in political science embraces some of the core principles of rationalism. There are likewise variants of game theory, such as evolutionary game theory, which incorporate empiricist ideas. Moreover, these epistemological debates and developments are not limited to the issue of justification. For example, many scientists who use statistics in their research adopt the view dating back to the English minister and mathematician Thomas Bayes (1701–1761) that *beliefs* are not simply either/or propositions (e.g., either I believe it will rain tomorrow or I do not), but instead are matters of degree and are updated as more information is collected.[6] This line of thinking underlies an important methodological area of research in the social sciences, Bayesian statistics, which aims to incorporate uncertainty in our beliefs into statistical procedures and calculations.[7]

Likewise, regarding the *truth* component of knowledge claims, Karl R. Popper (1902–1994) held that scientists must abandon attempts to provide evidence in favor of competing claims to knowledge and instead focus their efforts on disproving (or falsifying) prevailing explanations.[8] His idea was that knowledge claims that cannot be falsified, and so stand the test of time, are the best candidates for truth. As with Bayesian statistics, this line of thinking has also resulted in the development of specialized statistical procedures for working with data and testing hypotheses.[9]

BASIC ASSUMPTIONS OF SCIENCE

The scientific approach is grounded on a set of basic **assumptions,** fundamental premises considered to be unproven and unprovable. These assumptions are necessary prerequisites for conducting the scientific discourse.

1. *Nature is orderly.* There is recognizable regularity and order in the world; events do not just occur at random. Scientists assume that relationships and structures continue to exist within rapidly changing environments. They likewise assume that change is patterned and, therefore, can be understood. Order and regularity are inherent in all phenomena. For example, there is no logically compelling reason why the seasons should follow each other as they do, with winter following autumn, autumn following summer, and so on. But, because winter always follows autumn, despite the variations in temperature or snowfall, scientists conclude that other regularities may likewise underlie other observable phenomena.
2. *We can know nature.* This assumption expresses the conviction that human beings are as much a part of nature as other phenomena. Although each of us possesses a

set of unique characteristics, as human beings we can be studied and understood using the same methodology employed to study other natural phenomena. In essence, individuals and social phenomena exhibit sufficient recurrent, orderly, and empirically demonstrable patterns that are amenable to scientific investigation.

3. *All natural phenomena have natural causes.* That all natural phenomena have natural causes is at the core of the scientific revolution. By rejecting the belief that forces other than those found in nature cause natural events, science opposes fundamentalist religion, spiritualism, and magic. Scientists explain the occurrence of phenomena in natural terms. As empirical regularities are discovered and established, they can serve as evidence for the existence of cause-and-effect relationships.

4. *Nothing is self-evident.* Scientific knowledge is not self-evident. Accordingly, claims for truth must be demonstrated objectively. Scientists cannot rely on tradition, subjective beliefs, and cultural norms. They admit that possibilities for error are always present; hence, even the simplest of knowledge claims call for objective verification. Because of this characteristic, scientific thinking is skeptical and critical.

5. *Knowledge is based on experience.* If science is to help us understand the real world, it must be **empirical;** that is, it must rely on our perceptions, experience, and observations. Experience is an essential tool of the scientific approach, and it is achieved through our senses:

   > Science assumes that a communication tie between man and the external universe is maintained through his own sense impressions. Knowledge is held to be a product of one's experiences, as facets of the physical, biological, and social world play upon the senses.[10]

   However, it is also the case that many phenomena cannot be experienced or observed directly. For example, on February 15, 2013, a meteor traveling at 11 miles per second disintegrated over the Russian town of Chelyabinsk with the seismic force of roughly 30 atomic bombs.[11] In order to understand how and why this event occurred, scientists developed ideas and sophisticated computer models of how the orbits of the meteor and Earth came to collide, the angle and velocity with which the meteor entered Earth's atmosphere, and the accompanying shock wave that was felt by people on the ground. In order to provide this account, scientists also had to rely on rational intuition as a guide, grounded in scientific terms, concepts, theories, and models. As Karl Popper once wrote:

   > The naive empiricist . . . thinks that we begin by collecting and arranging our experiences, and so ascend the ladder of science. . . . But if I am ordered: "Record what you are experiencing," I shall hardly know how to obey this ambiguous order. Am I to report that I am writing; that I hear a bell ringing; a newsboy shouting; a loudspeaker droning; or am I to report, perhaps, that these noises irritate me? . . . A science needs points of view, and theoretical problems.[12]

6. *Knowledge is superior to ignorance.* Closely related to the assumption that we can know ourselves as well as we can know nature is the belief that knowledge should be pursued for its own sake and for its contribution to improving the human condition. The contention that knowledge is superior to ignorance does not, however, imply that everything in nature can or will be known. Scientists assume that all knowledge is tentative and changing. Things that we did not know in the

past we know now, and what we consider to be knowledge today may be modified in the future. Truth in science is always dependent on the evidence, methods, and theories employed, and it is always open to review. The belief that relative knowledge is better than ignorance is diametrically opposed to the position taken by approaches based on absolute truth. As Gideon Sjoberg and Roger Nett put it:

> Certainly the ideal that human dignity is enhanced when man is restless, inquiring, and "soul searching" conflicts with a variety of belief systems that would strive toward a closed system, one based on absolute truth. The history of modern science and its clash with absolute systems bears testimony to this proposition.[13]

True believers already "know" all there is to know. In contrast, scientific knowledge threatens the old ways of seeing and doing things; it challenges dogma, stability, and the status quo. In return, the scientific approach can offer only tentative truth, whose validity is relative to the existing state of knowledge. The strengths and weaknesses of the scientific approach rest on the provisional and relative nature of truth:

> It is a strength in the sense that rational man will in the long run act to correct his own errors. It is a weakness in that scientists, not being so confident of the validity of their own assertions as is the general public, may, in those frequent periods when social crises threaten public security, be overturned by absolutists. Science is often temporarily helpless when its bastions are stormed by overzealous proponents of absolute systems of belief.[14]

AIMS OF THE SOCIAL SCIENCES

Having discussed the assumptions of science, we are now in a position to address the question raised earlier: What does science have to offer people who take an interest in society's problems? The ultimate goal of the social sciences and all other sciences is to produce a cumulative body of verifiable knowledge. Such knowledge enables us to *explain*, *predict*, and *understand* the empirical phenomena of interest to us. We believe that a substantial body of knowledge can be used to improve the human condition. But what are scientific explanations? When can we make predictions? When are we justified in claiming that we understand empirical phenomena?

Scientific Explanation

Social scientists attempt to provide explanations for "why" questions—that is, why a phenomenon has occurred and the set of conditions that caused it. The term **explanation** thus refers to the process of relating a phenomenon to be explained to one or more other phenomena. For example, *why* are government expenditures per capita so much higher in Great Britain than in the United States? One response could be that the British want their government to spend more. Such an explanation might satisfy the layperson, but it would not satisfy social scientists unless the same reasoning explained the level of government expenditures per capita in other countries. In fact, despite reports that most Britons want their government to spend more, government expenditures per capita in Great Britain declined after the Conservative Party returned to power in the 1980s.

Carl G. Hempel distinguished between two basic types of scientific explanations—*deductive* and *inductive*.[15] His classification is based on the kinds of generalizations afforded by each type of explanation. Charles Sanders Peirce (1839–1914) proposed a third type of scientific explanation—*abductive*—that is often used in the social sciences.[16]

DEDUCTIVE EXPLANATIONS. While fairly uncommon in the social sciences, in **deductive explanations** a scientist explains an observed phenomenon by showing that it must follow from an established *universal law.* For example, let us assume that it is a universal law that *all elected officials in a democracy will seek reelection.* Suppose that Jane Brown is an elected official in the United States in the year 2014. From this universal law, we would conclude that Jane Brown will seek reelection. Moreover, we can arrive at this conclusion from the comfort of our living room because deductive explanations do not require going out into the world to make observations and analyze data.

In a deductive explanation, when the conclusion follows from the various parts or premises of the explanation as dictated by formal **logic**—that is, a system of reasoning in the development and evaluation of explanations—the explanation possesses **deductive validity.** When the conclusion is likewise generated from premises that are true (versus false), the explanation is also **deductively sound.** Returning to our example of Jane Brown, this explanation is valid (indeed, in formal logic this type of explanation is called a deductive syllogism), but it is not sound because it is simply false that all elected officials will seek reelection in a democracy.

Of course, deductive explanations are not always this rigid. Suppose that we revise our universal law to say that *some* elected officials in a democracy will seek reelection, or that it is *possible* that a person will seek reelection if she is an elected official in a democracy. These sorts of contingencies are the objects of two domains of formal logic called *predicate* and *modal* logic, respectively. For our purposes, however, the central takeaway message is that conclusions derived from deductive explanations are true by virtue of whether their premises are true. And their premises are considered true until it is demonstrated that they are not.

INDUCTIVE EXPLANATIONS. Not all scientific explanations are (or can be) deductive. This is particularly the case in the social sciences, where few, if any, universal laws have been established. Social scientists often use **inductive explanations** (also known as *probabilistic* explanations). Recalling our earlier example of Jane Brown, suppose that a social scientist observes that elected officials in a democracy will seek reelection 75% of the time. After all, elected officials are nothing more than human beings, who occasionally do not seek reelection for a host of reasons due to family situations, retirement, and scandal. Whereas there might be a strong correspondence between being an elected official in a democracy and subsequently seeking reelection, this relationship cannot be expressed as a universal law because not all elected officials will in fact seek reelection.

Inductive explanations are derived from probabilistic generalizations that express an arithmetic relationship between two phenomena (e.g., n percent of $X = Y$) or the tendency for two phenomena to take place simultaneously (e.g., X tends to correspond to Y). When compared to universal laws in deductive explanations, the primary limitation of inductive, or probabilistic, explanations is that conclusions cannot be drawn with complete certainty; thus, inductive explanations cannot be logically valid (or invalid).

In inductive explanations, when the conclusion *is likely* to logically follow from the premises of the explanation, the explanation is said to be **inductively strong** (versus *weak*). When a conclusion strongly follows from premises that are also true, the explanation is said to be **inductively sound.** Recalling our example of Jane Brown, an inductive argument would go as follows: Research finds that elected officials in a democracy will seek reelection about 75% of the time. Jane Brown is an elected official in the United States in the year 2014. Thus, it is likely that Jane Brown will seek reelection. In our case, the probability of her doing so is about 0.75, or 75%.

ABDUCTIVE EXPLANATIONS. Social scientists are often not in the position to make inductive explanations. This is usually the case when scientists study what are referred to as hard-to-reach populations such as victims of sex trafficking and undocumented