Social Science and Its Methods

chapter **1**

After reading this chapter, you should be able to:

- Define social science and explain why it is important
- List the various social sciences
- State the nine steps that make up the scientific method
- Discuss some reasonable approaches to problems in social science
- Differentiate the historical method from the case method and the comparative method
- Distinguish educated common sense from common sense
- Explain why a good scientist is always open to new ways of looking at issues

Theories should be as simple as possible, but not more so.

—Albert Einstein

On September 11, 2001, eighteen men boarded airplanes with the intent of crashing them into the World Trade Center, the Pentagon, and the White House or Capitol. They succeeded with three of the planes, causing enormous destruction. The fourth plane crashed, but thanks to passengers who discovered the highjackers' plans and attacked the highjackers, the destruction of the White House or Capitol was prevented. What forces drove the highjackers to undertake such action? What forces led the passengers to organize together to thwart them? What might have prevented the highjackings? Such questions fall under the purview of **social science**—the scientific study of social, cultural, psychological, economic, and political forces that guide individuals in their actions.

Formal social science is relatively new. Nevertheless, a vast amount of information has been accumulated concerning the social life of human beings. This information has been used in building a system of knowledge about the nature, growth, and functioning of human societies. Social science is the name given to that system of knowledge.

All knowledge is (1) knowledge of human beings, including their culture and products, and (2) knowledge of natural environment. Human culture has been changing, and knowledge about it has been gradually accumulating ever since the far distant time when humans first assumed their distinctively human character. But until rather recent times, this knowledge was not scientific in the modern sense. **Scientific knowledge** is knowledge that has been systematically gathered, classified, related, and interpreted. It is concerned with learning the concepts and applying those concepts to particulars, rather than just learning a vast amount of information.

Primitive peoples acquired much of their knowledge unconsciously, just as we today still begin the use of our native language and acquire many of the basic elements in our culture unconsciously. For the most part, they accepted the world as they found it, and if any

Social Science versus the Soaps

Faced with the events that affect our lives, we have two options: We can lose ourselves in a parody of reality, such as becoming experts on the soaps (is Laura really sleeping with John's wife's brother?), or we can try to understand those events—what actually happens. Some educators, following the philosophy of Plato, try to argue the moral superiority of the latter: Better to be an unhappy learned person than a happy fool. Others find that unconvincing. Following Jeremy Bentham, the social philosopher, they prefer happiness. The problem they have with the soaps is that soaps don't make you happy; soaps quickly become boring. You soon play out the options in your head and, often, create far better scenarios than the television writer. It's a bit like tic tac toe: one move (if you know what you are doing), and the game is done. Pinochle is somewhat more interesting, and the good TV shows approach the complexity of pinochle. But here again, after seven or eight cards have been played, the possibilities soon become evident. Chess is a step above this, with its infinite number of possibilities. But still, after twenty or so moves (and often fewer), good chess players can anticipate the outcome and choose to call a draw, resign, or declare victory.

Quite frankly, soaps, tic tac toe, pinochle, and chess are not for this author. I prefer a far more complicated game—one in which I'm both a player and a pawn. That game could be called the game of life, or it could be called the game of society. It is played by some 7.8 billion people, each having a wide variety of possible moves that range from shooting up a playground full of schoolchildren to trying to travel farther into outer space, construct faster computers, or improve humans by modifying their genes. The players in the game of society are divided into two types: male and female. These two types have certain drives, and desires, and certain rules that are passed on to them, either through their genes or through society's mores.

The ultimate goal of the game is often unclear, although its day-to-day objects can be said to consist of continuing to play the game and to keep the game itself alive. What winning or losing the game might be is clouded. Probably, if we commit suicide, we are losers. If we make a million dollars, are admired by our acquaintances for it, and are happy, we are probably winners. Many people even question whether we are playing the game of our own free will or whether we are merely the pawns of a god who has predetermined all our actions.

This game is far more diverse and interesting than other games. The possibilities are endless and the challenge immediate. It has elements of danger, like Russian roulette (if we really *do* goof, we *will* blow ourselves up). And it has its peaceful moments. But what makes it the most interesting game of all is that we are both the players and the played, at times moving ourselves as we make stupid or foolish choices and contrive sophisticated or imaginative solutions, and at other times watching other players as they make their choices and contrive their solutions. *Trying to understand this game is what social science is all about.* And the reason I am a social scientist instead of a TV fan is that I watch society and try to understand what makes society work. It's a whole lot more challenging and fun than watching the soaps. Moreover, unlike the soaps, watching society has a purpose—if we can understand society, we might be able to make it better.

Social science has fascinated enormous numbers of people, and a whole set of ponderings about the game has already developed. These ponderings concern the nature, growth, and functioning of human societies. This book introduces you to the past ponderings of social scientists.

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explanations seemed called for, they invented supernatural ones. Some primitive peoples believed that every stream, tree, and rock contained a spirit that controlled its behavior.

In modern times, our emphasis is on the search for scientific knowledge. We have divided human knowledge into a number of areas and fields, and every science represents the systematic collection and study of data in one of these areas, which can be grouped roughly into two major fields—social science and natural science. Each of these fields is subdivided into a number of specialized sciences or disciplines to facilitate more intensive study and deeper understanding. Social science is the field of human knowledge that deals with all aspects of the group life of human beings. **Natural science** is concerned with the natural environment in which human beings exist. It includes such sciences as physics and chemistry, which deal with the laws of matter, motion, space, mass, and energy; it also includes the **biological sciences,** which deal with living things. The third field of study is the **humanities,**

which deals with literature, music, art, and philosophy. The humanities are closely related to social science in that both deal with humans and their culture. Social science, however, is most concerned with those basic elements of culture that determine the general patterns of human behavior. The humanities deal with special aspects of human culture and are primarily concerned with our attempts to express spiritual and esthetic values and to discover the meaning of life. Whereas the social sciences study issues in a systematic, scientific way, the focus of the humanities is more on the emotions and feelings themselves than on the system employed to sharpen that focus.

The importance of social science goes far beyond the specific social sciences. It is social science thinking that underlies much of the law as well as our understanding of international relations and government. All these fields are the natural byproducts of social science inquiry. Thus, a knowledge of social science is necessary for anyone trying to understand current world events.

Social Science

No field of study is more important to human beings than the social sciences. To understand society is to learn not only the conditions that limit our lives but also the opportunities open to us for improving the human condition. Increasing our knowledge of human society is as important as learning more about mathematics, physics, chemistry, or engineering, for unless we can develop societies in which human beings can live happy, meaningful, and satisfying lives, we cannot reap the benefits from learning how to make better automobiles and skyscrapers, traveling in space, or constructing faster computers. Albert Einstein summed it up: "Politics is more difficult than physics and the world is more likely to die from bad politics than from bad physics."

Because all expressions of human culture are related and interdependent, to gain a real understanding of human society we must have some knowledge of all its major aspects. If we concentrate on some phases and neglect others, we will have a distorted picture. But social science today is such a vast complex that no one student can hope to master all of it. Thus, social science itself has been broken up into anthropology, sociology, history, geography, economics, political science, and psychology. (The boxes in this chapter provide a brief introduction to each of these disciplines.)

This list of social science disciplines is both too broad and too narrow. It is too broad because parts of the fields of history, geography, and psychology should not be included as social sciences. For instance, parts of history and geography belong in the humanities, and parts of psychology belong in the natural sciences. The list is too narrow because new social sciences are emerging, such as cognitive science and sociobiology, that incorporate new findings and new ways of looking at reality. (See box on The Evolving Social Sciences.)

Because all knowledge is interrelated, there are inevitable problems in defining and cataloging the social sciences. Often, it is difficult to know where one social science ends and another begins. Not only are the individual social sciences interrelated, but the social sciences as a whole body are also related to the natural sciences and the humanities. The strains of the old song, "The hip bone's connected to the thigh bone,..." are appropriate to the social sciences. To understand history, it is helpful, even necessary, to understand geography; to understand economics, it is necessary to understand psychology. Similar arguments can be made for all of the social sciences.

One of the difficulties in presenting definitions and descriptions of the various social sciences is that social scientists themselves don't agree on what it is they do, or should be doing. In preparing this chapter, we met with groups of social scientists specializing in specific fields and asked them to explain what it was that distinguished their field from others.

The Evolving Social Sciences

The themes of this book are evolution and change. Thus, it would be surprising if the divisions among the social sciences that currently exist still remain ten years from now. Indeed, with the development of new technology and technological advances in the physical sciences, the distinction among the various sciences is blurring and new sciences are developing. As these fields develop, the boundaries of the various social sciences change.

Interaction among the various social sciences is creating new fields, such as economic psychology, psychological economics, and sociopolitical anthropology. In economics and political science, too, a group of economists is calling for the reintegration of these two fields into political economy, and some schools do have departments of political economy.

Change is also occurring in the natural sciences, and there is interaction between the natural and social sciences. New developments in genetic theory, which will be discussed in Chapter 2, have caused many to believe it is time for a new social science, called cognitive science, which combines psychology, linguistics, philosophy, social anthropology, and molecular biology. Although it is still in the process of formation, a tentative definition of **cognitive science** is the study of how the mind identifies problems and how it solves those problems. For instance, there are more ways to write the letter *s* than there are people who know how to write that letter (all people who write plus the printing press and computer software and innumerable typefaces designed for them). Let us identify the problem as how to recognize the letter *s* when we see it. We know the result of the exercise: Everyone who knows how to read can instantly recognize most renditions of the letter *s* (the handwriting of a few college students and some physicians excepted). But we do not currently know *how* we do it. Or, how do you know the face of your roommate from the face of your mother, from the face of the letter carrier, from the face of Brad Pitt? There has been speculation about how the mind works for almost as long as there have been minds, theories, and even experiments, but few specific riddles have been conclusively solved.

Whether these upstart disciplines take hold remains to be seen, but that some change will take place is certain.

There was little agreement among specialists in a particular social science, let alone among all social scientists. A cynic once said, "Economics is what economists do." If we replaced "economics" and "economists" with any of the other social sciences and its practitioners, we would have as good a definition as possible. Unfortunately, it would not be very helpful to those who do not know what social scientists do.

One important difference among the individual social scientists did come out of these discussions: Even when two social scientists are considering the same issue, because their training is different they focus on different aspects of that problem. Geographers fixate on spaces and spatial relativities, economists on market incentives, and political scientists on group decision making. Thus, although we might not be able to define, unambiguously, the domains of the various social sciences, you will get a sense of the various approaches as we consider issues from various perspectives throughout the book.

The study of social science is more than the study of the individual social sciences. Although it is true that to be a good social scientist you must know each of those components, you must also know how they interrelate. By specializing too early, many social scientists can lose sight of the interrelationships that are so essential to understanding modern problems. That's why it's necessary to have a course covering all the social sciences. In fact, it wouldn't surprise me if one day a news story such as the one in the box on the next page appeared.

To understand how and when social science broke up, you must study the past. Imagine for a moment that you're a student in 1062, in the Italian city of Bologna, site of one of the first major universities in the Western world. The university has no buildings; it consists merely of a few professors and students. There is no tuition fee. At the end of a professor's lecture, if you like it, you pay. And if you don't like it, the professor finds himself without students and without money. If we go back still earlier, say to Greece in the

𝒰nified Social Systems Theory Derived

Dateline 2050. Researchers today announced the development of a unified theory of the social sciences. The new theory, which had its early foundations in the work of Ludwig von Bertalanffy, is the equivalent in social science of the unified field theory in physics, which tied together the various forces of nature into a general theory. The formulation of the unified field theory in 2020 solved the problem that stymied earlier physicists such as Albert Einstein. It intensified the efforts of social scientists to develop their own unified theory. The theory, which is also called a unified social systems theory, ties together the various social sciences that in the nineteenth and twentieth centuries diverged into anthropology, sociology, history, geography, economics, political science, and psychology. The theory combines the work on complex systems begun by John von Neumann in the late 1940s and early 1950s with game theory, also begun by von Neumann, to form a coherent whole, and captures many of the interrelationships that were previously lost in the fragmentation or divisions of social science. That work was extended in the complexity revolution in science that came into its own in the early 2000s. By combining these theories with recent advances in the separate social sciences, the resulting new unified social science theory provides new insights into how society works.

When asked what set her on this path, the social scientist who developed the theory said it was the experience in her first social science class, in which she used the classic Hunt and Colander text, *Social Science.* In that class, with the aid of the insights her teacher provided, the scientist grasped the first inklings of how these various theories might be put together, setting the stage for her later achievement.

sixth century B.C., we can see the philosopher Socrates walking around the streets of Athens, arguing with his companions. He asks them questions, and then other questions, leading these people to reason the way he wants them to reason (this became known as the *Socratic method*).

Times have changed since then; universities sprang up throughout the world and created colleges within the universities. Oxford, one of the first universities, now has thirty colleges associated with it, and the development and formalization of educational institutions has changed the roles of both students and faculty. As knowledge accumulated, it became more and more difficult for one person to learn, let alone retain, it all. In the sixteenth century, one could still aspire to know all there was to know, and the definition of the Renaissance man (people were even more sexist then than they are now) was one who was expected to know about everything.

Unfortunately, at least for someone who wants to know everything, the amount of information continues to grow exponentially while the size of the brain has grown only slightly. The way to deal with the problem is not to try to know everything about everything. Today we must specialize. That is why social science separated from the natural sciences and why social science, in turn, has been broken down into various subfields, such as anthropology and sociology.

There are advantages and disadvantages to specialization, and many social problems today are dealt with by teams of various social scientists. Each brings his or her specialty to the table. For example, one of the authors is an economist but works on projects with geographers, sociologists, anthropologists, political scientists, and psychologists. More and more interdisciplinary majors are being created; one of the authors of this book teaches in both the economics department and the international politics and economics department at his school. Interdisciplinary graduate schools of public policy have grown enormously. In these programs, students study all the social sciences while specializing in one. Figure 1.1 provides a graphic overview of the evolution of knowledge and the present social sciences. (The appendix at the end of this chapter expands on the ideas in this diagram.)
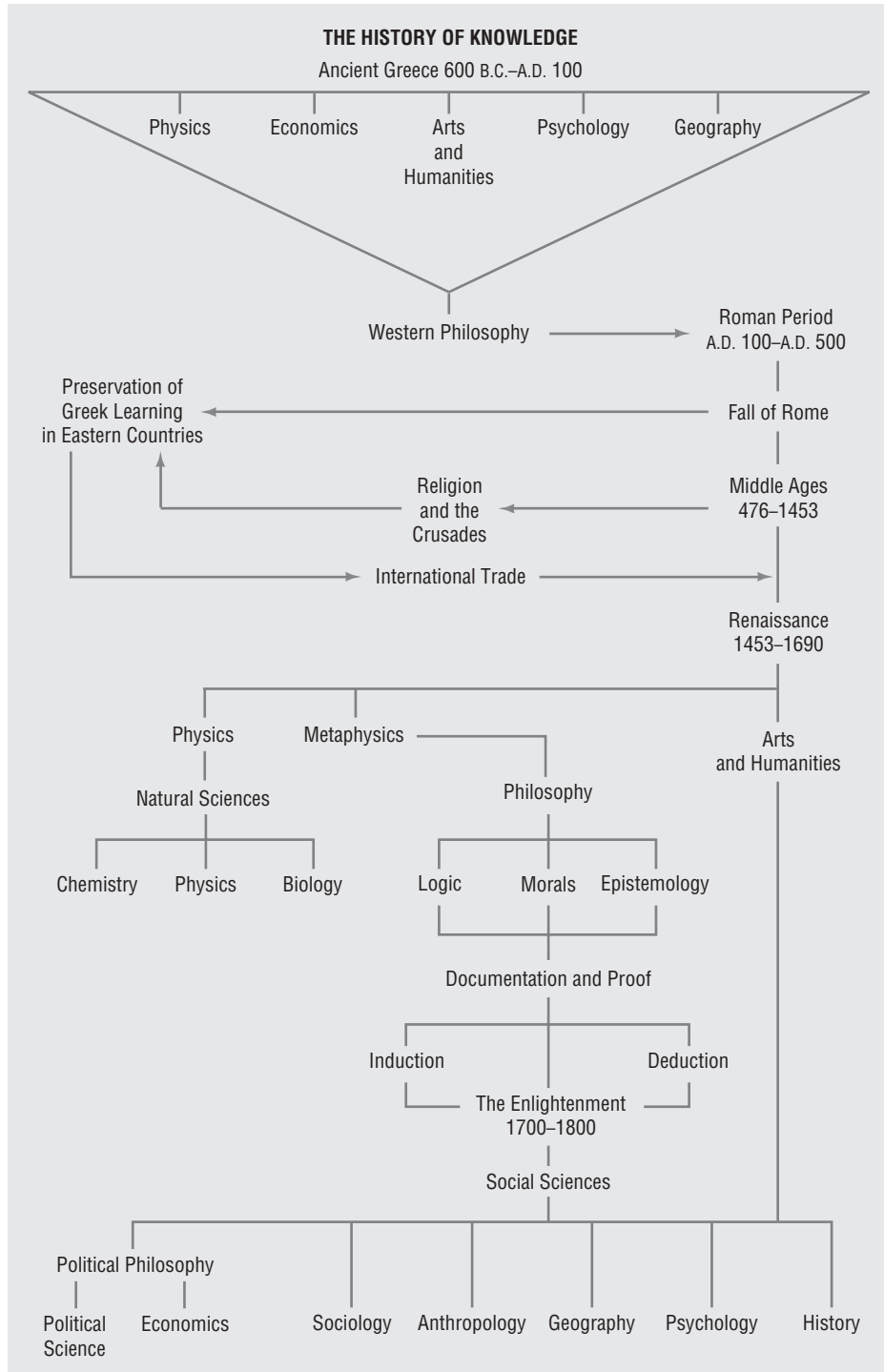
THE HISTORY OF KNOWLEDGE

Ancient Greece 600 B.C.–A.D. 100

Physics   Economics   Arts and Humanities   Psychology   Geography

Western Philosophy ⟶ Roman Period A.D. 100–A.D. 500

Preservation of Greek Learning in Eastern Countries ⟵ Fall of Rome

Religion and the Crusades ⟵ Middle Ages 476–1453

International Trade ⟶

Renaissance 1453–1690

Physics   Metaphysics   Arts and Humanities

Natural Sciences   Philosophy

Chemistry   Physics   Biology   Logic   Morals   Epistemology

Documentation and Proof

Induction   Deduction

The Enlightenment 1700–1800

Social Sciences

Political Philosophy

Political Science   Economics   Sociology   Anthropology   Geography   Psychology   History

Figure 1.1

Knowledge at a glance. The development of knowledge in messy, but assuming that a picture is worth a thousand words, we offer this sketch of the development of knowledge. Maybe it's worth five hundred words.

$\mathcal{A}$nthropology

Anthropology is the study of the relationship between biological traits and socially acquired characteristics. Sometimes called the study of humans, it consists of two broad fields:

1. Physical anthropology
2. Cultural anthropology

Some of the concerns of physical anthropology are:

- Influence of evolution of natural environment on the physical characteristics of humans
- Human evolution: how modern *homo sapiens* evolved from earlier species

Some of the concerns of cultural anthropology are:

- Archaeology, or the remains of extinct civilizations that left no written records
- Organization of preliterate societies
- Characteristics of subgroups or subcultures within contemporary society

Among the topics that interest anthropologists are excavation of formerly inhabited sites, fossils, the gene pool, technology and artifacts, linguistics, values, and kinship.

Social Science as a System of Rules

Today the amount of knowledge is increasing faster than ever. How, then, can a unified social science theory ever be formulated? The answer is found in abstraction and the ability to discover rules or relationships (rather than simply facts) and rules relating rules to other rules.

To understand the importance of knowing rules, think back to grade school when you learned addition. You didn't memorize the sum of 127 and 1,448. Instead you learned an algorithm (a fancy name for a rule) about adding ($7 + 8 = 15$; write down the 5 and carry the 1...). Then you had to memorize only a few relationships. By changing the number system from a base ten system to a binary system (0 and 1 are the only numbers), you cut substantially the amount of memorization (all you need to know is $0 + 0 = 0$; $0 + 1 = 1$; and $1 + 1 = 10$) and you could apply the same rule again and again, adding all possible numbers (an insight that played an important role in the development of the computer). Knowing the rules saved you from enormous amounts of memorization, but nonetheless gave you access to a large amount of information.

Another way to look at the problem is to think of the library. If you have a small library, you can know nearly everything in it, but once your library gets larger, you will quickly find that having more books makes it harder to know what's in there. However, if you put in place a filing system, such as the Dewey decimal system or the Library of Congress system, you can access the books through a filing system. The rules of the filing system give you the key to great amounts of information, just as the rules of addition, subtraction, or algebra do. General rules, once learned, can be applied to large numbers of particulars. The higher you go (rules about rules about rules), the more you can know with less memorization.[1]

All this is relevant to social science and the 2050 dateline because social science, too, is held together by rules or relationships. If there is to be a unified social science theory, it will be because some student started thinking about rules and how the rules of the various social sciences can fit together. If you understand the general concepts, you can apply them in a variety of circumstances. Thus the future "unified social scientists" will not necessarily know all the facts of a particular social science. Each of the specialties will retain its identity and will likely become even more specialized. But as that specialization occurs, it creates the need for a new specialization that concentrates on tying together the various component parts of social science. The new unified social scientists will know the general rules of the individual social sciences and the rules of how one social science interacts with another, but they will not know all the specific facts of any one of them.

The preceding argument is a heavy one to throw at you in the first pages of a textbook because it asks you not only to know the lessons of the individual social sciences, but also to

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[1]It was an architect, Ludwig Mies van der Rohe, who compressed such exposition into a famous statement, "Less is more."

Sociology

Sociology is the systematic study of relationships among people. Sociologists assume that behavior is influenced by people's social, political, occupational, and intellectual groupings and by the particular settings in which they find themselves at one time or another. Sociologists differ in their approach. Their three major choices are:

1. Functionalism
2. Conflict
3. Interactionism

Sociology's vast subject matter can be identified as a study of people:

- Where they collect
- How they socialize and organize
- Whom they include in and exclude from their groups
- What they do to their environment
- When they confront formulas for control, such as politics, law, finance, religion, education, and social pressures
- Why they change

Geography

Geography is the study of the natural environment and how it influences social and cultural development. Some of the concerns of geography are:

- Ecology
- Climate
- Resources
- Accessibility
- Demography

Geography has practical applications manifest in:

- Maps
- Trade patterns
- Industrial and agricultural decisions
- Settlement of population
- Aggression and acquisition

go beyond and strive for an understanding of their synthesis. Going beyond is ultimately what learning is all about and what makes it so challenging. We would like to be able to say that we can guide you to a unified social science theory, but the truth is that all we can do is give you a boost and encouragement. After surveying the social sciences, you can decide in which one, if any, you want to specialize; whether you should work toward tying them all together; or whether you should bag the whole approach and go into a premed program.

The Scientific Method and Its Application

The **scientific method** is a set of rules about how to establish rules. The use of the scientific method is perhaps the most important tool you can have in studying social science because it enables you not only to learn the lessons of the individual social sciences, but also to go beyond and strive for an understanding of their synthesis.

Conditions Favorable to Scientific Inquiry. Scientific inquiry is possible only in a society in which certain attitudes are developed or tolerated. Successful scientific investigation requires from the investigator not only intelligence but certain mental attitudes as well. One of these is curiosity, which makes people ask two questions: Why? and How? Another is skepticism, which makes people reexamine past explanations and reevaluate past evidence. To reexamine and reevaluate, investigators need objectivity, which enables them to seek impartially for the truth, to make every effort not to allow personal preconceptions, prejudices, or desires to color the observed facts or influence the interpretation of those facts. When these three attitudes—curiosity, skepticism, and objectivity—come together, scientific inquiry can flourish.

In preliterate tribal societies, the obstacles to the development of scientific methods of inquiry are very great. Such societies are much more bound by custom and tradition than are modern societies. The traditional way of doing things is regarded as the only right way. Moreover, any serious deviation from established procedures is likely to be regarded as a danger to the group.

We cannot classify Europe in the Middle Ages as either preliterate or tribal. Nevertheless, respect for tradition, for ancient authorities, and for religious

*H*istory

History is the study of past events. It is a social science in the sense that it is a systematic attempt to learn about and verify past events and to relate them to one another and to the present. Every event has a historical context within which we commonly say the event must be studied. The subject matter of history is everything that has already happened. The study of history involves:

- Identifying
- Classifying
- Arranging
- Patterning

The fruits of the study of history are:

- Imposition of order
- Appreciation of variety
- Possibilities of prediction
- Realization of limitation

dictates was so strong then that the growth of a scientific spirit was stunted. The free development of modern science had to wait until such events as the Crusades, the Renaissance, the great voyages of discovery, and the Reformation had loosened the hold of tradition.

Nature of the Scientific Method.   Modern science is based on the assumption that this is an orderly universe, ruled by the law of cause and effect. Any given set of circumstances always produces the same result. If seemingly identical situations have different results, they were not really alike; some significant difference existed and was overlooked. Further investigation should disclose what this difference was.

Science offers no final explanations of the universe and its phenomena. Time, space, matter, energy—existence itself—are mysteries the ultimate nature of which are probably forever beyond the grasp of the human search. But an accepted scientific theory may be regarded as an explanation, up to a certain point, of a scientific law.

Scientific investigation is seldom simple. Each field of knowledge has its special problems, and investigators must always adjust their methods to the peculiarities of the situation they are dealing with. A method of investigation that is of great importance in some fields is the setting up and carrying out of controlled experiments.

The Experimental Method and Its Limitations.   The **experimental method** is a method of separating out causal factors. It consists of running an experiment many times with only one variant. If the results of the experiments are different, that one variant is most likely the cause.[2] In chemistry, physics, and biology, such controlled experiments play an important role in discovering facts and testing hypotheses. In these sciences, an investigator can create a situation in which all the significant factors that bear on a problem can be controlled.

But there are limits to the use of the experimental method when a scientist cannot control the situations that are significant for the solution of problems. In the social sciences, very little use can be made of the method of controlled experiment except in dealing with certain relationships that involve rather small groups, because the investigator cannot control the situations. For example, one way to prove or disprove the proposition that high tariffs bring prosperity would be to apply very heavy duties to all goods entering the United States for a considerable period of time, while holding constant all other factors affecting business activity. If a sustained increase in prosperity followed, we would then have substantial evidence to support the thesis that high tariffs are a cause of prosperity. No investigator, let us say an economist, can control the country's tariff policy; and even if she could, while the high tariff was in effect many other social changes would be taking place, such as strikes, the establishment of new industries, and perhaps even wars. Some of these other changes would doubtless have much more influence on the state of national prosperity than

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[2]But it is always possible that some other factor was not "held constant." If you remember chemistry experiments in high school, you know how hard it is to keep all other things constant.

The Saga of Hans, the Thinking Horse

The scientific method can be seen in the saga of Hans, the Thinking Horse. Around 1900, according to reports published in a Berlin, Germany, newspaper, there was a horse that was good at math, and when his owner asked him math questions, the horse could answer by tapping out the correct number with one of his front hooves. People who witnessed the horse's ability were puzzled, and they called in a number of social scientists to investigate the phenomenon. To their amazement, they found that not only could Clever Hans, as he was known, add and subtract when his owner asked him— he could also calculate square roots. The social scientists were convinced that, against all odds, they had indeed been shown a thinking horse.

Another social scientist, though, a skeptical young psychologist by the name of Oskar Pfungst, had a different idea. He retested Hans, asking a set of questions to which Pfungst himself did not know the answers. He discovered that although Hans succeeded on nearly every question if the questioner knew the answer, the horse failed nearly every question when the questioner did not know the answer. A social scientist's skepticism had shown that Hans could not really reason, even though it seemed as if he could. This true story demonstrates the important trait of skepticism. The scientific community declared that Hans was just a horse.

But a quality those scientists did not show was imagination. Even though Hans could not think and reason, he had an amazing ability: He could almost read minds. When it came to people who knew the answers to the questions they were asking, he could monitor changes in his questioners' posture, their breathing, their facial expressions, and their inflections and speech patterns. He could interpret the signals they were sending and then provide the responses they wanted. This is an ability that some humans have—although generally to a lesser degree than Hans—and it is an ability that can supplement thinking. Yet it was only at the end of the twentieth century that comparative psychologists showed the imagination to start analyzing this kind of ability in detail.

The lack of imagination exhibited by some scientists in the past limited the scope of the scientific programs they followed. A good scientist must have both skepticism and imagination.

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would the high tariff and would make it impossible to separate out the effects of the high tariff from the effects of all these other events.

Most problems of interest to social scientists involve very large groups of people, often society as a whole. Controlled experiments cannot be used to solve such problems. When, however, social scientists can solve a problem by working with small groups, they may be able to make a limited use of the experimental method if the people involved will cooperate. Also, they can study **natural experiments,** which occur when two similar areas or entities choose different policies, and the effects of the different policies can be systematically studied. With natural experiments, researchers do not get perfect control, but they get some.

In the future, with further advances in computer technology, social scientists will study policy issues using virtual social systems in which a computer model of numerous interacting individuals creates a virtual system that can analogue what occurs in the real world. Because of the complexity of social systems, such virtual systems remain a hope for the future, not a reality.

Social experiments are sometimes called experiments, but, unless they have a "control" that followed a different path and hence can be studied as a natural experiment, they are not what we mean by experiment. A social experiment is simply the introduction and "trying out" of new social policies. For example, Oregon's change in the financing of health insurance or Florida's experiments with vouchers for financing education might be called social experiments. The distinction involves the ability to have a control and to be able to replicate the experiment. The less the control, and the less the ability to repeat the experiment, the less sure we are of the results.

Methodology and the Social Sciences

Because it is so difficult to experiment in social science, some people have insisted that it is not science. Except for the prestige carried by the word, whether we call the study of society

Economics

Economics is the study of the ways in which men and women make a living, the most pressing problem most human beings face. It considers the social organization through which people satisfy their wants for scarce goods and services. Its subject matter is often summarized as:

- Production
- Distribution
- Consumption

Some of the topics it includes are:

- Supply and demand
- Monetary and fiscal policy
- Costs
- Inflation
- Unemployment

Economics seeks to explain, guide, and predict social arrangements by which we satisfy economic wants.

Political Science

Political science is the study of social arrangements to maintain peace and order within a given society. It deals with government, and its interests are:

- Politics
- Laws
- Administration
- Theory of the nature and functions of the state
- International relations

It has both a philosophical and a practical base. It examines the theory of systems of government, but it also studies actual practices by which government:

- Taxes
- Prohibits
- Regulates
- Protects
- Provides services

a science is not important. It is merely a question of definition. If we mean by *science* the natural sciences only, then social science is not true science. If we mean by science only the so-called exact sciences, then again social science is not included. If, however, we use the term *science* broadly, to include all systematic attempts to expand knowledge by applying the scientific method, then social science must definitely be included in the scientific family. What is really important is that social scientists have discovered many significant relationships that are sufficiently dependable to add greatly to our understanding of social behavior and to serve as useful guides in dealing with some social problems.

There has been much debate about the correct methodology to be used in social science. Thomas Kuhn, a famous philosopher of science, defined a **paradigm** as a scientific theory and the core of beliefs that surround it. He argued that scientific progression occurs by paradigm shifts in which, for a long time, scientists will resist change and hold on to an old theory even as evidence mounts up against it, and even when another theory better fits the data. Eventually, however, the evidence in favor of the new theory is so great that suddenly scientists shift their thinking. The process can be likened to the way a drop of water forms on a faucet. It grows larger and larger until it falls. A good example in the sciences is Einstein's relativity theory in physics, which was initially scoffed at but was later adopted because it was consistent with a wider range of physical phenomena than was the earlier gravitational theory of Sir Isaac Newton.

Social scientists have discussed at great length whether Kuhn's theory of paradigm shift is appropriate for the social sciences. If it is, it gives legitimacy to competing theories. If it is not, then the generally accepted theory can be considered the best. The issue has never been resolved, but our understanding of the relevance of theories has advanced.

Imre Lakatos, another famous philosopher of science, has extended Kuhn's arguments by saying that in social science there are generally many competing theories, each being extended through competing **research programs,** or groups of scientists working on a particular problem. For example, in psychology there are the behaviorists and the Freudians. In sociology there are functionalists, conflict theorists, and interactionists. We could cite different theories within each social science. Advocates of each of the paradigms compete for researchers. The group of researchers most successful in competing for followers is the one most likely to grow.

$\mathcal{P}$sychology

Psychology deals with the mind and personality of the individual. It is a social science because humans are social creatures. It focuses on the individual and physical processes, such as:

■ Biological structure
■ Development and maturation

Of the various branches of psychology, the most relevant to social science is social psychology. Social psychology is the study of the individual's behavior as it influences and is influenced by the behavior of others. Some specific topics that interest psychologists and social psychologists are:

■ Socialization
■ Environment and heredity
■ Adjustment and maladjustment

These social scientists deal with natural phenomena such as emotion, memory, perception, and intelligence.

Other philosophers of science go further. Some, like Paul Feurabend, argue that all methodology is limiting and that the correct methodology is no methodology. Still others argue that sociological issues, such as what is likely to advance a scientist's career, rather than the truth of a theory determine what the scientist believes.

In this book, we emphasize the competition among various theories. By doing so, we hope to show how, in social science, controversy plays an important role in the development of our knowledge.

Probably the best way to understand the scientific method is to consider a couple of examples that do *not* follow the scientific method. For instance, consider astrology or numerology. These pseudostudies hold that by analyzing the alignment of the stars or the position of certain numbers, individuals can discover or predict events that will affect them. However, the accuracy of the discoveries or the reliability of the predictions has never been satisfactorily demonstrated to most social scientists. Even though we might turn to our horoscopes and say, "Aha! That seems to fit my character or my experience," if we critically consider these predictions, often we see that the statements are so broad that they can be applied more or less appropriately to a wide range of happenings or possibilities. This is not to say that the social sciences always avoid that. Economics, for instance, often comes up with predictions from large, highly sophisticated mathematical models (called *econometric models*), and some of these predictions are no better for steering a course than back-of-the-envelope estimates.

A good social scientist generally takes an agnostic (not believing but also not disbelieving) position about claims until they can be tested and retested. Consider, for example, parapsychology, which argues that people can transmit certain information independently of all conventional forms of communication. Shirley MacLaine's best-selling book *Out on a Limb* convinced many people that the claim of parapsychology is true. Most social scientists remain unconvinced. They hold that, to date, the theories have not been sufficiently demonstrated. In stating that these theories have not been tested, a good social scientist is not dogmatic. It is possible that we social scientists become so tied to our way of looking at the world that we are unable to consider the possibilities of other ways. Who is to say that the tests we accept as conclusive are the "right" tests? Or that our training hasn't biased the tests?

Ultimately, however, we must make a working judgment about what is and what isn't an acceptable test, and social scientists' methodology is an expression of that working judgment. It should, however, be presented as a working judgment, not as a set of definitive criteria of what is true and what is false. That's why, generally, good social scientists remain agnostic over a wide range of issues that they just don't have time to investigate. Thus, in many ways, what you will get out of a study of social science and an understanding of its methods is a healthy understanding of the limitations of your powers to know.

$\mathcal{T}$he Methods of Social Science

The basic procedures of the scientific method are as important in social science as in physical science. Social scientists must observe carefully, classify and analyze their facts, make generalizations, and attempt to develop and test hypotheses to explain their generalizations. Their problem, however, is often more difficult than that of physical scientists. The facts gathered by the social scientist—for example, those concerning the cultures of different peoples—have similarities, but each fact may also be unique in significant respects. Facts of this kind are difficult to classify and interpret. Further, as we have already noted, the generalizations or laws that the social scientist can make are likely to be less definite and certain than those of the physical scientist.

The difficulty of discovering relatively exact laws that govern social life results from several circumstances. First, the things of greatest importance in our social life—satisfactions, social progress, democracy—are not really measurable. Second, society is extremely complex. It is difficult and usually impossible to find and evaluate all the many causes of a given situation, though often we can discover the factors that were most important in bringing it about. Third, in every social situation there is the human element. Frequently, the course of social events depends on the reaction of a few individuals who are leaders, and, except in routine situations, we can seldom predict individual behavior with complete certainty.

If the social scientist finally does succeed in finding uniformities or "laws" of social behavior and in setting up hypotheses to explain them, there is still another difficulty—namely, that investigators can seldom employ controlled experiments to test their hypotheses. To a considerable extent, the social scientist must substitute careful observation and the mental process of abstraction for experiments. The investigator abstracts from a given situation some one factor in order to consider what effect it would have if acting alone. To do this, the investigator imagines that any other factors present remain constant or inert and asks, for example, a question such as: If other factors affecting economic life remained constant, what would be the economic effect of raising tariff rates on imports?

A social scientist with a thorough knowledge of a situation may correctly calculate the effect of a given causal factor by assuming that all other things remain equal. However, to reach correct conclusions by this method, the investigator must be both competent and painstaking. Even then, the dangers of error are great. If anything, there is more need for competence in the social scientist than in the physical scientist. The theories of a physical scientist often can be proved right or wrong by experiments, but this is seldom true of those of the social scientist. An unfortunate result is that it is easier in social science than in physical science to be needlessly vague, to perpetuate errors, and to cover up incompetence.

Social scientists also have more difficulty than physical scientists in being objective. Because they deal

"I'm a social scientist, Michael. That means I can't explain electricity or anything like that, but if you ever want to know about people. I'm your man."

with human beings and are human themselves, social scientists find it hard to put aside their own likes and dislikes, their sympathies, prejudices, and frustrations. As a result, they sometimes fall into the trap of trying to justify their own hopes, beliefs, or biases instead of seeking to discover the truth. We should always be on guard against those who pose as social scientists but who, in fact, substitute propaganda and charisma for objectivity and competence.

This does not mean that social science is any less scientific than the natural sciences, or that it is less objective. It simply means that social scientists must be continually on guard against such traps and must be as clear and objective as possible.

The differences between physical science and social science lead to slightly different structures of research. Although there is no ideal structure, a reasonable approach to a problem in social science is the following:

1. Observe.
2. Define the problem.
3. Review the literature. (Become familiar with what others have observed.)
4. Observe some more.
5. Develop a theoretical framework and formulate a hypothesis.
6. Choose the research design.
7. Collect the necessary data.
8. Analyze the results.
9. Draw conclusions.

Using this outline as a rough guide, and recognizing that the specific project and each specific social science determine the exact nature of the methodology to be used, you have a reasonably good method of attack.

Observing.　Notice that social science begins with observation. Social science is about the real world, and the best way to know about the real world is to observe it.

Defining the problem.　Of the various research steps listed, this one is probably the most important. If you've carefully defined your terms, you can save an enormous amount of energy. Put simply, if you don't know what you're doing, no matter how well you do it, you're not going to end up with much. The topic might be chosen for a variety of reasons, perhaps because it raises issues of fundamental social science importance, perhaps because it has suddenly become a focus of controversy, or perhaps because research funds have become available to investigate it.

Reviewing the literature.　Knowledge of the relevant literature is essential because it provides background, suggests approaches, indicates what has already been covered and what hasn't, and saves you from redoing what has already been done. It is a way of using other people's observations.

Observing some more.　After you have defined your problem and reviewed the literature, your observation will be sharper. You will know more precisely what you are looking for and how to look for it.

Developing a theoretical framework and formulating a hypothesis.　Make a statement predicting your results and then clarify what each of the terms in the statement means within the framework of your research. Suppose your hypothesis is: "High price increases sales of fashionable magazines." You should specify how high is high, and compared to what specific price is the price stated to be high; how much of an increase is significant over the circulation the magazine enjoyed at the lower price; what sales are included (newsstand,

subscription, or both); and what is "fashionable." Different researchers may define the same term differently, which is one of the reasons why the same research subject can produce different results.

Choosing a research design.   Pick a means of gathering data—a survey, an experiment, an observational study, use of existing sources, or a combination. Weigh this choice carefully because your plan is the crux of the research process.

Collecting the necessary data.   Data are what one collects from careful observation. Your conclusions will be only as good as your data, so take great care in collecting and, especially, in recording your data. If you can't document what you've done, you might as well not have done it.

Analyzing the results.   When all the data are in, classify facts, identify trends, recognize relationships, and tabulate the information so that it can be accurately analyzed and interpreted. A given set of facts may be interpreted two different ways by two different analysts, so give your analysis careful, objective attention. After this step has been taken, your hypothesis can then be confirmed, rejected, or modified.

Drawing conclusions.   Now you can prepare a report, summarizing the steps you've followed and discussing what you've found. A good report will relate your conclusions to the existing body of research, suggest where current assumptions may be modified because of new evidence, and possibly identify unanswered questions for further study.

These steps differ slightly from those used by a natural scientist, but only slightly—the primary difference comes in testing a hypothesis. In some natural sciences, it is possible to conduct controlled experiments in which the same experiment can be repeated again and again under highly regulated conditions. In the social sciences, such controlled experiments are more difficult to construct.

The line between social science and natural science is not fixed. In some natural sciences, perfectly controlled experiments are impossible. In cosmological physics, for example, one can't create the universe again and again. Thus, one must speculate about a hypothesis, draw conclusions from that hypothesis, and see whether the conclusions match what one observes in the universe. Alternatively, in the social science of psychology, certain controlled experiments are possible—for example, individuals can be given specific stimuli under specific conditions again and again. Thus, the difference between the way one deals with the natural sciences and the way one deals with the social sciences can be blurry.

Let's take an example of the use of the social science method—Joseph Holz's study of the implications of teen pregnancy. First, he studied all the writing on teen pregnancy. Then he set up the following hypothesis: Teen motherhood causes the mothers to be economically and socially worse off than they otherwise would have been. To test this hypothesis, he used data that had been collected over many years tracking the lives of teenage women. From that he extracted two groups—a set of teenagers who had become pregnant and borne the child and a set of teenagers who had become pregnant but had miscarried. He then compared their economic and social positions when they were in their mid-thirties. If teen motherhood caused the mother to be worse off, then the teens who had borne their babies should have been in a worse position than those who miscarried. They weren't. He found no significant difference between the two groups: Both were low income, significantly dependent on welfare benefits, and had completed the same number of years of school. The initial hypothesis was false. Teen pregnancy did not make mothers worse off; it was simply a symptom of a larger set of problems. This larger set of problems was so severe that whether mothers had borne a child in their teens made little difference to their economic and social positions.

Holz's findings were published as the government was conducting a costly campaign against teen motherhood, and his conclusions were unpopular with both liberals and conservatives. Liberals did not like them because his study suggested that much of the family planning advice and sex education developed by liberals was of little help in improving these women's lives. Conservatives didn't like them because his study implied that more substantive changes than simply eliminating teen motherhood were needed to improve these women's lives and break the cycle of poverty. But good social science methodology is not about pleasing anybody—it is about understanding social issues and social problems.

Although Holz's experiment was not fully controlled, it was as close as one could come to a controlled experiment in the social sciences. It selected similar groups to compare in such a way that no obvious reason existed as to why these two groups should differ.

Social Science Approaches to Problems

As you review the literature about various social science studies, you will see that social scientists can use many different approaches and methods as they study problems. We first consider alternative approaches; then we consider alternative methods.

Alternative Approaches.   The approach one takes when analyzing a problem reflects one's worldview—the lens through which one sees the world. Four approaches that social scientists use are the functionalist theory approach, the exchange theory approach, the conflict theory approach, and the symbolic interaction theory approach.

The functionalist theory approach.   This approach emphasizes the interconnectedness of social life and the difficulty of affecting only one part of society with a policy. Followers of the **functionalist theory approach** are hesitant to make social judgments because all aspects of society have certain functions.

The exchange theory approach.   Closely related to the functionalist approach, the **exchange theory approach** emphasizes the voluntary exchanges of individuals as reflecting individuals' choices. Thus, the structure of society reflects individuals' desires. The exchange theory approach lens is one of relative harmony in society, sometimes upset by dysfunctional elements.

The conflict theory approach.   The **conflict theory approach** sees far less harmony than the exchange theory approach. Followers of this approach see social behavior in terms of conflict and tension among competing groups or classes. Whereas the exchange theory approach sees individuals' voluntary choices, the conflict theory approach sees force and power directing individual actions.

The symbolic interaction theory approach.   The **symbolic interaction theory approach** sees individuals as deriving meaning from the symbols they learn from. Followers of this approach see reality as reflecting less what people do and more what they think and feel. Their motives and perceptions, rather than actions, are emphasized.

These approaches are not necessarily independent of one another. Some social scientists use a combination of approaches to study problems, while some use one at one time and another at another time.

Alternative Methods.   In addition to using different approaches, social scientists also use different methods. These include the historical method, the case method, and the comparative and cross-cultural methods.

The historical method. Because most social developments—such as the government of the United States—have unique characteristics, in order to understand them as fully as possible the social scientist must rely heavily on a study of their historical background. We can never understand completely how any historical situation came to exist, because there are limits to our historical knowledge and causes become increasingly complex and uncertain as we trace them further into the past. We can, however, make both historical events and present social situations much more intelligibly by using the **historical method**—tracing the principal past developments that seem to have been directly significant in bringing about a social situation. To trace these past developments, a historian will use many of the same methods as other social scientists such as collecting birth and marriage certificates and classifying those data.

It has been noted that history never really repeats itself. Nevertheless, present and past situations often have such striking similarities that a knowledge of the past can give us insights into present situations and sometimes into future trends.

The case method. Writers on the methodology of social research have devoted a great deal of attention to the case method—its characteristics, its variations, the uses it can serve, its advantages, and its limitations. Here we only describe its basic nature. The **case method** involves making a detailed examination and analysis of a particular issue or problem situation. This can involve a case study of a single person such as that by a psychologist of his client, a single area or town such as a sociologist's study of why a town changes, or even a study of whole countries such as an economist's when comparing various countries.

A case study can be intended to discover how to bring about desirable changes in a particular problem situation: for example, to find the most effective ways of upgrading or rehabilitating a slum area. More often, the chief purpose of a case study is to throw light on many similar situations that exist in a society. The hope is that an understanding of one or a few cases will illuminate the others and thus aid in solving the social problems they present. The case or cases selected should be typical of the group they purport to represent.

The preceding requirement can be a limiting factor in the usefulness of the case method. Suppose we wanted to make a study of the class structure of U.S. society as a whole. Obviously, it would be easier to select as cases for study several relatively small and isolated cities in various sections of the country. But it is questionable whether these would give us a true picture of the country as a whole, because today a great proportion of our people live in large metropolitan areas where the class structure is likely to be much more complex than in smaller and more isolated communities. However, to study and describe in detail the class structure of such an area may be prohibitively difficult and expensive, and therefore impractical.

The comparative and cross-cultural methods. The **comparative method** was formerly often employed in the hope of discovering evolutionary sequences in the development of human institutions—that is, patterns of social development or progress that would be universal. For example, it was sometimes assumed that definite stages existed in the development of governmental institutions, and it was thought that these stages could be discovered by comparing a society at one level of development with some other society at a different level. Today, this attempt to find patterns of social evolution that can be applied to all societies has been largely abandoned.

However, comparison of different societies still plays an important role in anthropological studies through what is called the **cross-cultural method.** This method consists of making detailed studies of the culture patterns of a number of societies for the purpose of comparing the different ways in which their people meet similar needs. These studies sometimes show surprising similarities in the cultural traits of widely separated peoples who appear to have had no direct or indirect contacts with one another.

Comparison of the characteristics of different societies involves problems. At times, it is difficult to decide whether two or more societies are independent or should be treated as one. Or consider definitions: If we are comparing the family institution in different societies, we must define *family* broadly enough to cover cultural variations yet specifically enough to make comparisons meaningful. Sociologists do not always agree on just what a family is. Again, if we are comparing unemployment in urban-industrial societies, we must agree on what we mean by *unemployment.* For example, in the early 1980s, the unemployment rate in Mexico, computed by U.S. standards, was approximately 30 percent. Mexican economists, however, argued that this figure was meaningless because Mexican work habits and culture were different from those in the United States. Much of what was measured as unemployment, they said, was actually individuals working at home and not earning money in the marketplace. Thus, although they had nonmarket jobs, they had been counted as unemployed.

Common Sense in the Social Sciences

Probably the most important lesson to remember when conducting any research is that you should use what might be called an educated common sense. You can understand the analytic argument for common sense by considering the mind as a supercomputer storing enormous amounts of information, not all of which may lie at the surface of recall. This holds true even with the vast increase in computer power. Processing speeds of computers double every eighteen months, according to Moore's Law. That increase has made it possible to do enormous things even with home computers. However, compared with the capabilities of the human mind, even the most powerful computer counts by using its fingers and toes. The mind processes trillions of pieces of information in millinanoseconds (we don't know what they are either, but we do know they are very small). When the results of the models and the minds diverge, it seems reasonable to rely on the more powerful computer—the mind. It makes sense to do so, however, only if the best information has been input into the mind. Common sense is not sufficient; we must use educated common sense.

To see the difference between common sense and *educated* common sense, consider the problem: Does the earth circle the sun or does the sun circle the earth? Uneducated common sense tells us that the sun circles the earth, and that commonsense conclusion became built into society and society's view of itself throughout the Middle Ages. To believe otherwise was heresy. In 1540, Copernicus tried to fit that commonsense view with observations that classical Greeks had made of the heavens. As he went about this task, he discovered that he could get a good fit of the data with the theory only if he assumed the earth moved around the sun. His was an **educated common sense**—rational thought based on observation and the best information available. It was that kind of educated common sense that ultimately led to the scientific method. As specialization makes us focus on narrower and narrower issues, it is important to keep in the back of our minds that scientific analysis has made us look at only part of the problem and that we must also use our educated common sense to interpret the results reasonably.

The Use of Statistics

Whenever possible, social scientists rely on quantitative data—data that can be reduced to numbers—but often quantitative data are not available, so social scientists must rely on qualitative data such as interviews or heuristic summaries of information in the literature. When using qualitative data, it is much more difficult to draw specific inferences from the data, because the "facts" one finds depend on how one interprets the qualitative data. One way to partially overcome such "interpretive problems" is the "Delphic method" in which

another specialist in the field reviews your interpretation and then you modify your interpretation in response if you see fit, explaining your reasons for accepting or rejecting the suggested modifications. Another way is to translate the qualitative data into quantitative data, creating "proxies" (stand-ins) for any missing quantitative data, although that often simply hides the interpretative issues rather than eliminating them.

If quantitative data are available, social scientists rely on **statistical analysis**—information in numerical form that has been assembled and classified—to provide the social scientist with the information needed to understand social relationships and processes. Statistics do not enable us to measure directly such basic social values as good citizenship, happiness, or welfare, but they are useful in measuring other factors that underlie social life, such as the size of the population of a country, or the number of families whose incomes fall below some level that we set as the minimum for decent and healthful living. Statistical relationships also give us insights into social problems. If we find that the proportion of males in juvenile detention centers who come from broken homes is substantially greater than the proportion of males in the population at large who come from such homes, this suggests that broken homes may be an important factor contributing to juvenile delinquency. But statistics must always be interpreted with care, for it can be easy to read into them conclusions they do not justify. Also, it is sometimes possible to manipulate them so that they appear to show what we want them to show.

Although statistics measure the results of social activity and highlight trends, they have other useful functions: testing theories and discovering relationships. For example, *correlation* is the relationship between two sets of data. A high correlation between sets of data means that if an element in one set rises, its corresponding element in the other set is also likely to rise. Other statistics determine how sure we are of a relationship. We do not discuss these statistics because an introductory social science course is not the place to learn them, but it *is* the place to learn that such techniques of testing relationships exist, and they may be worth your while to study at some point in the future.

If we are going to use statistics, we must have data. Data are the raw numbers describing an event, occurrence, or situation. Social scientists' data come from measuring and counting all occurrences of a particular happening. For example, we might find, "In 2007, there were x number of murders and y number of suicides." One way to get data is to conduct a **survey,** a method whereby data are collected from individuals or institutions by means of questionnaires or interviews. For instance, we might conduct a survey in which selected people are questioned or polled on such matters as their incomes, their beliefs on certain issues, or the political candidate for whom they intend to vote. Figure 1.2 gives an example of such a survey. Statistics can tell us how large a portion of a group must be surveyed before we can be reasonably sure that the results will reflect the views of the entire group. Such techniques are used extensively in surveys such as the Gallup or Harris public opinion polls.

The use of statistics has been greatly facilitated, and therefore greatly expanded, by the computer. The computer has made it possible to record, arrange, and rearrange voluminous information quickly and analytically. Today, enormous amounts of data and other resources are available to anyone with a computer or other access to the Internet.

With the expansion of social data and the enormous increase in computing power, it is increasingly possible for social scientists to look for relationships in the data alone, rather than to be guided in that search by theories. Using highly sophisticated statistical techniques, social scientists analyze data, looking for patterns. After they find a pattern, they fit that pattern to a theory. For example, social scientists Stephen Levitt and John Donohue searched the data and found a relationship between the passage of the abortion rights law in the United States and a decrease in crime in later periods. Based on this evidence, they argued that because abortion reduced the number of unwanted children, those children who were born had more guidance, and that it was the law making abortion legal, not any change in law enforcement or increase in the number of inmates
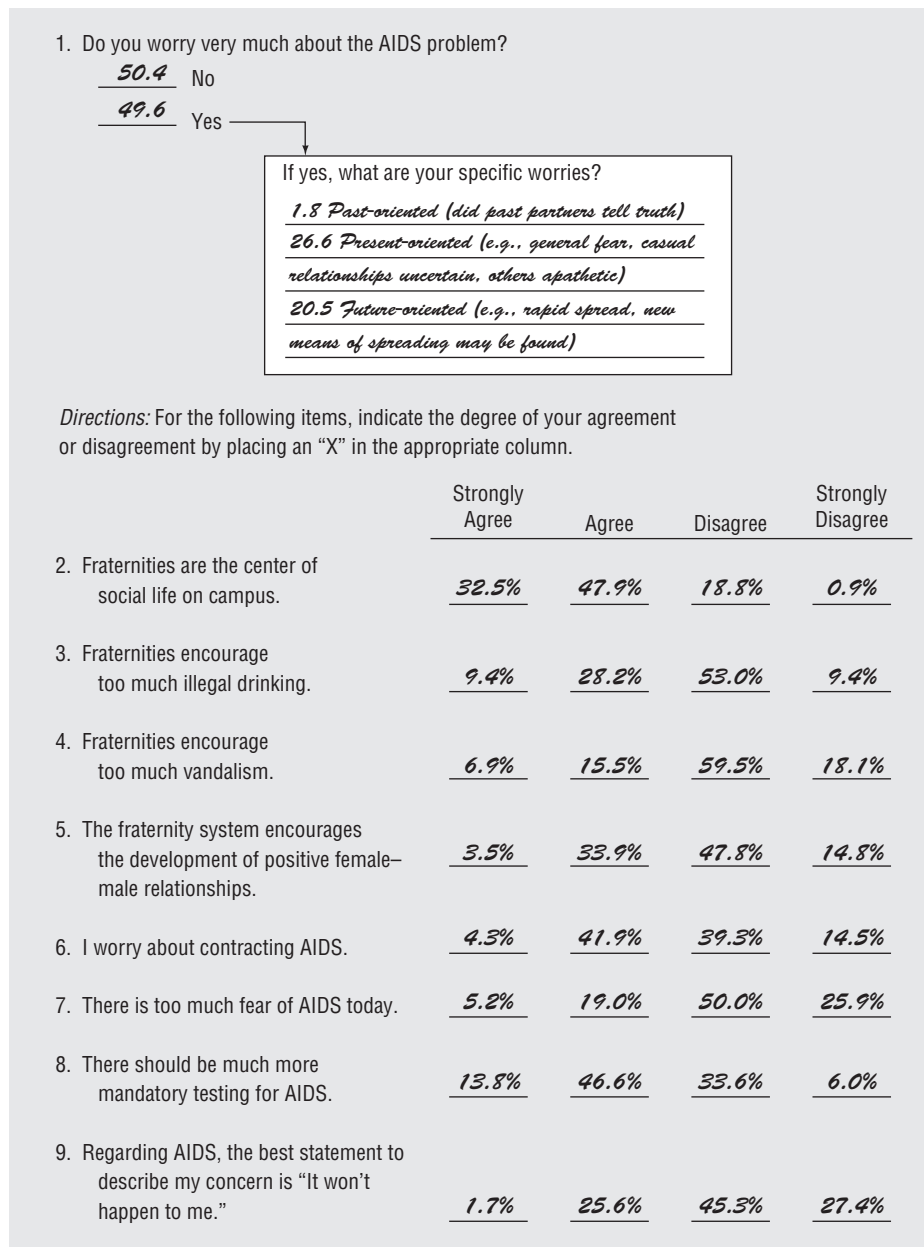
1. Do you worry very much about the AIDS problem?

    __50.4__ No

    __49.6__ Yes ⟶

> If yes, what are your specific worries?
>
> *1.8 Past-oriented (did past partners tell truth)*
>
> *26.6 Present-oriented (e.g., general fear, casual relationships uncertain, others apathetic)*
>
> *20.5 Future-oriented (e.g., rapid spread, new means of spreading may be found)*

Directions: For the following items, indicate the degree of your agreement or disagreement by placing an "X" in the appropriate column.

	Strongly Agree	Agree	Disagree	Strongly Disagree
2. Fraternities are the center of social life on campus.	*32.5%*	*47.9%*	*18.8%*	*0.9%*
3. Fraternities encourage too much illegal drinking.	*9.4%*	*28.2%*	*53.0%*	*9.4%*
4. Fraternities encourage too much vandalism.	*6.9%*	*15.5%*	*59.5%*	*18.1%*
5. The fraternity system encourages the development of positive female–male relationships.	*3.5%*	*33.9%*	*47.8%*	*14.8%*
6. I worry about contracting AIDS.	*4.3%*	*41.9%*	*39.3%*	*14.5%*
7. There is too much fear of AIDS today.	*5.2%*	*19.0%*	*50.0%*	*25.9%*
8. There should be much more mandatory testing for AIDS.	*13.8%*	*46.6%*	*33.6%*	*6.0%*
9. Regarding AIDS, the best statement to describe my concern is "It won't happen to me."	*1.7%*	*25.6%*	*45.3%*	*27.4%*

Figure 1.2

One of the best ways by which social scientists collect information is through a survey. This is one page of a fourteen-page survey conducted by college students for their sociology class. Because of time pressures in that particular survey, they were unable to perform an extensive analysis of their data. For this reason, they urged caution in the use and interpretation of the information.

jailed, that was mostly responsible for the decrease in crime rates that the United States experienced in the 1990s.

Whenever making such claims, social scientists should be very careful not to confuse **correlation**—the simultaneous movement of two variables—with **causation**—in which change in one variable brings about change in the other variable. The difference can be seen in the following example. When it is expected to rain, more people carry umbrellas, so umbrella usage and rain are correlated. But the fact that people carry umbrellas does not cause it to rain, or so most of us believe.

The Interdisciplinary Approach

Modern industrial societies and their problems are becoming increasingly complex, and because no one person today can master all the social sciences, growing emphasis is placed on the interdisciplinary approach to many social problems. The **interdisciplinary approach** means that a group of social scientists with different specialties will work together on a certain problem, not all of whose aspects any one of the group fully understands. For some problems, such as those surrounding pollution, it may be necessary to call in, say, a physical scientist, a geologist, and an engineer. But in facing all of these problems, the need for educated people who have a broad sense of problems and interrelationships—who understand the need for a unified social science—is also becoming more and more evident.

Though few social relationships can be reduced to exact and invariable laws, human beings in large groups everywhere show great likenesses of behavior when conditions are really similar. Thus, there is reason to believe that we can, through systematic study and research, greatly increase our understanding of the nature and development of human societies, and to hope that the attitudes fostered by the interdisciplinary approach itself and the knowledge to which it leads us can ultimately result in greater tolerance and cooperation among diverse groups and among nations.

Social Science and Society

Some people believe that the social sciences are lagging behind the natural sciences. They maintain that not only does social science have no exact laws, but that it has also failed to eliminate great social evils such as racial discrimination, crime, poverty, and war. They imply that social scientists have failed to accomplish what might reasonably have been expected of them. However, such critics are usually unaware of the real nature of social science and of its special problems and basic limitations. For example, they forget that the solution to a social problem requires not only knowledge but also the ability to influence people. Even if social scientists discover the procedures that should be followed to achieve social improvement, they are seldom in a position to control social action. For that matter, even dictators find that there are limits to their power to change society.

Agreeing on Policy

One of the great problems in a democracy is getting the majority of people to reach substantial agreement on the major policies that should be followed to create a better society. Social scientists can aid in bringing about this agreement by helping people to understand the issues, the difficulties involved, and the possible steps to a solution. If we express social objectives in sufficiently general terms, agreement is not so hard to obtain. Most people would like to have a heaven on earth characterized by peace and goodwill, with freedom, justice, security, health, and happiness for all. But when it comes to drawing up a blueprint

for reaching these objectives, disagreements and obstacles become apparent. Social scientists themselves are not always in complete agreement on what our specific social goals should be or on how we can best work toward them.

In any case, the function of social science and of those who practice it is not primarily to determine social objectives. Its major function is to discover how our objectives can be achieved. The determination of the goals themselves—our social values—is not a scientific problem but one having to do with our likes and dislikes, our esthetic concepts, our moral standards, and our philosophical and religious beliefs. (We will have more to say about social values in the following chapter.)

Values, Terminology, and Rhetoric

This chapter began with a quotation from Albert Einstein who said that "theories should be as simple as possible, but not more so." The same thing could be said about ideas and the expression of those ideas. Unfortunately, specialists have an incentive to develop a terminology that is anything but simple and that often obscures rather than clarifies. One of the many social science teachers who has written us about this book (and in doing so, these teachers have played an important role in its development) described a history conference she attended where "we were treated to such goodies" as

> The sociopolitical internecine amortizations of agronomous proletarization, if solely counterproductive of Jurassic multi-dimensional interstitial extrapolated Augustinian and Aristotelian epistemological diagrammetric middle-sector dichotomies, as measured in the context of paradigmatic vestigiae (though challenged none too effectively, if I am not remiss in saying so, by Freylinghausen's hypothesis delivered at the University of Bordeaux in April 1896) are existentially and polaristically categorized by Nordlinger's Metternichian thermodynamics as tangentially interrelated with studies promulgated by Darffenstangenovich on a scale of one to twenty factored to the 24th power.

Although she may have used a bit of literary license in transcribing the conference proceedings, her point is well taken. She was attending a conference on her specialty, yet she didn't understand what was being said. It happens all the time, not only to students, but to teachers as well. Although there may be valuable ideas in what many specialists have to say, we can't profit from them if we can't understand them, or if we must spend hours translating them.

In his wonderful book, *The Sociological Imagination,* C. W. Mills made precisely this point. He argued that in many social sciences, "high theory" is top-heavy with jargon. As an example, he interpreted sociologist Talcott Parsons's terminology: He reduced it by 80 to 90 percent and at the same time made it more intelligible. Mills wasn't making the point that Parsons's insights weren't good ones; to the contrary, Mills believed that Parsons was a brilliant sociologist. But Parsons's language obscured his brilliant ideas.

Another characteristic of language is that it embodies value judgments and preserves ways of looking at problems. A good social scientist recognizes this and is always open to dealing with reality by alternative modes of expression and new ways of looking at issues.

Conclusion

If this chapter has succeeded in its intended purpose, it should have given you a sense of what it means to be a social scientist. As you saw, the social sciences are evolving: They interact and they move among the humanities, the natural sciences, and the individual social sciences depending on who is working with them. They are fluid, not static, and that fluidity will present problems to anyone who attempts too fixed a definition of any of them.

The ability to handle the fluid definitions, to recognize the shadows as well as the objects without flinching, is an important characteristic that good social scientists exhibit—one which, if learned, will serve you well as you study this book and play the game of life.

*K*ey Points

- Social science is the name given to our knowledge about the nature, growth, and functioning of human society.
- The scientific method is a set of rules about how to establish rules.
- A good social scientist generally takes a wait-and-see position about claims until they are tested and retested.
- A reasonable approach to a problem in social science is to observe, define the problem, review the literature, observe some more, develop a theoretical

framework and formulate a hypothesis, choose the research design, collect the necessary data, analyze the results, and draw conclusions.
- Three typical methods in social science are the historical method, the case method, and the comparative method.
- It is important to use educated common sense in the social sciences.
- A good social scientist is always open to new ways of looking at issues.

*S*ome Important Terms

anthropology (1)
biological science (2)
case method (17)
causation (21)
cognitive science (4)
comparative method (17)
conflict theory approach (16)
correlation (21)
cross-cultural method (17)
economics (1)
educated common sense (18)
exchange theory approach (16)

experimental method (9)
functionalist theory
    approach (16)
geography (1)
historical method (17)
history (1)
humanities (2)
interdisciplinary approach (21)
natural experiments (10)
natural science (2)
paradigm (11)
political science (1)

psychology (1)
research program (11)
scientific knowledge (1)
scientific method (8)
social science (1)
sociology (1)
statistical analysis (19)
survey (19)
symbolic interaction theory
    approach (16)

*Q*uestions for Review and Discussion

1. What is scientific knowledge? How does it differ from knowledge acquired "unconsciously"?
2. Distinguish among the three major fields of human knowledge. What is the emphasis of each?
3. Name the principal social sciences and define the field with which each deals.
4. Why would it have been difficult to carry on scientific investigation in primitive societies or even in the Middle Ages?
5. What is the scientific method?
6. What basic assumption underlies the use of the scientific method?
7. What is the experimental method?
8. Why is it difficult to formulate precise laws in the field of social science?
9. Are there any advantages to having competing research programs?
10. In what sense is social science scientific?
11. Why is it often impossible to study social problems by means of the experimental method?

12. Explain the ways in which the problems of social science differ from those of the exact natural sciences.

13. What are the advantages of the interdisciplinary approach to the study of many social problems?

14. Social science has been broken down into specialties. Why is it a problem to put them back together through a unified theory?

15. What new social science fields do you think will be important ten years from now? Why do you think so?

Internet Questions

1. Using an Internet search engine directory (for example, http://dir.google.com or http://dir.yahoo.com), look at the lists of topics included under Social Science or Society. How many fields are listed? What fields would you add (or delete) in a list of your own?

2. The website www.buildfreedom.com/content/scientific_method.shtml uses an abbreviated version of the scientific method to solve the social problem of dating. Use this process to "solve" another everyday problem.

3. Go to www.wikipedia.org and choose one of the branches listed under Social Sciences. What are the subdisciplines or branches listed under your choice?

4. Take the survey about alcohol use at www.alcoholscreening.org. After taking the survey, look at the feedback you are given based on your answers. What can the results for this survey be used for?

5. Go to www.ncpa.org/pi/crime/pd08599g.html and read the discussion about Donohue and Levitt's study of abortion and crime rates mentioned in the text. What are some of the alternative arguments that critics use to explain why the crime rate has decreased?

For Further Study

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Wilson, Edward O., *Consilience: The Unity of Knowledge,* New York: Knopf, 1998.

WWW Anthropology Resources on the Internet www.anthropologie.net

WWW Economic History Services http://eh.net/

WWW Encyclopedia of Psychology www.psychology.org (accessed June 16, 2009)

WWW Political Resources on the Net www.politicalresources.net

WWW Social Science Research Council www.ssrc.org

WWW Sociological Resources on the Internet www.socioweb.com

WWW Virtual Library in Economics www.helsinki.fi/WebEc

WWW Virtual Library in Sociology http://socserv.mcmaster.ca/w3virtsoclib

Historical Roots of Social Science

Natural scientists tell us that the world has been around for some 6 billion years and that living things have been around for at least 3 billion. We will go back, however, only about 2,600 years, when Western philosophy began on the fringes of ancient Greece (some theorists hold that the Greeks responded to ideas from Eastern civilizations, but there are limits to even our broad sweep). The Greeks came to realize that their ancient account of how the world was created and administered—by an enormous collection of gods, or pantheon—was not the only possible explanation. They are credited with being the first to establish rational theory, independent of theological creed; to grasp rational concepts and use them as a way of looking at reality and seeing logical connections; and to be empirical and antimystical. Two great Greek thinkers of the third and fourth centuries B.C., Plato and Aristotle, are responsible for establishing a basis for knowledge as we know it and deal with it today.

The philosophical debates of the Greek period were in many ways the same ones that go on today, explaining how, when all things change, things must also be simultaneously unchanging; otherwise, something would have to be created out of nothing—a logical impossibility. These ideas would later develop into modern physics, including the laws of thermodynamics and the proposition that matter can neither be created nor destroyed—merely transformed. The Greeks also considered many of the issues that later became the social sciences; for example, they considered the role of the state (political science), the way minds interact with society (psychology), and individuals' interaction within the market (economics). Thus, the history of the social sciences begins with the Greeks. The history, however, is not continuous.

Much of the Greek contribution to knowledge would have been lost (who knows what other contributions actually have been lost?) were it not for its preservation by Eastern civilizations. On their forays into the East during the Crusades (the religious wars from 1095 to 1272 in which Christians in Europe attempted to capture Christianity's traditional territory in the Middle East), Europeans became reacquainted with the learning of the ancient Greeks, and they brought back the body of ancient Greek learning to Europe, where it was generally available by the twelfth century. These ideas spread slowly throughout Europe over the next three hundred years, and by the middle of the fifteenth century, rediscovery of Greek civilization in Europe was widespread. Because the period from about 1453 (the fall of Constantinople) to the end of the seventeenth century was characterized by the rebirth and proliferation of ancient knowledge, it became known as the **Renaissance** (a French word meaning "rebirth").

The Renaissance must have been a wonderful time for scholars. The totality of knowledge was still comprehensible by the human mind. An ideal in the Renaissance was that an educated person could know everything and exercise all skills and social graces. A true Renaissance man was willing to take on all comers on any issue.

As the store of knowledge grew, it became harder and harder to know everything, and so people began to specialize. A natural division opened, one between the humanities (the study of literature, music, and art) and physics. The physics part of this division was not refined enough, and soon physics was broken up into empirical studies (which developed into the various natural sciences) and metaphysics (nonempirical studies that developed into philosophy).

The Renaissance was preceded by the **Middle Ages** (a period from roughly A.D. 476, and the end of the Roman Empire, to A.D. 1453, the defeat of Christian religious armies in Constantinople by the Islamic Turks). In the Middle Ages, religion was so central to life that the study of religion was taken for granted, and it tied together all the other fields of study. For example, painters painted religious pictures, musicians wrote

religious music, and the study of literature was the study of the Bible and its commentators. Questions that today seem the obvious ones, such as, Why are people divided into classes? and Why are the poor poor? were simply not asked. Things were the way they were because that was God's will. Once one knew God's will, the issue was how to carry it out. For example, medieval scholars believed in a "just" price and that collecting interest on savings was immoral. They taught those principles and condemned those who did not follow their teachings.

As the Renaissance dawned and continued, that religious tie provoked tension as scholars in the various fields of study came to conclusions different from the church's doctrines, beginning a long conflict between religious learning and beliefs and so-called rationalist learning and beliefs.

The tension between religious explanations and rationalist explanations was (and still is) inevitable. The rationalist approach places human reason above faith. In a rationalist approach, one looks for logical connections and is continually asking the question, Can you prove it? This meant that somehow the rationalists had to figure out what it meant to prove something. A religious approach places faith above reason. A religious explanation had no need to prove anything: Explanations were accepted on faith.

Throughout the Renaissance, rationalism more and more replaced religion as the organizing principle of knowledge, and as it did, the various fields of knowledge became divided along rationalist lines. The humanities still reflected religious issues; the rationalist revolution came much later to the humanities. To the degree that they were considered, most of the issues we now classify under social science were studied as part of history. History was part of literature and the humanities. It was simply a documentation of what had happened—it never asked *why* something happened. To ask why meant failure to accept God's will. Thus, it was primarily from philosophy, not history, that most of the social sciences emerged.

The natural sciences and philosophy divided along modes of inquiry and answers to the question, Can you prove it? The study of philosophy itself evolved into a variety of fields, such as logic, morals, and epistemology (the study of knowledge).

The Enlightenment

The **Enlightenment** is the period in which rationalism definitely replaced religion as the organizing principle of knowledge. The Enlightenment began between A.D. 1650 and A.D. 1700 and continued for about one hundred years. It is in this period that the development of the social sciences took hold and flourished.

By the time of the Enlightenment, it had become evident that to know everything—to be a Renaissance scholar—was impossible. Not only was it impossible to know everything, but it was also impossible to know everything about just one subject—say, all of physics or all of philosophy. Individuals began to specialize their study. For instance, chemistry and astronomy were separated from physics.

As philosophers delved into their subject, they further divided philosophy into parts. One part was metaphilosophy, the study of issues that most scholars agreed were not empirically testable. One such issue was: Because God is all-powerful, can he create a rock so heavy he cannot move it? The other division of philosophy dealt with issues that could, in principle at least, be empirically tested. For instance: What type of political organization of society is preferable? It is from the second division that the social sciences evolved. (They were called sciences because they were in principle meant to be empirically testable.)

The Enlightenment spawned social science because the Enlightenment rejected the assumption that the classical world of the Greeks and the Romans was perfect. In the Enlightenment (roughly the whole of the eighteenth century), there was a general belief that civilization had improved and so too should the thinking about civilization. Moreover, in the seventeenth century, just preceding the Enlightenment, there was continual turmoil—a long drawn-out war between France and England and a religious conflict between Catholics and Protestants about how to interpret God's will. That fight broke down the religious explanations and made people very much aware of social problems. Which of the two explanations, Catholic or Protestant, was right? Why were they fighting? What could be done about it? The social sciences developed as individuals attempted to explain those social problems and suggest what could be done to solve them.

Although the existence of social problems that require solutions may seem obvious to you, it was not always so obvious. This view is the product of the Enlightenment, which established the "three humiliations" of human beings. These are:

1. The earth is not the center of the universe.
2. Humans are creatures of nature like other animals.
3. Our reasoning ability is subject to passions and subconscious desires.
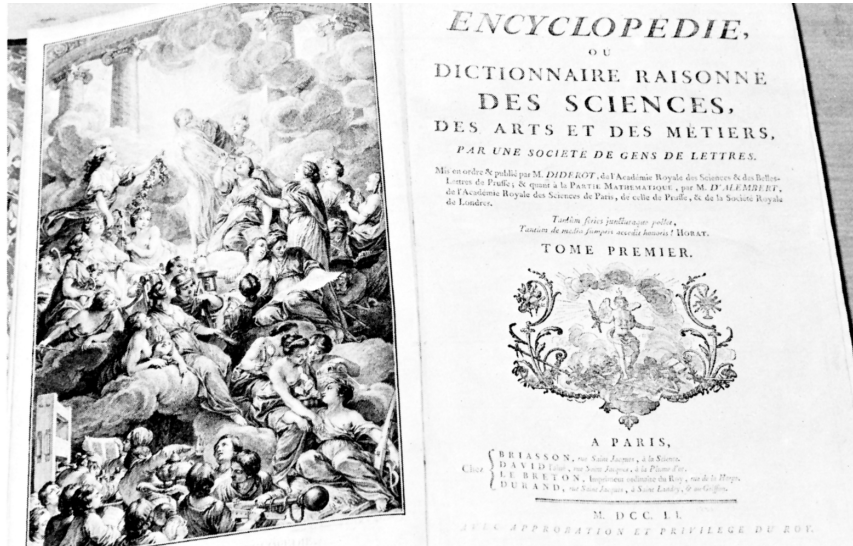
Frontispiece from Diderot's Encyclopédie, *written during the Enlightenment.*

Before we experienced these humiliations, thinkers could rely on an order they believed was established by God. Social problems were set up by God and were to be accepted or endured. Only after the beginning of the Enlightenment did people begin to believe that society and culture are themselves products of history and the evolution of culture—that they had changed and would continue to change.

As is often the case, the change in viewpoint had a paradoxical counterpoint, and human beings' "humiliation" was accompanied by a belief in human beings' power. If society could change, then the change could be, at least to some extent, guided and directed by human beings.

Since its conception, social science has entwined these two aspects. Sometimes it is simply trying to understand, and it accepts our limited powers and our place in the cosmos, and at other times it is trying to change society.

From Philosophy to Social Science

The evolution of philosophy into the social sciences can be seen in France, where philosophers joined to produce an encyclopedia, edited by Denis Diderot and Jean d'Alembert, which appeared over a span of several years in the mid-1700s. The full title of this encyclopedia proclaimed it to be a rational dictionary of science, art, and industry. Unlike earlier compilations, it contained systematic articles on man, society, and method, and a number of the first definitions of the social sciences can be traced to this mammoth work.

There are many ways to look at social problems, and as scholars began considering human beings in reference to their social environment, the diversity soon became apparent. The history of each of the social sciences becomes hopelessly tangled with that of each of the others at this point. In the Enlightenment, scholars were debating one another and ideas were quickly evolving. To capture even a flavor of the interaction and debate leads to a formidable morass, hardly conducive to a social science course. So we will stop our consideration here.

Some Important Terms

Enlightenment (26)
Middle Ages (25)
Renaissance (25)