Part I

Introduction

Introductions lend themselves to overviews. In introducing *Through the Eyes of Social Science*, we offer an overview of perceptions about what we can expect from science, an introduction to the geography and population of the planet Earth, and, finally, an introduction to the steps involved in the scientific method.

The first selection, "Science and Social Science, Pro and Con," is a sequence of quotations which reflect the hopes and despairs of attempting to see through the eyes of science in general and social science in particular. The quotations summarize many important themes that will be taken up in the book. As you read through them, see how many of the authors you can recognize by name. See if you can place any of them into specific historical and/or social contexts. The quotations are presented to start you thinking. Sociologist Frank Zulke's "Lost on Planet Earth," the second reading, is presented to start you thinking about your geographical literacy. Some recent surveys have pointed out that some college students couldn't locate the United States on a world map, let alone Chicago or Los Angeles. The final selection, Frank Zulke's "Science, the Scientific Method, and Research Designs in the Social Sciences," supplies a few essential definitions. After pinpointing the steps necessary to do research, the article follows these steps through an actual research project. Four commonly used research designs in the social sciences—experiments, surveys, observational studies, the use of already existing data—are described. This background information should help you to begin seeing through the eyes of social science.

1

Science and Social Science, Pro and Con

Science

1. Where there is much desire to learn, there of necessity will be much arguing.

    Milton

2. We are not simply contending in order that my view or that of yours may prevail, but I presume that we ought both of us to be fighting for the truth.

    Socrates

3. The philosophers have only interpreted the world in various ways. The point, however, is to change it.

    (from the tombstone of Karl Marx)

4. In our time and for some centuries to come, the natural and social sciences will be to an increasing degree the accepted point of reference with respect to which truth is gauged.

    George Lundberg

5. Science is a body of knowledge about the universe obtained by objective, logical, and systematic methods of research.

    Olga Petryszyn

6. [I]n the history of our race the equation objective = masculine is a valid one.

    George Simmel

7. Scientific knowledge is based on empirical evidence.

    John Macionis

8. Equipped with our five senses, we explore the universe around us.

    Edwin Hubble

9. An actually existing fly is more important than a possibly existing angel.

                                                                    Emerson

10. Science recognizes no ultimate final truths.

                                                                    Ian Robertson

11. In science, each of us knows that what he has accomplished will be antiquated in ten, twenty, fifty years.

                                                                    Max Weber

12. The entire history of science is a progression of exploded fallacies, not of achievements.

                                                                    Ayn Rand

13. The exact contrary of what is generally believed is often the truth.

                                                                    Jean De La Bruyère

14. Science never solves a problem without creating ten more.

                                                                    George Bernard Shaw

15. Too many seem to have either a global perception of science as some variant of magic, or else an understanding of the specifics of a *particular* science, but no fundamental grasp of it as a generic process of knowing.

                                                                    Charles Hughes

16. Always simplify.

                                                                    Henry David Thoreau

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

                                                                    Albert Einstein

18. It is a capital mistake to theorize before one has data.

                                                                    Sherlock Holmes

19. There is in science, as in all our lives, a continuous to and fro of factual discovery, then of thought about the implications of what we have discovered, and then back to the facts for testing and discovery.

                                                                    Jacob Bronowski

20. The true scientist is able to look into the face of Hell and not be afraid.

                                                                    Bertrand Russell

21. We simply collect the facts; others may use them as they will.

                                                                    W. E. B. DuBois

22. Science should not be an egoistic pleasure.

                                                                    Karl Marx

23. Nothing in science has any value if it is not communicated.

                                                                    Anne Roe

24. All observations must be for or against some view.

                                                                    Charles Darwin

25. Science is amoral; scientists, however, are not amoral.

E. R. Babbie

26. The intention of the Holy Spirit is to teach how to go to heaven and not how go the heavens.

Galileo (quoting a churchman of his day)

27. There are no irreconcilable differences between science and faith.

Pope John Paul II

28. Unless scientists are willing to give hard thought—indeed, their hearts—to their social responsibilities, they may find themselves someday in the position of the Sorcerer's Apprentice, unable to control the forces they have unleashed.

René Dubos

29. By following strict methodological rules, scientists aim to distance themselves from the values, vested interests, and emotions generated by their class, race, sex, or unique situation .... The result of this entire process is often the separation of information from meaning.

Patricia Hill Collins

Social Science

30. Social science is the study of human behavior. Anthropology, sociology, psychology, economics, history, and political science have developed into separate "disciplines," but each shares an interest in human behavior.

Thomas Dye

31. Social scientists should differ from other scientists only in their concern with human behavior rather than the behavior of viruses or electrons. The situation, however, is more complicated. The scientist will not have a brother or sister married to a virus.

Reid Luhman

32. Social scientists have destroyed the delicacy and intricacy of their subject matter in coarse-grained attempts to imitate the methods of natural scientists.

Margaret Mead

33. Executed properly, social science is the quality of mind whose more adroit use offers the promise that human reason itself will come to play a greater role in human affairs.

C. Wright Mills

34. When we dub the objective sciences "hard" as opposed to the softer, i.e., more subjective, branches of knowledge, we implicitly invoke a sexual metaphor, in which "hard" is of course masculine and "soft," feminine.

Evelyn Fox Keller

35. Social scientists ... maintain a flow of information and an understanding of alternative modes of action that keeps policy-makers in line with reality.

Paul Bohannan

36. Social science can provide us with rules of action for the future.

Émile Durkheim

37. Social science is a tool of the establishment and, consciously or unconsciously, a way of supporting the status quo.

James Rankin

38. Social life is so complex that researchers cannot observe everything; they must select what is relevant.

Helen Hughes

39. To the social scientist, a humble cooking pot is as important as a Beethoven sonata.

Judith Nielson

40. All social research represents a potential invasion of privacy.

M. Bassis

41. Not everything that can be counted counts, and not everything that counts can be counted.

Robert Cameron

42. The regularities social scientists find do not have the firm general validity of laws of nature.

Gunnar Myrdal

43. There are three kinds of lies: lies, damned lies, and statistics.

Disraeli

44. We must not view people's behavior as a finished product, as a relationship of an independent and a dependent variable.

Herbert Blumer

45. One common attribute of social scientists is a somnambulant dullness combined with a wordy concern for things everybody else already knows.

Ray Cuzzort

2

Lost on the Planet Earth

Frank Zulke

Knowledge of geography is essential information. Without understanding geographical relationships, one cannot understand historical or current events. Put as simply as possible, you must understand where you are to understand where you are going or even where you want to be. Yet, consider these findings from two surveys by the National Geographic Society. A 1988 survey compared American geographic literacy with neighbors Canada and Mexico and six other industrial nations. Respondents were given a world map and asked to identify sixteen geographic locations. The winners among 18- to 24-year-olds, from first place to last, were Sweden, West Germany, Japan, Canada, Italy, France, United Kingdom, Mexico, and the United States. About 14 percent of the Americans could not pick out the United States on a world map. Only 5 percent could locate Vietnam. A 1989 survey pitted the United States against the Soviet Union. While Soviet adults in general scored slightly lower than American adults, younger Soviets between 18 and 24 did significantly better than their American counterparts. Do you think there would be any changes if these surveys were done today?

    Boxes 2.1, 2.2, and 2.3 and the unlabeled world map below are intended to start you thinking about geography. Study them for a few moments. See how many continents you can locate on the map. (That's Antarctica peeking up at the bottom.) Try to get some idea of the land area and population size of various countries. (Boxes 2.2 and 2.3 indicate that while the Russian Federation has a land area over twice the size of the United States, it has fewer people.) Get a feel for distances between countries. (Cuba is only 90 miles from the United States; Afghanistan is over 7000 miles away.)

Finally, see how many of the numbers on the map you can match to the twenty countries listed below. If you get stuck, get help from an up-to-date atlas in the library or consult the maps in the appendix. There's also a staggeringly large amount of geographical information on the Internet. Two World Wide Web sites to get you started are http://www.usgs.gov/ (U.S. Geological Survey) and http://www.nationalgeographic.com/ (National Geographic Society). Keep in mind, however, that the world is not static: countries form, reform, change names, and even cease to exist. For example, Burma changed its name to Myanmar, East and West Germany were reunited, and many republics of the former Soviet Union have become independent. If you were to look at a map of Asia or Africa from fifty years ago, it would look vastly different from one today. Have fun with this little exercise and don't get "lost on the planet earth."

- ☐ United States
- ☐ Germany
- ☐ Vietnam
- ☐ Japan
- ☐ United Kingdom
- ☐ Canada
- ☐ Russian Federation
- ☐ Mexico
- ☐ France
- ☐ Italy
- ☐ Sweden
- ☐ Brazil
- ☐ South Africa
- ☐ Australia
- ☐ China
- ☐ Egypt
- ☐ Pakistan
- ☐ Nigeria
- ☐ Argentina
- ☐ Ethiopia

Box 2.1

Population and Land Area of the World by Continents, 2000 (estimated, in thousands)

Continent or Region	Population	% World Total, 2000	Area (in sq. mi.)	% of Earth
North America	481,000	7.9	9,400	16.2
South America	347,000	5.7	6,900	11.9
Europe	729,000	12.0	3,800	6.6
Asia	3,688,000	60.7	17,400	30.1
Africa	805,000	13.2	11,700	20.2
Oceania, incl. Australia	31,000	0.5	3,300	5.7
Antarctica			5,400	9.3
WORLD	6,080,000		57,900	

Note: Figures may not add to total because of rounding.
Source: Bureau of the Census, U.S. Dept. of Commerce

Box 2.2

Twenty Largest Countries in the World in Population, 2000

Rank	Country	Population
1.	China	1,261,832,482
2.	India	1,014,003,817
3.	United States	275,562,673
4.	Indonesia	224,784,210
5.	Brazil	172,860,370
6.	Russia	146,001,176
7.	Pakistan	141,533,775
8.	Bangladesh	129,194,224
9.	Japan	126,549,976
10.	Nigeria	123,337,822
11.	Mexico	100,349,766
12.	Germany	82,797,408
13.	Philippines	81,159,644
14.	Vietnam	78,773,873
15.	Egypt	68,359,979
16.	Turkey	65,666,677
17.	Iran	65,619,636
18.	Ethiopia	64,117,452
19.	Thailand	61,230,874
20.	United Kingdom	59,508,382

Source: Bureau of the Census, U.S. Dept. of Commerce

Box 2.3

Ten Largest Countries in the World in Land Area, 1999

Rank	Country	Area (in sq. mi.)
1.	Russia	6,592,800
2.	Canada	3,851,809
3.	China	3,691,521
4.	United States	3,536,341
5.	Brazil	3,286,470
6.	Australia	2,966,150
7.	India	1,229,737
8.	Argentina	1,072,067
9.	Kazakhstan	1,049,000
10.	Sudan	967,491

Source: Bureau of the Census, U.S. Dept. of Commerce

3

Science,
the Scientific Method,
and Research Designs
in the Social Sciences

Frank J. Zulke

The world we live in is changing. It is changing at a more rapid pace than at any other period in history. Compare life today with the not too distant past. Imagine an age where values were stable, when the divorce rate was low, when one could go downtown at night without fear of being mugged, when a cross country flight took eight hours, when a typical American did not have their television on for seven hours or more each day, and when one relied more on snail mail than e-mail. Indeed, try to imagine life without the airplane, television, or the computer. Or, better yet, think of what life could be like for your children. The next twenty-five years may bring further megalopolitan growth, gender selection of unborn babies, the "electronic church," increased longevity, transsexualism, global warming, biological terrorism, the colonization of space, and maybe even communication with extraterrestrials. To continue boggles the imagination. Virtually every human institution and cultural practice accepted in the past will come under scrutiny and be subject to change. Will we be ready for these changes? Will we have any control over the direction of these changes? Will the changes affect us and, if so, how? Will the new society be a better one than the one that exists now?

Since our relationship to the universe and to each other is constantly evolving, these questions are, of course, not new. Neolithic cave dwellers in

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10,000 B.C., inhabitants of the *polis* in ancient Greece, theologians in the Middle Ages, hunters and gatherers in the Kalahari desert in Africa, and Chicagoans and New Yorkers at the dawn of the twenty-first century have all attempted answers. Indeed, "ancients" and "moderns" alike have wrestled with the problem of change so life might be more meaningful and have a greater sense of direction and purpose. But, and this is a very important but, the pace of change has accelerated and no one would doubt that the world is undergoing a major transformation. We no longer even speak of trends today but, as Box 3.1 points out, "megatrends."

Some authors, like Alvin Toffler in *Future Shock* and *The Third Wave*, Joe Cappo in *Futurescope*, and Bill McKibbons in the elegiac *The End of Nature*, fear a dehumanization of society as people's lives become regulated by new technologies and impersonal bureaucracies. They see poverty, overpopulation, ecological devastation, secularization and loss of community. Even an increase in mental illness is predicted. Such dire pessimists warn against getting caught up in materialism and narcissism.

Box 3.1

Megatrends 2000

One way to think about the future is to consider new directions in which our society seems to be moving. Futurists John Naisbitt and Patricia Aburdene have pinpointed some megatrends that they believe are transforming our lives. Read through the list below and see if you agree. As you try to think of examples, consider the positive and negative consequences of each megatrend.

1. We are shifting from a manufacturing society to one in which service and information related jobs will predominate.
2. We will live more and more in a "high tech" world and have an ever increasing need for a "human touch."
3. Cities in the southern and western areas of the country will "win" over the old industrial cities of the north.
4. We are moving from a national economy to a global one.
5. The Pacific "rim" of the world will become increasingly more important in the world.
6. A free market socialism seems to be emerging worldwide.
7. There will be a religious revival in the third millennium.
8. Women will move into positions of leadership in record numbers.

Source: John Naisbitt: *Megatrends* (New York: Warner Books, 1984) and John Naisbitt and Patricia Aburdene: *Megatrends 2000* (New York: William Morrow), 1990.

Other authors, like Marvin Cetron and Owen Davies in *American Renaissance*, Austin and Knight Kiplinger in *America in the Global '90s* or Richard Falk in *This Endangered Planet* offer a more upbeat mood. They see the shifts taking place in today's world as offering unprecedented opportunities for a humanism that will eventually prevail. These exuberant optimists point to stabilized populations, harmoniously used resources, new technological developments, and a sharing, cooperative world where satisfaction might be achieved by all. Since both the pessimistic and optimistic points of view are reasonable, only the future will tell which is more correct.

Science

What is new about the modern attempt to pose and answer fundamental questions regarding possible changes is that we rely more and more on the use of science to do so. It is not that we cannot learn much from mythology, folk-sayings, religious maxims, intuition, common sense, poetry, philosophy, or even movies and television, but rather that science offers a "new" way to obtain and organize our knowledge. While other approaches are feasible, of course, few would argue with the position that science increasingly affects our lives.

Science may be defined as an objective, logical, and systematic method of analysis of phenomena devised to permit the accumulation of reliable knowledge. So defined, two components of science stand out. Science is both a body of knowledge about some aspects of the universe in which we live as well as a method by which that knowledge is obtained. Conceived of this way, we usually speak of the natural sciences and the social sciences. The natural sciences include those which focus on the nature of the physical universe (for example, astronomy, chemistry, physics) as well as those that study living organisms (for example, biology, botany, zoology). Generally included among the social sciences are psychology, sociology, anthropology, political science, economics, and history. Some feel the subject matter of geography overlaps enough so that it should be included as well. All the social sciences are concerned with the study of people, both individually and in groups, in cultures and societies, and in the past and the present.

Regardless of whether we talk of the natural or the social sciences, scientists attempt to collect basic data and to generalize or explain their meaning, that is, they do research and theorize. Research refers to the actual tasks involved in the way scientists have chosen to study the world. Put another way, scientists must collect the facts. A theory is a general explanation of phenomena that, hopefully, will have predictive value for future research and theorizing. Whereas research tells us "what," theory tells us "why." Theory gives meaning to facts that might otherwise simply

be units of information; research makes theory more than a set of abstractions. The two are thus complementary: research is meaningless without theory, and theory without research is simply speculation.

The Scientific Method

Although the way of studying or knowing a subject hardly seems as important as the subject itself, it is clear that what one learns depends on the way one approaches the material. The scientific method is a set of rules for ensuring that research will lead to valid theories. It proceeds from the inception and first formulation of a problem to publication of its results. Executed properly, it can serve as a safeguard against the possibilities of arriving at false conclusions or of accepting generalizations that have not been adequately supported by evidence.

Step one: Choosing a Topic and Defining Basic Terms

The first goal of the scientific method is to identify an area of concern that the research will investigate. Although this sounds relatively simple, it is often more difficult than one might think. Enthusiasm and curiosity are not enough. The researcher must have both the insight to see possible relationships between complex phenomena as well as the ability to define terms in such a way that the topic can be studied logically, objectively, and systematically. *Try to think of a topic on which you would like to do research.*

Step two: Getting Oriented on the Topic

The next step is to compare existing knowledge about the topic with the researcher's ideas. A survey of the literature will show what research and thinking has already been done on the topic and may expand or change research plans. More and more libraries now offer computerized literature searches that speed up this step. The idea here is that we do not want to "rediscover the wheel." *Where would you look to see how others have studied similar topics?*

Step three: Formulating a Hypothesis

Having chosen a topic and reviewed what work has been done on it, the researcher now formulates a hypothesis. It may be just a "hunch" or it may be part of an already developed theory. A hypothesis is a statement specifying a particular relationship between two or more variables (or factors) thought to be important. Usually, an independent and dependent variable are involved. The independent variable is the factor thought to affect the dependent variable; the dependent variable is the factor expected to change in relation to the independent variable. The hypothesis is phrased in such a way that it can be "tested," i.e., proved or disproved empirically. This involves sense perception: the information must be visible, smellable, hearable, feelable, or tastable. This is crucial because observations made in this way can be checked for accuracy by other persons using the same

senses. Remember that many propositions are not testable because they are outside the realm of empirical evidence. The existence of angels or God, for example, can be neither supported nor refuted empirically. In summary, then, a hypothesis is an expectation or educated guess that acts as a guideline in suggesting what might be encountered as research proceeds. *Have you come up with at least one testable hypothesis for your topic?*

Step four:
Choosing a Research Design and Collecting the Data
Once the hypothesis is formulated, the researcher must decide how to collect information that will prove or disprove it. Box 3.2, "Unobtrusive Measures," suggests unobtrusive ways to collect the facts, i.e., research designs that involve little contact between the researcher and the subjects of the research. Other designs may be more obtrusive. Many commonly used designs in the social sciences—experiments, sample surveys, and observational studies—involve situations where the researcher may influence the behavior of the persons being studied. Sometimes researchers make use of sources of data that already exist to avoid this potential pitfall. Each of these designs will be discussed in greater detail later in this chapter. *Will you use an obtrusive or unobtrusive design to gather your information?*

Step five: Analyzing the Data
After the information has been collected, it must be summarized and interpreted. (The use of computers increasingly plays a large role here and social science majors are encouraged to become computer literate and to take courses in research methods and statistics.) The attempt is made to draw logical conclusions and, on the basis of those conclusions, either support or reject the original hypothesis. Equally important is to determine if the findings add to or suggest revision of established theory. *Did your analysis prove or disprove your hypothesis? Why or why not?*

Step six: Reporting the Results
Once the data are analyzed, it is important that the results be made public. Communication within the scientific community cannot be overestimated as the value of a study lies both in the information collected and analyzed as well as in new investigations the study stimulates. In this way, scientists can systematically build on one another's work. Many great scientific achievements were accomplished by building on the findings of others who lived and worked in different places. *Where will public dissemination of your conclusions do the most good?*

    Psychiatrist Thomas Szasz observed that when you put on a shirt, "if you button the first buttonhole to the second button, then it doesn't matter how careful you are the rest of the way." So it is with the scientific method. If these steps are not followed—if basic terms are not defined precisely, or if the hypothesis is not defined in a way that can be tested empirically, or if an inappropriate research design is chosen—then all the brilliant analysis

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> ## Box 3.2
>
> ### Unobtrusive Measures
>
> What are the advantages in using unobtrusive measures to collect facts in the research studies below? What other ways might these topics be studied? Can you isolate the independent and dependent variables in these studies?
>
> One investigator wanted to learn the level of whiskey consumption in towns which were officially "wet" or "dry." Empty bottles were counted in ashcans.
>
> The degree of fear induced by a ghost-story-telling session can be measured by noting the shrinking diameter of a circle of seated children.
>
> The floor tiles around the hatching-chick exhibit at Chicago's Museum of Science and Industry must be replaced every six weeks. Tiles in other parts of the museum need not be replaced for years. The selective erosion of tiles, indexed by the replacement rate, is a measure of the relative popularity of exhibits.
>
> Chinese jade dealers have used the pupil dilation of their customers as a measure of the client's interest in particular stones. Others have noted this same variable as an index of fear.
>
> Library withdrawals were used to demonstrate the effect of the introduction of television into a community. Fiction titles dropped, nonfiction titles were unaffected.
>
> Children's interest in Christmas was demonstrated by distortions in the size of Santa Claus drawings.
>
> Racial attitudes in two colleges were compared by noting the degree of clustering of blacks and whites in lecture halls.
>
> Source: E. Webb, D. Campbell, R. Schwartz, and L. Sechrest, *Unobtrusive Measures* (Chicago: Rand McNally, 1966).

in the world will not make things right. The scientific method is a way to make sure "to button the first buttonhole to the first button."

Application of the
Scientific Method to a Problem

To understand the scientific method more concretely, let us attempt to follow these steps through on an actual research project. The project chosen is a classic example of sociological research: Frenchman Emile Durkheim's *Suicide*. Although originally published in 1897, the findings seem as important today as when the study was first published. Before you continue read-

ing, jot down some of the reasons why you think people commit suicide. Then, after you read this section, you can see if you have a different view.

In Durkheim's time, suicide was thought to be caused by such factors as insanity or heredity, or even a full moon. Investigators usually explained suicide by referring to the motives of people who had taken their own lives. Some had committed suicide, for instance, after a doctor had diagnosed a fatal illness, others had failed in business, and still others may have had unhappy love affairs. Durkheim was not satisfied with such explanations. He believed the reasons for suicide lay outside the individual and sought to investigate this.

Having *chosen a topic*, Durkheim had to *define his terms* more precisely. Of primary importance, of course, was to define suicide. He said it referred to "death resulting from some act of the victim which he or she knows will produce the result." He wanted to measure it in terms of rates such as the number of suicides per 1,000,000 population. Lastly, he had to explain how the reason for suicide could "lay outside the individual." This was harder to do. He finally decided he would concentrate on the "social context" within which suicide occurs, that is, the type of society and the kinds of groups to which people belong.

His next step was to review the literature in order to *get oriented on the topic*. He found that suicide rates varied from one time period to another and from one country to another. Those countries that had the highest suicide rates surprisingly had the lowest rates of mental illness. This suggested that insanity alone did not explain suicide. He found, furthermore, that while more women than men were confined to mental asylums, more men than women committed suicide. He was not able to accumulate accurate information that compared suicide rates of parents and children. While Durkheim's survey of the literature did not allow him to disprove that suicide rates were related to insanity and heredity, his findings were suggestive enough to make him suspect that previous researchers had been looking in the wrong direction. Thus, Durkheim decided to pursue his idea that suicide was related to a person's relationships within the groups to which they belong.

Durkheim could now *formulate some hypotheses* to be investigated. He used factors such as marital status (unmarried and married), religious affiliation (Protestant and Catholic), military involvement (being in the armed forces and being a civilian), and societal stability (a rapidly changing society and a stagnant society) as his independent variables and specific suicide rates as his dependent variables. Examples of hypotheses he sought to test were: fewer married people will commit suicide than single people; more Protestants than Catholics will commit suicide; fewer civilians will commit suicide than people in the armed forces; periods of rapid social change will have higher suicide rates than periods of slow change. Durkheim tested many other hypotheses as well.

To test these hypotheses, Durkheim *chose an unobtrusive research design* that utilized already existing data. He examined official government suicide records in various European countries over a period of years. The records listed numbers of suicides and gave information about the people involved—their age, sex, nationality, marital status, and so on. Sta-

tistical records available at the time were scattered and incomplete and Durkheim, without the aid of today's computers, *collected the data*.

Analysis of the data supported many of Durkheim's hypotheses. He compiled percentages and constructed elaborate tables, maps, and graphs to illustrate his findings. Table 3.1 is a good example of his analytical approach. From this table we see a relationship between male family relationships and the suicide rate. Men who are married and have children have the lowest suicide rate; widowers without children have the highest suicide rate; husbands without children and widowers with children have intermediate rates. (He compiled female rates as well as rates for hundreds of other groups).

What many regard as Durkheim's most lasting contribution to social science was his ability to consistently relate his factual information to theoretical and practical issues. Box 3.3 below gives a general idea of how he did this.

We might look now at some of the conclusions Durkheim made as he *reported the results of his findings*. He explained that unmarried people are more likely to commit suicide than those who are married because the unmarried are likely to have a lower level of social integration and group involvement. Since the emotional attachment of single persons to a family group is less intense than that of married persons, their barrier against suicide in times of personal stress is weaker. The logic here is that when the father in a tightly knit family comes home with the news that he has been fired, the wife and children rally around him, "hold his hand," and assure him of love and support. The answer to why suicide rates differed for various religious groups was not so obvious. Durkheim had to look beyond specific religious beliefs since both Protestantism and Catholicism condemned suicide. Instead, he concentrated on how the two religions interpreted the relationship between the individual and God. For Protestants, a central concept was that each individual stood alone before his Maker; for Catholics, a hierarchical order of the priesthood intervened. Thus, according to Durkheim, the Protestant was more susceptible to suicide than the Catholic because he was less intimately associated with a traditionally organized

Table 3.1

Family Relationships and Male Suicide Rate: France, 1861–1868

Family Relationships	Male Suicide Rates (per million)
Husbands with children	336
Husbands without children	644
Widowers with children	937
Widowers without children	1258

Source: Emile Durkheim, *Suicide* (New York: The Free Press, 1966).

> ## Box 3.3
>
> ### Why Study Suicide Rates?
>
> "The study of suicide rates shows that the individual is dominated by a moral reality greater than himself: namely, collective reality. When each society is seen to have its own suicide rate and when it appears that the variations through which it passes at different times of the day, month, year, merely reflect the rhythm of social life, and that marriage, divorce, the family, religious society, the army, the economy, etc. affect it in accordance with definite laws—then these states and institutions will no longer be regarded as characterless, ineffective ideological arrangements. Rather they will be felt to be real, living, active forces which, because of the way they determine the individual, prove their independence of him.
>
> If, instead of seeing in suicide only separate occurrences, unrelated and to be separately studied, the suicides committed in a given society during a given period of time are taken as a whole, it appears that this total is not simply a sum of independent units, a collective total, but is itself a new fact *sui generis*."
>
> Source: Emile Durkheim, *Suicide* (New York: The Free Press, 1966), p. 46.

Church and placed largely on his own resources. Durkheim referred to suicide for the unmarried and for Protestants as *egoistic suicide*—such individuals will commit suicide because they perceive themselves as isolated.

Durkheim's explanation of why men in the armed forces commit suicide more than civilians is referred to as *altruistic suicide*. When you belong to a group in which its importance is stressed and the individual is viewed as insignificant, you will not value your own life as strongly. Thus, provocations that would not motivate others to commit suicide may affect you. The Indian widow who is expected to burn herself to death on her husband's funeral pyre, the kamikaze pilots in World War II, or the self-immolating Buddhist monks during the Vietnam War are examples of this.

One other major type of suicide that Durkheim discusses is *anomic suicide*. He posited that a rapid change in either the society as a whole or in an individual's social situation would create a state of anomie or normlessness. This would increase the probability of committing suicide. This is because individuals are most satisfied with their lives when their day-to-day behavior is oriented toward a set of meaningful goals and is regulated by a set of rules or norms. When goals lose their meaning or when norms are uncertain, life seems without purpose and suicide is more likely. The theory of anomic suicide could explain, for example, the increase in suicide rates during a period of economic instability as existed after the stock market crash of 1929.

You might wish to return now to the reasons you thought that people committed suicide. Most likely you had listed individual causes like unhappiness or depression. Did Durkheim make you change your mind? Do you agree now that a private act like suicide can be explained in terms of social causes? Which, if any, of Durkheim's types of suicide might account for the current increase of suicides in high school and college age populations in the United States?

Current Research Designs in the Social Sciences

Social scientists currently use one or more of four basic research designs: the experiment, the sample survey, the observational study, and the use of existing sources of data. The first three of these involve researchers personally collecting their own data; the fourth does not. Each design has its own advantages and disadvantages. While each is discussed separately, keep in mind that there is often an overlap between them when actual research is being done.

The Experiment

The experiment is the most precise and rigorous of the research designs. It seeks to specify cause-and-effect relationships between two variables under carefully controlled conditions. In a typical experiment, three basic steps are involved. First, two comparable groups are set up. Second, one group is exposed to some stimulus and the other group is not. Third, both groups are measured and compared to see what effect the stimulus had. Conducted properly, the experiment should be able to prove or disprove if one variable "caused" a change in another variable. The next few paragraphs attempt to pinpoint some of the more salient aspects of this technique in a hypothetical situation.

Let us suppose a major pharmaceutical company has developed Expando, a drug it believes will expand human memory so as to retain much more material. So far, the company has tried Expando on many animals with positive results and no negative consequences. Since a similarity between animal and human reactions is assumed, the company now wishes to see if Expando works on humans. Psychologists, who have pioneered in the use of experimentation to study human behavior, are consulted to help set up a laboratory experiment.

The experimenter obtains "subjects" and divides them into two groups, the "experimental group" which takes Expando, and the "control group" which is given a false medication. (Taking or not taking the drug is the independent variable.) The researcher may not want to know which group got Expando and which the "placebo" so that he or she will not subconsciously influence the results as testing commences. Another consider-

ation for the researcher is to be certain that the groups were similar in terms of sex, age, race, social class, scholastic aptitude, previous success in studies, etc. After all, these variables might play a part in the subjects' memory retention. At this point, tests measuring retention of information can be given to the two groups and we should be able to see if the drug works. If it does, the experimental group should perform better on the tests than the control group. (Improved or unimproved memory as measured by the tests is the dependent variable).

While the situation above is hypothetical, properly constructed experiments can help to disentangle cause-and-effect relationships. To the extent they do this, whether in a "laboratory" type of setting (as described above), or in a more "naturalistic" setting (as described in Box 3.4), they are very important. Keep in mind, however, that there are always potential disadvantages in conducting experiments: usually only very few subjects—often pigeons or college sophomores—can be "tested"; designs must frequently be modified for reasons of time, costs, etc.; "labs" are often artificial; "naturalistic" situations can't always be controlled; the experimenter may unwittingly influence the results; etc. The point is that the experiment is not a foolproof way to collect information but one of several possibilities. Ask your instructor if your class can perform the "Landing on the Moon" experiment described in Box 3.5. You may have fun and there may be some surprises for you.

The Sample Survey

The sample survey, while lacking the precision of an experiment, is another frequently used research design in social science. It is a method in which people are asked questions in order to systematically gather standardized information about their behavior, opinions, attitudes, values, beliefs, or other characteristics. It is useful for gaining information about issues that can't be directly observed. In simplest terms, it asks people "what's going on out there." Since it can deal with a large number of subjects in a real community, its results can often be easily compared and/or generalized to the wider society. Whereas psychologists most often use the experiment as their way of gathering information, sociologists, political scientists, and economists usually use the sample survey.

One key word here is "sample." A "sample" or portion of people is chosen from a particular "population," for example, Americans, Chicagoans, doctors, college students, etc. The way the sample is chosen is of paramount importance if the sample is to accurately reflect the population. An example of how *not* to choose a sample was offered by a poll conducted by the magazine *Literary Digest* in 1936. The magazine sent ten million postcard ballots to respondents chosen from telephone directories and auto registration lists. On the basis of returns, the magazine predicted that Alfred Landon would beat Franklin D. Roosevelt in the presidential election. Think of how many people would have telephones and drive automobiles during the Depression and you can guess why the magazine's prediction was so

Box 3.4

The Hawthorne Effect

Sometimes, researchers are able to conduct their experiments in the field in a naturalistic setting. This is often desirable because there may be a tendency for people to behave differently when they know that they are participating in experiments than they would ordinarily behave in real life situations. In one famous study, researchers went into a factory to see how lighting (the independent variable) affected workers' output (the dependent variable). To the investigators' amazement, findings indicated that the productivity of the subjects increased regardless of increases or decreases in lighting. Even when working in almost complete darkness, productivity increased. The experimenters concluded that the high degree of personal attention was a more important influence on behavior than the physical setting. Workers changed their behavior to fulfill what they believed were the researchers' expectations. This change in behavior is known as the Hawthorne effect (after the factory in which the experiments were conducted). Social scientists today strive to avoid it.

Source: F. J. Roethlisberger and W. J. Dickson, *Management and the Worker* (Cambridge, MA: Harvard University Press, 1939).

inaccurate. For reasons like this, researchers will usually have trained statisticians help them choose a representative sample, i.e., a subgroup drawn from a population so that it has essentially the same distribution of characteristics as the population at large. If a sample is to be representative, all members of the population must have the same chance to be selected for the sample. The sample in effect must be random. A young George Gallup, incidentally, correctly predicted the Roosevelt landslide using a much smaller random sample than that used by the *Literary Digest*.

The other key word here is "survey" and, as you have undoubtedly guessed, people in the sample will be asked to complete a questionnaire or take part in an interview. Questionnaires, which respondents fill out, are popular because they can be collected relatively fast and inexpensively. A problem arises, however, because although all respondents fill out the same questionnaire, there is no guarantee that they will understand and interpret each question in the same way. A question such as "do you approve of legalized abortion?" usually poses little difficulty. About 50 percent of Americans answer yes. Questions such as "do you believe there should be an amendment to the Constitution protecting the life of the unborn child?" or "do you think there should be an amendment to the Constitution prohibiting legalized abortion?" may involve difficulties in inter-

pretation. While essentially the same question, over 60 percent of Americans said yes in the first version and under 25 percent answered yes in the second version. It is important that survey questions be phrased in a neutral way. Additional potential problems in using questionnaires are that unanticipated responses or information often cannot be included, people may give false information, or people may not return the questionnaires. To complicate matters even more, between 10 percent and 20 percent of American adults are not sufficiently literate to complete a questionnaire.

The interview differs from the questionnaire because the questionnaire is completed by the individual respondent whereas the interview is carried out by a trained interviewer who asks the subject certain questions. This is more time-consuming and expensive but there are several advantages. The problem of nonresponse is limited; more intimate questions can be asked; the interviewer can explain questions and thereby reduce misunderstandings on the part of the respondent.

Once the data is collected, the sample survey is an excellent source of information about social characteristics. In addition to basic distributions (for example, the number of people who approve or disapprove of abortions), sample surveys can provide clues to relations between variables (for example, attitudes toward abortion do or do not vary with sex, age, social class, religion, etc.). Furthermore, if the survey is repeated over a period of time, social scientists may be able to draw certain conclusions about changing attitudes (for example, attitudes toward abortion are more tolerant or less tolerant in the 2000s than in the past). Use of modern computers makes it possible to pinpoint relationships between many different variables for large populations. The relationships are usually correlations. As Sydney Harris points out in Box 3.6, there are major differences between correlations (when two factors vary together) and cause-and-effect relationships (when one factor causes the other to happen).

The Observational Study

Some social scientists argue that they would prefer to study fewer people than those involved in the typical sample survey and to probe more deeply into the context of the behavior being studied than is usually allowed in an experiment. The observational study provides an opportunity to do this. It is an intensive examination of one unit—person, event, gang, ghetto, religious cult, etc.—firsthand in a natural setting. It allows the researcher the opportunity to observe behavior while it is actually taking place. The goal of such investigations is to learn "all" one can about the particular subject. Sometimes the social scientist simply watches without getting involved in the activity itself. This is called "detached observation." Other times, and it is this approach that anthropologists and some sociologists have developed extensively, the researcher finds it useful to actually join and participate in the group or community being studied. Such "participant observation" often allows the researcher more insight into the way of life of the

Box 3.5

An Experiment to Compare Individual and Group Decision Making

You are to imagine yourself a member of a space crew originally scheduled for rendezvous with a mother ship on the lighted surface of the moon. Mechanical difficulties, however, have forced your ship to crash-land at a spot some 200 miles from the rendezvous point. The rough landing damaged much of the equipment aboard. Since survival depends on reaching the mother ship, you must choose the most critical items of those available to take with you on the 200-mile trip. Below are listed the fifteen items left intact after landing. Your task is to rank the items in terms of their importance to your crew in its attempt to reach the rendezvous point. Place a number 1 by the most important item, the number 2 by the second most important item and so on through number 15, the item you feel to be the least important.

_____ A. Box of matches   _____ J. Life raft

_____ B. Food concentrate   _____ K. Magnetic compass

_____ C. 50 feet of nylon rope   _____ L. 5 gallons of water

_____ D. Parachute silk   _____ M. Signal flares

_____ E. Portable heating unit   _____ N. First-aid kit (with
                                                        injection needles)
_____ F. Two .45 calibre pistols
                                           _____ O. Solar powered FM
_____ G. One case dehydrated milk   receiver-transmitter

_____ H. Two 100 lb. tanks of oxygen

_____ I. Stellar map

   After you have done this individually, divide up into working groups of four to eight students. The group will then work together to provide a ranking from 1 to 15, as has previously been done individually.
   When both individuals *and* groups have completed their work, look on page 32 to see how the National Aeronautics and Space Administration would have ranked the items. Compute scores for individuals and groups and try to answer these types of questions:

1. Did individuals or groups do better?

2. Does the make-up of the group affect its score? Age, sex, year in school, etc.

3. To what extent do emotional factors affect the group's score?

4. To what extent does basic knowledge play a part in either the individual's or the group's score?

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│              ╭──────────────────╮                │
│              │     Box 3.6      │                │
│              ╰──────────────────╯                │
│                                                   │
│        "Correlation" and "Cause and Effect"      │
│                                                   │
│   Few laymen really understand the difference between "correlation"  │
│   and "cause and effect." Most people take the one for the other, and │
│   commit a huge blunder in doing so.             │
│       There is a clear and steady correlation between the amount of for- │
│   mal education you have and the level of income you achieve. This │
│   correlation has led many people into the fallacy that education is the │
│   "cause" and income is the "effect" in this common equation. │
│       It is not so. Young people with more formal education win better │
│   jobs and higher income not so much because they know more and │
│   can do more as because they know more people who can do more for │
│   them. Most have little difficulty in finding a white-collar job—through │
│   family, friends, college connections or the general social milieu in │
│   which they have grown up and live. It is not education per se that │
│   raises the quality of the job or the level of income, but the whole │
│   social fabric and pattern of the community. │
│       The old cynical slogan "It's not what you know but who you know" │
│   still operates to decide which youngster trudges off to the car wash and │
│   which walks briskly into the anteroom marked "Executive Trainee." │
│   Sydney J. Harris, *Chicago Sun-Times*, 9/20/83. │
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people he is observing since it provides a better opportunity to experience and understand the world from the point of view of the subject. Let us take an imaginary trip to the Kalahari Desert in Africa to indicate how an observational study of the culture of the !Kung people might be carried out. (The exclamation point before Kung indicates a clicking sound in these people's language for which there is no English equivalent).

We leave Maun, Botswana to spend a year among the !Kung. We have jeeps, food, water, medicine, camping equipment and even rifles. We have a guide who knows the land and speaks the !Kung language fluently. The guide is probably the only person we take with us, for "the fewer people along the better" is a good rule of field work. One or two people stand a better chance of making friends with the !Kung and observing their life without disrupting it than do half a dozen. Of course, our arrival will affect their activities no matter what because they are a shy people who live in small bands of about 20–50 people. Nevertheless, we want to minimize our effect.

We will have read everything that has ever been written on the !Kung and even have tried to learn their language. Because so much has been written, we may even anticipate proving or disproving some hypothesis. We certainly can't wait to practice speaking our new found "clicking" language.

When we find a band of !Kung, our first problem will be to make friends with them. Previous research reports indicated that tobacco serves this purpose well. Since the Surgeon General has warned us about possible ill effects of this, we may have qualms about giving them tobacco. (Box 3.7 discusses "ethical questions" that arise in the social sciences.) Hopefully, we will find some alternative way to gain their confidence and become accepted. This may not be easy. Think of how we would react if a !Kung came into our neighborhood with trucks, cameras, notebooks, tape recorders, and rifles to study our way of life. Eventually, when they get used to our odd ways, they probably will let us write down, photograph, and record what we want. They may even laugh at our attempts to speak their language.

At first, everything we see will seem unique: a small boy shooting arrows at an ant hill, two men jogging across the veld, a circle of men dancing around a campfire at night with women singing in the background. Gradually, a pattern will emerge and we will learn that small boys spend hours amusing themselves with bows and arrows in anticipation of future roles as hunters, that men sometimes try to run down game, and that dancing and singing are an important part of !Kung religion, recreation, and even medicine. These learned, shared patterns of life are the !Kung culture and that is what we have come here to study.

As with the other research designs considered, there are pluses and minuses in doing observational studies. They are very useful if we want to study something that we don't know much about. They cannot be matched in their ability to reveal the meaning of a social situation from the angle of the people involved. Behavior studied in this way is relatively uncontaminated by the presence of large number of strangers and interviewers. They are adaptable, furthermore, to the extent they are relatively unstructured and can easily be altered when necessary. Still another advantage is that the detail and depth of information make them particularly rich in clues and insights. In this way, observational studies often suggest hypotheses worthy of future testing by more precise methods.

A major limitation of the observational study is that the results are often based on one case, which makes it difficult to generalize to another situation. The potential for bias on the part of the researcher is another possible problem area. Often, he or she must rely on personal judgment and interpretation and thus may not accurately see what is actually happening. Finally, the lack of standardized procedures could make it difficult to duplicate or replicate additional observational studies.

Use of Existing Sources of Data

The three research designs discussed so far emphasize collecting data from scratch, that is, with researchers personally collecting their own data. Sometimes this may be unnecessary. Relevant data may already exist which has been collected by other researchers. Think of what data is available on the Internet. Various research centers throughout the world such

Box 3.7

Ethical Questions: Tea Rooms

Certain ethical questions arise for social scientists doing research: Should animals be used? What if it is necessary to terminate their lives? How does one respect the privacy and integrity of the people being studied? Is there the potential for emotional suffering? Who will make use of the findings? Might the findings be used for policy formulation that is detrimental to the group from which the findings came? Should secret agreements with sponsors be allowed? Must all reports be public? Not surprisingly, because of these and other questions, there has been a hot debate among social scientists over past decades on the subject of ethics. Professional organizations such as the American Anthropological Association, American Psychological Association, American Sociological Association, etc. have now adopted codes of ethics which offer guidelines for "proper" research so that there will be no damage to either the people studied or to the scholarly community. The codes often have provisions for censure of unprofessional conduct.

Despite safeguards, the mere possession of confidential information about people introduces certain risks. One controversial study involved an investigation where sociologist Laud Humphreys observed homosexual encounters in "tearooms," that is, public restrooms in forest preserves. Subsequently, he followed the men to their cars and used their license plate numbers to find out their names and addresses. A year later he changed his appearance and went to their homes and interviewed them—without revealing his knowledge of their sexual activity. Had the names of his subjects become public, there was always the possibility of personal embarrassment, not to mention the risk of family disruptions or threats to careers. Some social scientists opposed Humphreys' approach because they feel people have a right to know when they are being studied and a right not to be studied if they don't want to be. Others argue, however, that when people are in a public place, social scientists have the same right to observe them that anyone else has. What do you think?

Source: Laud Humphreys, *Tearoom Trade: Impersonal Sex In Public Places* (Chicago: Aldine, 1970)

as the National Opinion Research Center in Chicago or the late George Gallup's American Association for Public Opinion Research in Princeton, now maintain data archives whereby they collect, exchange and sell data sets stored on computers. The records of universities, corporations, hospitals, government agencies, etc. present other sources where data is available.

One of the richest sources of data would be the United States Census which gathers detailed information about every citizen every ten years. See Box 3.8 below. If we think of Durkheim's research dilemma, it may make what is being said more clear. Durkheim found it impossible to conduct an experiment, survey, or observational study because the people whose behavior he wanted to study were dead. His solution was to analyze government death certificates. He did it so brilliantly that many consider his research to be the first great empirical breakthrough in sociology.

Box 3.8

The U.S. Census: From Horseback to the Internet

A census is an official, systematic head count of the number of people who live in a given area. The area can be as small as a city block or as big as an entire country. Often, in addition to counting people, an attempt is made to determine where and under what conditions people live, their occupations, their marital status, their age distribution, maybe even their military prowess, and other related data.

Census taking in this sense is not new. It has been around for a long time, going back to ancient China and biblical times. After the Israelites were safely out of Egypt, for example, the Old Testament records that the Lord told Moses to "take a census of all the congregation of the people of Israel." It would have been important for a besieged people to count all men 20 or older to assess Israelite military strength. Roman emperors also counted and assessed their subjects frequently. William, Duke of Normandy, compiled the *Domesday Book* after his seizure of the English throne in 1066. One purpose for this counting was that the king suspected his subjects were not paying the proper amount of taxes. From ancient times to the present, therefore, censuses have been important.

The first national census in the United States took place in 1790. Under the authority of Secretary of State Thomas Jefferson, seventeen U.S. marshals knocked on doors and interviewed residents throughout the country. They solicited answers to six questions: the name of the head of the household; the number of free white males 16 years of age and older; the number of free white males under 16 years of age; the number of free white females; the number of other free persons; and the number of slaves. Slaves were counted as three-fifths of a person. Native Americans on reservations or in Indian territory were not counted. The census took about 18 months and the total population was tallied at 3,929,214.

The nation's twenty-second decennial census, Census 2000, officially began on April 1, 2000. Its stated mission was to be the preemi-

nent collector and provider of timely, relevant, and quality data about the people and economy of the United States of America. Taking such a census was a massive task, costing billions of dollars. Rather than seventeen enumerators, almost 900,000 people were employed to solicit answers to questionnaires that would reflect the number and characteristics of Americans. Those employed ranged from office personnel and regular enumerators to "special place enumerators" who went to places such as abandoned buildings to count the homeless. Most households received a 7-question short form to be answered but some received a 52-question long form. (It was the first time, incidentally, that respondents could indicate more than one racial category in describing themselves.) While census takers again went door-to-door to interview people, Americans in 2000 had other options for responding. They could mail in forms via the U.S. Postal Service or even file electronically via the Internet. For those not proficient in English, the questionnaire was available in Spanish, Chinese, Korean, Vietnamese, and Tagalog. Additionally, "questionnaire assistance guides" were available in 49 languages. This was a decidedly different census than the one in 1790. The current total population of the United States at the time of Census 2000 was tallied at 275,562,673.

Response to the census is not optional but is required by law. Article 1 of the Constitution prescribes that an elaborate census be conducted every ten years in the United States. Information collected is strictly confidential. In fact, census workers are sworn to secrecy. Data can be used only for statistical purposes. It is important that the data be as accurate as possible because not only are the seats in the House of Representatives apportioned according to the population of each state, but also because many federal and state entitlement programs are similarly allocated on the basis of census data. Everything from schools, highways, mass transit, hospitals, and aid to the elderly is affected by census figures. In addition to the decennial census, the Bureau of the Census conducts a sample survey called the Current Population Survey (CPS) each month. The purpose of the CPS is to update the census with monthly data. Thousands of interviews are conducted in randomly selected households. The CPS is the nation's most comprehensive source of information about race, ethnicity, employment, veteran status, and related data. If you need up-to-date information on any of these topics, go to your computer or any major library to obtain it.

Some people, however, are skeptical about the accuracy of the census and the CPS. They say a major problem has been undercounting due to some Americans' fear, for instance, that personal data would fall into the hands of agencies such as the Internal Revenue

Service or the Immigration and Naturalization Service. A former director of the Census Bureau has said: "80 or 90 percent of our effort is targeted at the 10 percent we're most likely to miss." A field interviewer supported this statement when she said that in addition to the difficulties presented by dogs, crime, vacationers, and unlisted phone numbers, there are also problems walking in on séances, marijuana usage, and "extracurricular activities." Even if not perfect, however, census workers make extraordinary efforts to be accurate. In fact, a nation would not be able to plan intelligently for the needs of its people without the census.

If you want to learn more about the census, try http://www.census.gov for a general overview and great references to other Web sites. U.S. POPClock Projection can get you an estimate of the resident population of the United States as of 12:01 each day. Try this site several days in a row and you can get a good idea of where America's population is heading. Have fun.

There are some already existing sources of data that are less "quantitative" than those mentioned above, but of equal potential importance for social science research. Useful information can be found in newspapers, books, magazines, movies, television programs, advertisements, speeches, letters, diaries, song lyrics, paintings, school textbooks, the yellow pages, Web sites, chat rooms, or even garbage. Newspapers, for example, can be a time machine to another century. If we analyze the newspapers published 100 years ago, we can find out how people at that time lived. Another imaginative study dealing with this more "qualitative" type of data had sociologists study the images of men and women in rock music videos. They looked at lyrics, clothing styles, gestures, and the like and found that most rock music videos portrayed women in subordinate roles, as sexual objects, or as targets of violence.

As was true for the other three research designs, there are advantages and disadvantages to using precollected qualitative and quantitative data. Certainly, in some circumstances, a lot of time, money, and effort can be saved. There are also the distinct advantages of making historical research possible and giving the researcher the opportunity to be "creative." Also, since the data have been collected by others, the researcher cannot influence answers to questions he or she is using.

On the negative side, however, there are several potential problems. Quantitative data, often collected for a different purpose than that of the researcher, may not be sufficiently accurate or reliable. The official statistics on crime, for example, overreport lower-class crimes and underreport crimes committed by members of the middle and upper classes. Qualitative data, on the other hand, may require undue subjective interpretation. Assume, for example, that we wanted to see if public attitudes toward sex had changed in the last 20 years. We might compare the erotic content

(vocabulary, themes, descriptions of sexual acts, etc.) in best selling novels of today with those of the past. But how do we deal with the fact that what may be erotic to one researcher may not be erotic to another? These types of subjective issues could arise when using already existing sources of data.

Summary

Scientists in general and social scientists in particular are interested in finding out what is true and why it is true. Adherence to the scientific method keeps them on the "right track" in this search for truth. Specific research designs used by social scientists include experiments, sample surveys, observational studies, and the use of existing sources of data. Experiments can disentangle or explain cause-and-effect relationships both in laboratories and naturalistic settings. Sample surveys generally provide correlations that allow us to explore the current scene. Observational studies give descriptive depth. Already existing sources of data may be useful for explanatory, exploratory, and descriptive types of research. Overall, no single research design is superior to any other. Each has its own strengths, drawbacks, and limitations. Sometimes the best way to conduct research is to combine several of these designs.

Questions

1. What is the difference between the way that "ancients" and "moderns" conceive of change and upheaval in life?
2. What did you think science was before reading this chapter? What definition of science do you have now? Is astrology a science?
3. To what extent are *all* sciences alike? To what extent are they different?
4. Why is it important that scientists test their hypotheses empirically?
5. What is the scientific method? Why is it important?
6. What is the difference between an independent and a dependent variable? Give examples.
7. What are the differences between obtrusive and unobtrusive research designs? Which are better? Did Durkheim use an obtrusive research design?
8. Explain the difference between a scientific and an unscientific hypothesis.
9. What is the difference between egoistic, altruistic, and anomic suicide?
10. Why has the experiment always had a central place in the history of science?
11. What is the Hawthorne effect?
12. What kinds of questions can a sample survey answer that an experiment cannot?

13. What are the differences between correlations and cause-and-effect relationships?

14. What problems are involved in picking a representative random sample?

15. The telephone is increasingly used to interview people today. Some jokingly call these "telephone polls." List the pros and cons of using telephones in survey research.

16. Why is it difficult to be both a participant and an observer of a society or culture?

17. Assume someone gave you a stack of *Superman* comic books that date back to 1930. Design a study that would make use of this existing source of data.

18. What are the advantages and disadvantages of using the experiment as a research design? The sample survey? The observational study? The use of existing sources of data?

19. Do you think that increased use of computers in social science will have positive or negative effects?

20. What types of ethical questions arise in doing social science research?

21. What are the practical benefits of conducting a census of the United States?

22. Try the Gallup Organization home page (*http://www.gallup.com*) to check out public-opinion polls on a huge variety of topics.

23. The Internet offers an inexpensive way to reach large numbers of potential respondents and get a quick return of responses. What are some problems that might limit its potential for conducting survey research?

Scoring for the experiment described in Box 3.5
NASA ranks the items this way:

A.	15	F.	11	K.	14
B.	4	G.	12	L.	2
C.	6	H.	1	M.	10
D.	8	I.	3	N.	7
E.	13	J.	9	O.	5

To compute either individual or group scores, subtract the ranking "choice" for a specific item from NASA's ranking for that item. (Disregard positive or negative numbers and always subtract the lower number from the higher number.) When you have completed this, add up the differences. The lower the total score, the more the score conforms to NASA's judgment. In the many times I have tried this experiment, the range for individual scores has gone from a low of 20 to a high in the 80s. Group scores have averaged in the 30s.