explain such sacrifice in terms of ideals or warm feelings between humans. However, genes are the essential unit in Wilson's paradigm, producing his famous dictum that human beings are "only DNA's way of making more DNA."

Reductionism of any type tends to suggest that particular units of analysis or variables are more relevant than others. Suppose we ask what caused the American Revolution. Was it a shared commitment to the value of individual liberty? The economic plight of the colonies in relation to Britain? The megalomania of the founders? As soon as we inquire about *the* single cause, we run the risk of reductionism. If we were to regard shared values as the cause of the American Revolution, our unit of analysis would be the individual colonist. An economist, though, might choose the thirteen colonies as units of analysis and examine the economic organizations and conditions of each. A psychologist might choose individual leaders as the units of analysis for purposes of examining their personalities.

Like the ecological fallacy, reductionism can occur when we use inappropriate units of analysis. The appropriate unit of analysis for a given research question, however, is not always clear. Social researchers, especially across disciplinary boundaries, often debate this issue.

The Time Dimension

So far in this chapter, we've regarded research design as a process for deciding what aspects we'll observe, of whom, and for what purpose. Now we must consider a set of time-related options that cuts across each of these earlier considerations. We can choose to make observations more or less at one time or over a long period.

Time plays many roles in the design and execution of research, quite aside from the time it takes to do research. Earlier we noted that the time sequence of events and situations is critical to determining causation (a point we'll return to in Part 4). Time also affects the generalizability of research findings. Do the descriptions and explanations resulting from a particular study accurately represent the situation of ten years ago, ten years from now, or only the present? Researchers have two principal options for dealing with the issue of time in the design of their research: cross-sectional studies and longitudinal studies.

Cross-Sectional Studies

A **cross-sectional study** involves observations of a sample, or cross section, of a population or phenomenon that are made at one point in time. Exploratory and descriptive studies are often cross-sectional. A single U.S. Census, for instance, is a study aimed at describing the U.S. population at a given time.

Many explanatory studies are also cross-sectional. A researcher conducting a large-scale national survey to examine the sources of racial and religious prejudice would, in all likelihood, be dealing with a single time frame—taking a snapshot, so to speak, of the sources of prejudice at a particular point in history.

Explanatory cross-sectional studies have an inherent problem. Although their conclusions are based on observations made at only one time, typically they aim at understanding causal processes that occur over time. This is akin to determining the speed of a moving object from a high-speed, still photograph.

Yanjie Bian, for example, conducted a survey of workers in Tianjin, China, to study stratification in contemporary urban Chinese society. In undertaking the survey in 1988, however, he was conscious of the important changes brought about by a series of national campaigns, such as the Great Proletarian Cultural Revolution, dating from the Chinese Revolution in 1949 (which brought the Chinese Communists into power) and continuing into the present.

> *These campaigns altered political atmospheres and affected people's work and nonwork activities. Because of these campaigns, it is difficult to draw conclusions from a cross-sectional social survey, such as the one presented in this book, about general patterns of Chinese workplaces and their effects on workers. Such conclusions may be limited to one period of time and are subject to further tests based on data collected at other times.*
>
> *(1994: 19)*

cross-sectional study A study based on observations representing a single point in time.

As you'll see, this textbook repeatedly addresses the problem of using a "snapshot" to make generalizations about social life. One solution is suggested by Bian's final comment—about data collected "at other times": Social research often involves revisiting phenomena and building on the results of earlier research.

Longitudinal Studies

In contrast to cross-sectional studies, a **longitudinal study** is designed to permit observations of the same phenomenon over an extended period. For example, a researcher can participate in and observe the activities of a UFO cult from its inception to its demise. Other longitudinal studies use records or artifacts to study changes over time. In analyses of newspaper editorials or Supreme Court decisions over time, for example, the studies are longitudinal whether the researcher's actual observations and analyses were made at one time or over the course of the actual events under study.

Many field research projects, involving direct observation and perhaps in-depth interviews, are naturally longitudinal. Thus, for example, when Ramona Asher and Gary Fine (1991) studied the life experiences of the wives of alcoholic men, these researchers were in a position to examine the evolution of the wives' troubled marital relationships over time, sometimes even including the reactions of the subjects to the research itself.

In the classic study *When Prophecy Fails* (1956), Leon Festinger, Henry Reicker, and Stanley Schachter set out to learn what happened to a flying saucer cult when its predictions of an alien encounter failed to come true. Would the cult members close down the group, or would they become all the more committed to their beliefs? A longitudinal study was required to provide an answer. (The cult redoubled their efforts to get new members.)

Longitudinal studies can be more difficult for quantitative studies such as large-scale surveys. Nonetheless, they are often the best way to study changes over time. There are three special types of longitudinal studies that you should know about: trend studies, cohort studies, and panel studies.

longitudinal study A study design involving data collected at different points in time.

trend study A type of longitudinal study in which a given characteristic of some population is monitored over time.

Trend Studies

A **trend study** is a type of longitudinal study that examines changes within a population over time. A simple example is a comparison of U.S. Censuses over a period of decades, showing shifts in the makeup of the national population. A similar use of archival data was made by Michael Carpini and Scott Keeter (1991), who wanted to know whether contemporary U.S. citizens were better or more poorly informed about politics than were citizens of an earlier generation. To find out, they compared the results of several Gallup polls conducted during the 1940s and 1950s with a 1989 survey that asked several of the same questions tapping political knowledge.

Overall, the analysis suggested that contemporary citizens were slightly better informed than were earlier generations. In 1989, 74 percent of the sample could name the vice president of the United States, compared with 67 percent in 1952. Substantially higher percentages could explain presidential vetoes and congressional overrides of vetoes than could people in 1947. On the other hand, more of the 1947 sample could identify their U.S. representative (38 percent) than could the 1989 sample (29 percent).

An in-depth analysis, however, indicates that the slight increase in political knowledge resulted from the fact that the people in the 1989 sample were more highly educated than were those from earlier samples. When educational levels were taken into account, the researchers concluded that political knowledge has actually declined within specific educational groups.

Every trend study must begin with a first stage, and the 2014 Chapman survey of American Fears is a good example of a trend study in the making. Day, Bader, and Gordon (2014) have set out to trace trends in what Americans are afraid of, timing the annual surveys to coincide with Halloween. In 2014, the top personal fears and concerns were:

- Safety in different spaces
- Anxiety about one's future (illness, job stability, etc.)

- Internet-related fears (identity theft, government surveillance, etc.)
- Criminal victimization (murder, mugging, mass shootings, etc.)
- Phobias (clowns, tight spaces, blood, etc.)

In 2018 (Day, Bader, and Gordon 2018) the leading fears had shifted substantially:

- Corruption of government officials
- Pollution of oceans, rivers, and lakes
- Pollution of drinking water
- Not having enough money for the future
- People I love becoming seriously ill

Cohort Studies

In a **cohort study**, a researcher examines specific subpopulations, or *cohorts*, as they change over time. Typically, a cohort is an age group, such as people born during the 1950s, but it can also be some other time grouping, such as people born during the Vietnam War, people who got married in 2012, and so forth. An example of a cohort study would be a series of national surveys, conducted perhaps every 20 years, to study the attitudes of the cohort born during World War II toward U.S. involvement in global affairs. A sample of people 15 to 20 years of age might be surveyed in 1960, another sample of those 35 to 40 years of age in 1980, and another sample of those 55 to 60 years of age in 2000. Although the specific set of people studied in each survey would differ, each sample would represent the cohort born between 1940 and 1945.

Figure 4-5 offers a graphic illustration of a cohort design. In the example, three studies are being compared: one was conducted in 1990, another in 2000, and the third in 2010. Those who were 20 years old in the 1990 study are compared with those who were 30 in the 2000 study and those who were 40 in the 2010 study. Although the subjects being described in each of the three groups are different, each set of subjects represents the same cohort: those who were born in 1970.

In one study, Eric Plutzer and Michael Berkman (2005) used a cohort design to reverse a prior conclusion regarding aging and support for education. Logically, as people grow well beyond the child-rearing years, we might expect them to reduce their commitment to educational funding. Moreover, cross-sectional data support that expectation. The researchers present several data sets showing those over 65 voicing less support for education funding than did those under 65.

Such simplistic analyses, however, leave out an important variable: increasing support for educational funding in U.S. society over time in general. The researchers add to this the concept

cohort study A study in which some specific subpopulation, or cohort, is studied over time, although data may be collected from different members in each set of observations.

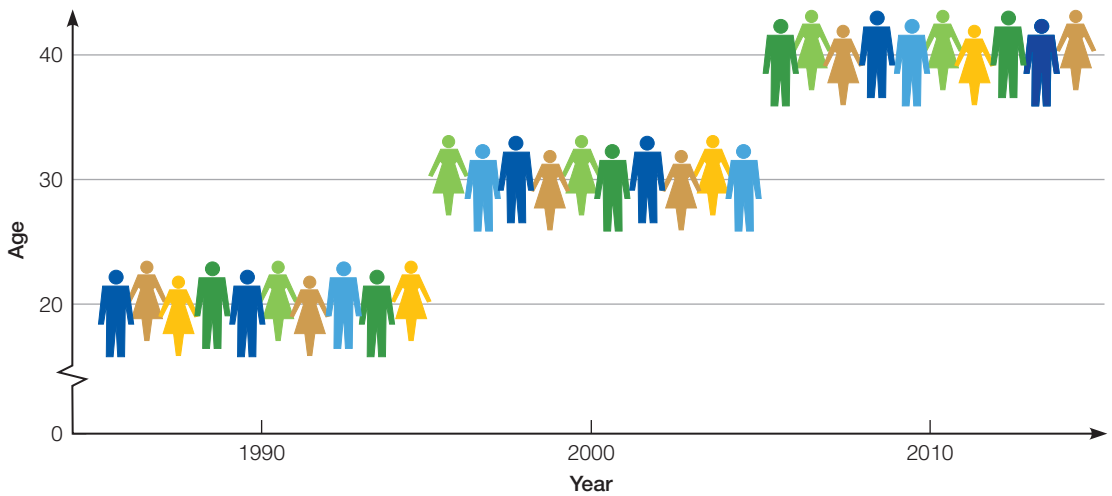

FIGURE 4-5

A Cohort Study Design. Each of the three groups shown here is a sample representing people who were born in 1970.

TABLE 4-1
Age and Political Liberalism

Survey Dates	*1972–1974*	*1977–1980*	*1982–1984*	*1987–1989*
Age of cohort	20–24	25–29	30–34	35–39
Percent who would let the Communist speak	72	68	73	73

of "generational replacement," meaning that the older respondents in a survey grew up during a time when there was less support for education in general, whereas the younger respondents grew up during a time of greater overall support. (See Table 4-1.)

A cohort analysis allowed the researchers to determine what happened to the attitudes of specific cohorts over time. Here, for example, are the percentages of Americans born during the 1940s who felt that educational spending was too low, when members of that cohort were interviewed over time (Plutzer and Berkman 2005: 76):

Year Interviewed	*Percent Who Say Educational Funding Is Too Low*
1970s	58
1980s	66
1990s	74
2000s	79

As these data indicate, those who were born during the 1940s have steadily increased their support for educational funding as they have passed through and beyond the child-rearing years.

Panel Studies

Though similar to trend and cohort studies, a **panel study** examines the same set of people each time. For example, we could interview the same sample of voters every month during an election campaign, asking for whom they intended to vote. Though such a study would allow us to analyze overall trends in voter preferences for different candidates, it would also show the precise patterns of persistence and change in intentions. For example, a trend study that showed that Candidates A and B each had exactly half of the voters on September 1 and on October 1 as well could indicate that none of the electorate had changed voting plans, that all of the voters had changed their intentions, or something in between. A panel study would eliminate this confusion by showing what kinds of voters switched from A to B and what kinds switched from B to A, as well as other facts.

panel study A type of longitudinal study in which data are collected from the same set of people (the sample or panel) at several points in time.

Joseph Veroff, Shirley Hatchett, and Elizabeth Douvan (1992) wanted to learn about marital adjustment among newlyweds and focused on differences between white and African American couples. To get subjects for study, they selected a sample of couples who applied for marriage licenses in Wayne County, Michigan, in April through June 1986.

Concerned about the possible impact their research might have on the couples' marital adjustment, the researchers divided their sample in half at random: an experimental group and a control group (concepts we'll explore further in Chapter 8). Couples in the former group were intensively interviewed over a four-year period, whereas the latter group was contacted only briefly each year.

By studying the same couples over time, the researchers could follow the specific problems that arose and the way the couples dealt with them. As a by-product of their research, they found that those studied the most intensely seemed to achieve a somewhat better marital adjustment. The researchers felt that the interviews may have forced couples to discuss matters they might otherwise have buried.

Panel mortality is a fundamental problem in panel studies: subjects dropping out of the study. Over the years, researchers have developed many techniques for tracking down missing subjects. Bryan Rhodes and Ellen Marks (2011) used Facebook as a vehicle for tracking down members of a longitudinal study who had been unreachable by telephone or mail. They were successful in locating a third of the subjects.

Roger Tourangeau and Cong Ye (2009) were also intent on decreasing panel mortality. Specifically, they considered positive and negative inducements for subjects to continue. To find out, they randomly divided their panel survey sample in half and gave the two groups different pleas to continue. In one subsample, they stressed the benefits to be gained if everyone continued with the study. In the other subsample, they stressed how the study would be hurt by people dropping out. The latter, negative, message increased continued participation by ten percentage points.

As Steven Farrall et al. (2016) point out, panel mortality can be especially problematic for qualitative longitudinal studies, since the relatively small sample sizes rule out the possibility of weighting as a solution. One effective technique was to maintain contact sheets with names, addresses, and phone numbers of family and friends likely to know how to reach a missing study participant. They found family members more reliable than friends in that regard and found sisters were the best bet. Other researchers found it useful to stay in touch with participants with birthday cards, holiday greetings, and the like.

Comparing the Three Types of Longitudinal Studies

To reinforce the distinctions among trend, cohort, and panel studies, let's contrast the three study designs in terms of the same variable: *religious affiliation*. A trend study might look at shifts in U.S. religious affiliations over time, as the Gallup poll does on a regular basis. A cohort study might follow shifts in religious affiliations among "the 9/11 generation," specifically, say, people who were 10 to 20 years of age on September 11, 2001. We could study a sample of people 20 to 30 years old in 2011, a new sample of people who were 30 to 40 in 2021, and so forth throughout their life span. A panel study could start with a sample of the whole population or of some special subset and study those specific individuals over time. Notice that only the panel study would give a full picture of the shifts among the various categories of affiliations, including "none." Cohort and trend studies would uncover only net changes.

Longitudinal studies have an obvious advantage over cross-sectional ones in providing information describing processes over time. But this advantage often comes at a heavy cost in both time and money, especially in a large-scale survey. Observations may have to be made at the time events are occurring, and the method of observation may require many research workers.

Panel studies, which offer the most comprehensive data on changes over time, face a special problem: panel mortality, as discussed above. Some of the respondents studied in the first wave of the survey may not participate in later waves. (This is comparable to the problem of experimental mortality discussed in Chapter 8.) The danger is that those who drop out of the study may not be typical, thereby distorting the results of the study.

Figure 4-6 provides a schematic comparison of the several study types we have been discussing.

Approximating Longitudinal Studies

Longitudinal studies do not always provide a feasible or practical means of studying processes that take place over time. Fortunately, researchers often can draw approximate conclusions about such processes even when only cross-sectional data are available. Here are some ways to do that.

Sometimes cross-sectional data imply processes over time on the basis of simple logic. For example, in the study of student drug use conducted at the University of Hawaii that I mentioned in Chapter 2, students were asked to report whether they had ever tried each of

panel mortality The failure of some panel subjects to continue participating in the study.

	Cross-Sectional	Longitudinal		
		Trend	Cohort	Panel
Snapshot in time	X			
Measurements across time		X	X	X
Follow age group across time			X	
Study same people over time				X

FIGURE 4-6
Comparing Types of Study Design.

several illegal drugs. The study found that some students had tried both marijuana and LSD, some had tried only one, and others had tried neither. Because these data were collected at one time, and because some students presumably would experiment with drugs later on, it would appear that such a study could not tell whether students were more likely to try marijuana or LSD first.

A closer examination of the data showed, however, that although some students reported having tried marijuana but not LSD, there were no students in the study who had tried only LSD. From this finding it was inferred—as common sense suggested—that marijuana use preceded LSD use. If the process of drug experimentation occurred in the opposite time order, then a study at a given time should have found some students who had tried LSD but not marijuana, and it should have found no students who had tried only marijuana.

Researchers can also make logical inferences whenever the time order of variables is clear. If we discovered in a cross-sectional study of college students that those educated in private high schools received better college grades than did those educated in public high schools, we would conclude that the type of high school attended affected college grades, not the other way around. Thus, even though our observations were made at only one time, we would feel justified in drawing conclusions about processes taking place across time.

Very often, age differences discovered in a cross-sectional study form the basis for inferring processes across time. Suppose you're interested in the pattern of worsening health over the course of the typical life cycle. You might study the results of annual checkups in a large hospital. You could group health records according to the ages of those examined and rate each age group in terms of several health conditions—sight, hearing, blood pressure, and so forth. By reading across the age-group ratings for each health condition, you would have something approximating the health history of individuals. Thus, you might conclude that the average person develops vision problems before hearing problems. You would need to be cautious in this assumption, however, because the differences might reflect society-wide trends. For instance, improved hearing examinations instituted in the schools might have affected only the young people in your study.

Asking people to recall their pasts is another common way of approximating observations over time. Researchers use that method when they ask people where they were born or when they graduated from high school or whom they voted for in 1988. Qualitative researchers often conduct in-depth "life history" interviews. For example, C. Lynn Carr (1998) used this technique in a study of "tomboyism." Her respondents, ages 25 to 40, were asked to reconstruct aspects of their lives from childhood on, including experiences of identifying themselves as tomboys.

The danger in this technique is evident. Sometimes people have faulty memories; sometimes they lie. When people are asked in post-election polls whom they voted for, the results inevitably show more people voting for the

winner than actually did so on election day. As part of a series of in-depth interviews, such a report can be validated in the context of other reported details; however, we should regard with caution results based on a single question in a survey.

Cohorts can also be used to infer processes over time from cross-sectional data. For example, when Prem Saxena and colleagues (2004) wanted to examine whether wartime conditions would affect the age at which people married, they used cross-sectional data from a survey of Lebanese women. During the Lebanese Civil War, from 1975 to 1990, many young men migrated to other countries. By noting the year in which the survey respondents first married, they could determine that the average age at first marriage increased with the onset of the war.

For a more in-depth and comprehensive analysis of longitudinal methodologies, you might consider the book edited by Peter Lynn (2009). The several authors cover more aspects of this subject than would be feasible in this introductory textbook.

This discussion of the way time figures into social research suggests several questions you should confront in your own research projects. In designing any study, be sure to look at both the explicit and the implicit assumptions you're making about time. Are you interested in describing some process that occurs over time, or are you simply going to describe what exists now? If you want to describe a process occurring over time, will you be able to make observations at different points in the process, or will you have to approximate such observations by drawing logical inferences from what you can observe now? If you opt for a longitudinal design, which method best serves your research purposes?

Examples of Research Strategies

As the preceding discussions have implied, social research follows many paths. The following short excerpts from a variety of completed studies further illustrate this point. As you read them, note both the content of each study and the method used to study the chosen topic. Does the study seem to be exploring, describing, or explaining (or some combination of these)? What are the sources of data in each study? Can you identify the unit of analysis? Is the dimension of time relevant? If so, how will it be handled?

- This case study of unobtrusive mobilizing by Southern California Rape Crisis Center uses archival, observational, and interview data to explore how a feminist organization worked to change police, schools, prosecutors, and some state and national organizations from 1974 to 1994. (Schmitt and Martin 1999: 364)
- Using life-history narratives, the present study investigates processes of agency and consciousness among 14 women who identified themselves as tomboys. (Carr 1998: 528)
- By drawing on interviews with activists in the former Estonian Soviet Socialist Republic, we specify the conditions by which accommodative and oppositional subcultures exist and are successfully transformed into social movements. (Johnston and Snow 1998: 473)
- This paper presents the results of an ethnographic study of an AIDS service organization located in a small city. It is based on a combination of participant observation, interviews with participants, and review of organizational records. (Kilburn 1998: 89)
- Using interviews obtained during fieldwork in Palestine in 1992, 1993, and 1994, and employing historical and archival records, I argue that Palestinian feminist discourses were shaped and influenced by the sociopolitical context in which Palestinian women acted and with which they interacted. (Abdulhadi 1998: 649)
- This article reports on women's experiences of breastfeeding in public, as revealed through in-depth interviews with 51 women. (Stearns 1999: 308)
- Using interview and observational field data, I demonstrate how a system of temporary employment in a participative workplace both exploited and shaped entry-level workers' aspirations and occupational goals. (V. Smith 1998: 411)
- I collected data [on White Separatist rhetoric] from several media of public discourse, including periodicals, books, pamphlets, transcripts from radio and television talk shows, and newspaper and magazine accounts. (Berbrier 1998: 435)
- In the analysis that follows, racial and gender inequality in employment and retirement will be analyzed, using a national sample of persons who began receiving Social Security Old Age benefits in 1980–81. (Hogan and Perrucci 1998: 528)

- Drawing from interviews with female crack dealers, this paper explores the techniques they use to avoid arrest. (Jacobs and Miller 1998: 550)

Mixed Modes

In this chapter, I have mentioned a number of ways to conduct social research: experiments, survey research (telephone, in person, online), field research, and so forth. In my observation over time, researchers have often spoken of the value of using more than one approach to understanding a social phenomenon. But, as researchers find techniques they are comfortable with and adept at, the support for multiple techniques has been talked about more than practiced. However, this may be changing. Partly in response to the growing problems faced by survey researchers, perhaps, a review of the literature will produce increasing numbers of studies actually using mixed modes.

The U.S. Energy Information Administration's Residential Energy Consumption Survey (RECS), for example, seeks to get detailed information on America's energy use. Household interviews provide much of the needed information, but the researchers discovered that household subjects usually could not provide special details of their energy consumption. So the agency collects billing data from the energy suppliers and matches those data to the households interviewed (Worthy and Mayclin 2013).

On the other side of the globe, Peggy Koopman-Boyden and Margaret Richardson used diaries and focus groups to study the activities of New Zealand seniors in a three-year study that aimed "to analyse the experiences and perceptions of elders and organizational representatives with whom they interact in everyday encounters" (2013: 392). Participating seniors were asked to maintain logs of their interactions, and they were invited to participate in periodic discussions of their experiences. In addition to providing researchers with a greater depth, breadth, and richness of data, they report that the participants often indicated that they had benefited from the combination of methods, as in the focus-group discussions of the experience of keeping a research diary.

Moving north from New Zealand to India, Prem Saxena and Dhirendra Kumar examined the risk of mortality among seniors after retirement, focusing on the importance of work for defining social position. In the context of a number of social psychology studies of problems regarding retirement, the researchers found a data source in the Office of the Accountant General to add to the previous studies, allowing them to examine overall patterns of mortality after retirement. Ultimately, they concluded that "In developing countries few people look forward to retirement, while the majority dread it. However, the way pensioners react depends mainly upon their social liability and their unmet needs at the time of retirement" (1997: 122).

While social researchers have been using mixed modes of inquiry for a long time, this approach has begun attracting more attention and, more important, more actual use in recent years. I think you can expect to see more mixed modes in the future and may utilize this approach yourself.

How to Design a Research Project

You have now seen some of the options available to social researchers in designing projects. I know there are a lot of pieces, and the relationships among them may not be totally clear, so here's a way of pulling the parts together. Let's assume you were to undertake research. Where would you start? Then, where would you go?

Although research design occurs at the beginning of a research project, it involves all the steps of the subsequent project. This discussion, then, provides guidance on how to start a research project and gives an overview of the topics that follow in later chapters of this book.

Figure 4-7 presents a schematic view of the traditional image of research. I present this view reluctantly, because it may suggest more of a step-by-step order to research than actual practice bears out. Nonetheless, this idealized overview of the process provides a context for the specific details of particular components of social research. Essentially, it is another and more-detailed picture of the scientific process presented in Chapter 2.

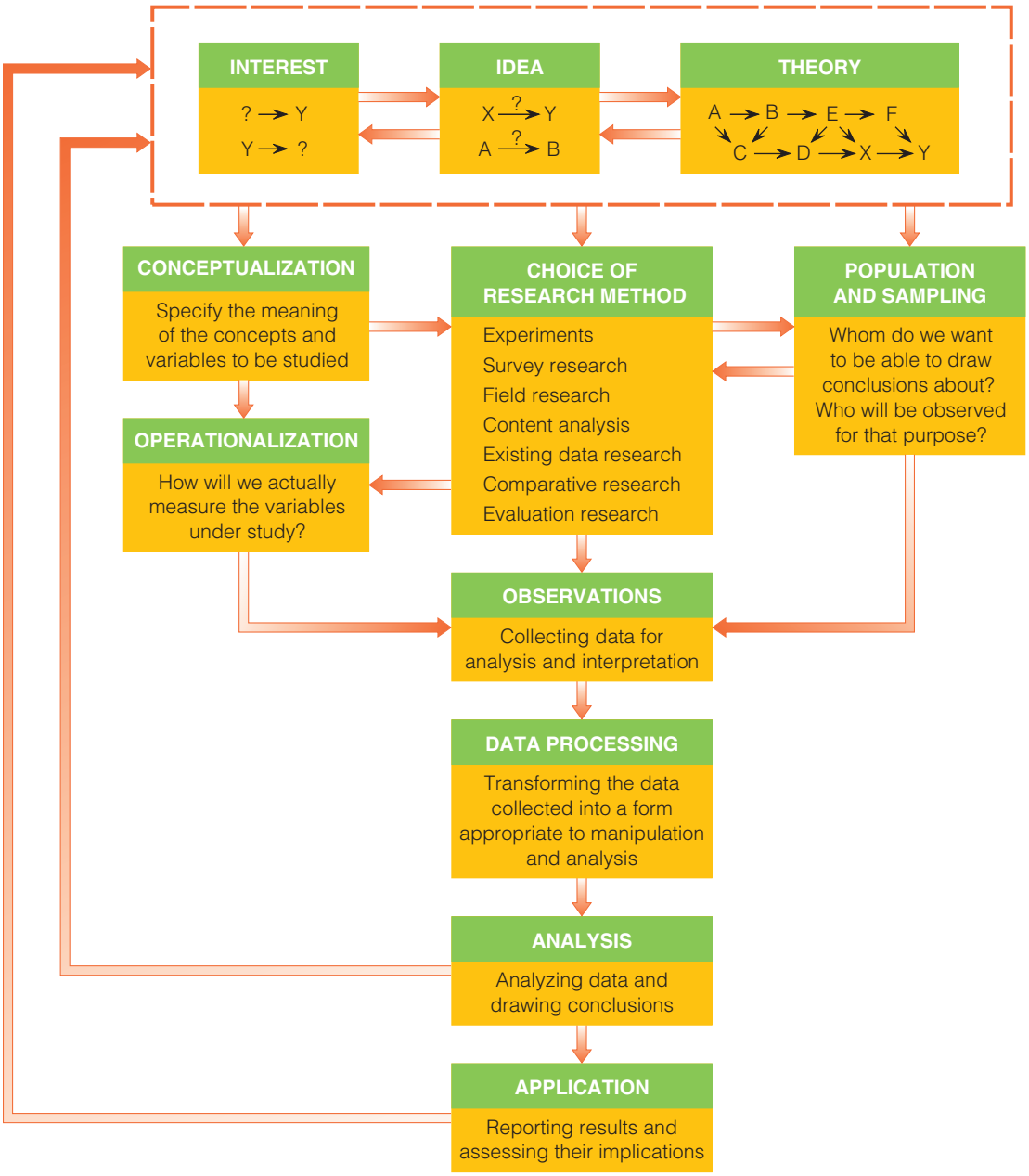

FIGURE 4-7

The Research Process. Here are some of the key elements that we'll be examining throughout this book: the pieces that make up the whole of social research.

At the top of the diagram are interests, ideas, and theories, the possible beginning points for a line of research. The letters (A, B, X, Y, and so forth) represent variables or concepts such as *prejudice* or *alienation*. Thus, you might have a general interest in finding out what causes some people to be more prejudiced than others, or you might want to know some of the consequences of alienation. Alternatively, your inquiry might begin with a specific idea about the way things are. For example, you might have the idea that working on an assembly line causes alienation.

The question marks in the diagram indicate that you aren't sure things are the way you suspect they are—that's why you're doing the research. Notice that a theory is represented as a set of complex relationships among several variables.

Or you might want to consider this question: "How is leadership established in a juvenile gang?" You may wonder the extent to which age, strength, family and friendship ties, intelligence, or other variables figure into the determination of who runs things. We don't always begin with a clear theory about the causal relationships at play.

The double arrows between "interest," "idea," and "theory" suggest that researchers often move back and forth across these several possible beginnings. An initial interest may lead to the formulation of an idea, which may be fit into a larger theory, and the theory may produce new ideas and create new interests.

Any or all of these three may suggest the need for empirical research. The purpose of such research can be to explore an interest, test a specific idea, or validate a complex theory. Whatever the purpose, the researcher needs to make a variety of decisions, as indicated in the remainder of the diagram.

To make this discussion more concrete, let's take a specific research example. Suppose you're concerned with the issue of abortion and want to learn why some college students support abortion rights and others oppose them. Let's say you've gone a step further and formed the impression that students in the humanities and social sciences seem generally more inclined to support the idea of abortion rights than do those in the natural sciences. (That kind of thinking often leads people to design and conduct social research.)

In terms of the options we've discussed in this chapter, you probably have both descriptive and explanatory interests: What percentage of the student body supports a woman's right to an abortion (description), and what causes some to support it and others to oppose it (explanation)? The units of analysis in this case would be individuals: college students. Let's assume you would be satisfied to learn something about the way things are now. You might then decide that a cross-sectional study would suit your purposes. Although this would provide you with no direct evidence of processes over time, you might be able to approximate some longitudinal analyses if you pursued changes in students' attitudes over time.

Getting Started

At the outset of your project, your interests would probably be exploratory. At this point, you might choose among several possible activities in exploring student attitudes about abortion rights. To begin with, you might want to read something about the issue. If you have a hunch that attitudes are somehow related to college major, you might find out what other researchers have written about that. Appendix A of this book will help you make use of your college library. In addition, you would probably talk to some people who support abortion rights and some who do not. You might attend meetings of abortion-related groups. All these activities could help prepare you to handle the various decisions of research design we're about to examine.

Before designing your study, you must define the purpose of your project. What kind of study will you undertake—exploratory, descriptive, explanatory? Do you plan to write a research paper to satisfy a course or thesis requirement? Is your purpose to gain information that will support you in arguing for or against abortion rights? Do you want to write an article for the campus newspaper or an academic journal? In reviewing the previous research literature regarding abortion rights, you should note the design decisions other researchers have made, always asking whether the same decisions would satisfy your purpose.

Usually, your purpose for undertaking research can be expressed as a report. A good first step in designing your project is to outline such a report (see Chapter 15 for more). Although your final report may not look much like your initial image of it, this exercise will help you figure out which research designs are most appropriate. During this step, clearly describe the kinds of statements you want to make when the research is complete. Here are some examples of such statements: "Students frequently mentioned abortion rights in the context of discussing social issues that concerned them personally." "X percent of State U. students favor a woman's right to choose an abortion." "Engineers are (more/less) likely than sociologists to favor abortion rights."

Conceptualization

Once you have a well-defined purpose and a clear description of the kinds of outcomes you want to achieve, you can proceed to the next step in the design of your study—conceptualization. We often talk quite casually about social science concepts such as prejudice, alienation, religiosity, and liberalism, but we need to clarify what we mean by these concepts in order to draw meaningful conclusions about them. Chapter 5 examines this process of conceptualization in depth. For now, let's see what it might involve in the case of our hypothetical example.

If you're going to study how college students feel about abortion and why, the first thing you'll have to specify is what you mean by "the right to an abortion." Because support for abortion probably varies according to the circumstances, you'll want to pay attention to the different conditions under which people might approve or disapprove of abortion: for example, when the woman's life is in danger, in the case of rape or incest, or simply as a matter of personal choice.

Similarly, you'll need to specify exact meanings for all the other concepts you plan to study. If you want to study the relationship of opinion about abortion to college major, you'll have to decide whether you want to consider only officially declared majors or to include students' intentions as well. What will you do with those who have no major?

In surveys and experiments, such concepts must be specified in advance. In less tightly structured research, such as open-ended interviews, an important part of the research may involve the discovery of different dimensions, aspects, or nuances of concepts. In such cases, the research itself may uncover and report aspects of social life that were not evident at the outset of the project.

Choice of Research Method

As we'll discuss in Part 3, each research method has its strengths and weaknesses, and certain concepts are more appropriately studied by some methods than by others. In our study of attitudes toward abortion rights, a survey might be the most appropriate method: either interviewing students or asking them to fill out a questionnaire. Surveys are particularly well suited to the study of public opinion. Of course, you could also make good use of the other methods presented in Part 3. For example, you might use the method of content analysis to examine letters to the editor and analyze the different opinions letter writers have of abortion. Field research would provide an avenue to understanding how people interact with one another regarding the issue of abortion, how they discuss it, and how they change their minds. Usually the best study design uses more than one research method, taking advantage of their different strengths. If you look back at the brief examples of actual studies at the end of the preceding section, you'll see several instances in which the researchers used many methods in a single study.

Operationalization

Once you've specified the concepts to be studied and chosen a research method, the next step is operationalization, or deciding on your measurement techniques (discussed further in Chapters 5 and 6). The meaning of variables in a study is determined in part by how they are measured. Part of the task here is deciding how the desired data will be collected: direct observation, review of official documents, a questionnaire, or some other technique.

If you decide to use a survey to study attitudes toward abortion rights, part of operationalization is determining the wording of questionnaire items. For example, you might operationalize your main variable by asking respondents whether they would approve a woman's right to have an abortion under each of the conditions you've conceptualized: in the case of rape or incest, if her life were threatened by the pregnancy, and so forth. You would have designed the questionnaire so that it asked respondents to express approval or disapproval for each situation. Similarly, you would have specified exactly how respondents would indicate their college major and what choices to provide those who have not declared a major.

Population and Sampling

In addition to refining concepts and measurements, you must decide whom or what to study. The population for a study is that group (usually of people) about whom we want to draw

conclusions. We're almost never able to study all the members of the population that interests us, however, and we can never make every possible observation of them. In every case, then, we select a sample from among the data that might be collected and studied. The sampling of information, of course, occurs in everyday life and often produces biased observations. (Recall the discussion of "selective observation" in Chapter 1.) Social researchers are more deliberate in their sampling of what will be observed.

Chapter 7 describes methods for selecting samples that adequately reflect the whole population that interests us. Notice in Figure 4-7 that decisions about population and sampling are related to decisions about the research method to be used. Whereas probability-sampling techniques would be relevant to a large-scale survey or a content analysis, a field researcher might need to select only those informants who will yield a balanced picture of the situation under study, and an experimenter might assign subjects to experimental and control groups in a manner that creates comparability.

In your hypothetical study of abortion attitudes, the relevant population would be the student population of your college. As you'll discover in Chapter 7, however, selecting a sample will require you to get more specific than that. Will you include part-time as well as full-time students? Only degree candidates or everyone? International students as well as U.S. citizens? Undergraduates, graduate students, or both? There are many such questions—each of which must be answered in terms of your research purpose. If your purpose is to predict how students would vote in a local referendum on abortion, you might want to limit your population to those eligible and likely to vote.

Observations

Having decided what to study among whom by what method, you're now ready to make observations—to collect empirical data. The chapters of Part 3, which describe the various research methods, give the different observation techniques appropriate to each.

To conduct a survey on abortion, you might want to print questionnaires and mail them to a sample selected from the student body. Alternatively, you could arrange to have a team of interviewers conduct the survey over the telephone. The relative advantages and disadvantages of these and other possibilities are discussed in Chapter 9.

Data Processing

Depending on the research method chosen, you'll have amassed a volume of observations in a form that probably isn't immediately interpretable. If you've spent a month observing a street-corner gang firsthand, you'll now have enough field notes to fill a book. In a historical study of ethnic diversity at your school, you may have amassed volumes of official documents, interviews with administrators and others, and so forth. Chapters 13 and 14 describe some of the ways social science data are processed for quantitative or qualitative analysis.

In the case of a survey, the "raw" observations are typically in the form of questionnaires with boxes checked, answers written in spaces, and the like. The data-processing phase for a survey typically involves the classification (coding) of written-in answers and the transfer of all information to a computer.

Analysis

Once the collected data are in a suitable form, you're ready to interpret them for the purpose of drawing conclusions that reflect the interests, ideas, and theories that initiated the inquiry. Chapters 13 and 14 describe a few of the many options available to you in analyzing data. In Figure 4-7, notice that the results of your analyses feed back into your initial interests, ideas, and theories. Often this feedback represents the beginning of another cycle of inquiry.

In the survey of student attitudes about abortion rights, the analysis phase would pursue both descriptive and explanatory aims. You might begin by calculating the percentages of students who favored or opposed each of the several different versions of abortion rights. Taken together, these several percentages would provide a good picture of student opinion on the issue.

Moving beyond simple description, you might describe the opinions of subsets of the student body, such as different college majors. Provided that your design called for tracking

other information about respondents, you could also look at men versus women; freshmen, sophomores, juniors, seniors, and graduate students; or other categories that you've included. The description of subgroups could then lead you into an explanatory analysis.

Application

The final stage of the research process involves the uses made of the research you've conducted and the conclusions you've reached. To start, you'll probably want to communicate your findings so that others will know what you've learned. You may want to prepare—and even publish—a written report. Perhaps you'll make oral presentations, such as papers delivered to professional and scientific meetings. Other students would also be interested in hearing what you've learned about them.

You may want to go beyond simply reporting what you've learned to discussing the implications of your findings. Do your findings say anything about actions that might be taken in support of policy goals? Both the proponents and the opponents of abortion rights would be interested.

Karen Akerlof and Chris Kennedy (2013) have provided an omnibus analysis of ways in which social research can be used to design and evaluate programs to combat environmental degradation. They identify five major areas:

1. Promote favorable attitudes.
2. Increase personal agency.
3. Facilitate emotional motivation.
4. Communicate supportive social norms.
5. Alter the environmental context; design the choice.

Finally, be sure to consider what your work suggests in regard to further research on your subject. What mistakes should be corrected in future studies? What avenues that were opened up only slightly in your study should be pursued further?

Research Design in Review

As this overview shows, research design involves a set of decisions regarding what topic is to be studied, among what population, with what research methods, for what purpose. Although you'll want to consider many ways of studying a subject—and use your imagination as well as your knowledge of a variety of methods—research design is the process of focusing your perspective for the purposes of a particular study.

If you're doing a research project for one of your courses, many aspects of research design may be specified for you in advance, including the method (such as an experiment) or the topic (as in a course on a particular subject). The following summary assumes that you're free to choose both your topic and your research strategy.

In designing a research project, you'll find it useful to begin by assessing three things: your interests, your abilities, and the available resources. Each of these considerations will suggest a large number of possible studies.

Simulate the beginning of a somewhat conventional research project: Ask yourself what you're interested in understanding. Surely you have several questions about social behavior and attitudes. Why are some people politically liberal and others politically conservative? Why are some people more religious than others? Why do people join white supremacist groups? Do colleges and universities still discriminate against minority faculty members? Why would a woman stay in an abusive relationship? Spend some time thinking about the kinds of questions that interest and concern you.

Once you have a few questions you'd be interested in answering for yourself, think about the kind of information needed to answer them. What research units of analysis would provide the most relevant information: college students, corporations, voters, cities, or unions? This question will probably be inseparable from the question of research topics. Then ask which aspects of the units of analysis would provide the information you need in order to answer your research question.

Once you have some ideas about the kind of information relevant to your purpose, ask yourself how you might go about getting that information. Are the relevant data likely to be available somewhere already (say, in a government publication), or would you have to collect them yourself? If you think you would have to collect them, how would you go about doing it?

Would you need to survey a large number of people, or interview a few people in depth? Could you learn what you need to know by attending meetings of certain groups? Could you glean the data you need from books in the library?

As you answer these questions, you'll find yourself well into the process of research design. Keep in mind your own research abilities and the resources available to you. There is little point in designing a perfect study that you can't actually carry out. You may want to try a research method you have not used before so you can learn from it, but be careful not to put yourself at too great a disadvantage.

Once you have a general idea of what you want to study and how, carefully review previous research in journals and books to see how other researchers have addressed the topic and what they have learned about it. Your review of the literature may lead you to revise your research design: Perhaps you'll decide to use a previous researcher's method or even replicate an earlier study. The independent replication of research projects is a standard procedure in the physical sciences, and it is just as important in the social sciences, although social researchers tend to overlook that. Or, you might want to go beyond replication and study some aspect of the topic that you feel previous researchers overlooked.

Here's another approach you might take. Suppose a topic has been studied previously using field research methods. Can you design an experiment that would test the findings those earlier researchers produced? Or can you think of existing statistics that could be used to test their conclusions? Did a mass survey yield results that you would like to explore in greater detail through on-the-spot observations and in-depth interviews? The use of several different research methods to test the same finding is sometimes called *triangulation*, and you should always keep it in mind as a valuable research strategy. Because each research method has particular strengths and weaknesses, there is always a danger that research findings will reflect, at least in part, the method of inquiry. In the best of all worlds, your own research design should bring more than one research method to bear on the topic.

The Research Proposal

Quite often, in the design of a research project, you'll have to lay out the details of your plan for someone else's review or approval. For a course project, for example, your instructor might very well want to see a "proposal" before you set off to work. Later in your career, if you wanted to undertake a major project, you might need to obtain funding from a foundation or government agency, who would definitely want a detailed proposal that describes how you would spend their money. You might respond to a request for proposals (RFP), which both public and private agencies often circulate in search of someone to do research for them.

We now turn to a brief discussion of how you might prepare a research proposal. This will give you one more overview of the whole research process that the rest of this book details.

Elements of a Research Proposal

Although some funding agencies (or your instructor, for that matter) may have specific requirements for the elements or structure of a research proposal, here are some basic components you should include. I've posed some questions that should help you establish some key elements of your proposal.

Problem or Objective

What exactly do you want to study? Why is it worth studying? Does the proposed study have practical significance? Does it contribute to the construction of social theories?

Literature Review

What have others said about this topic? What theories address it, and what do they say? What previous research exists? Are there consistent findings, or do past studies disagree? Does the body of existing research have flaws that you think you can remedy?

You'll find that reading social science research reports requires special skills. If you need to undertake a review of the literature at this point in your course, you may want to skip ahead to Chapter 15. It will familiarize you with the different types of research literature, how to

find what you want, and how to read it. There is a special discussion of how to use electronic resources online and how to avoid being misled by information on the Internet.

In part, the data-collection method(s) you intend to use in your study will shape your review of the literature. Reviewing the designs of previous studies using that same technique can give you a head start in planning your own study. At the same time, you should focus your search on your research topic, regardless of the methods other researchers have used. So, if you're planning field research on, say, interracial marriages, you might gain some useful insights from the findings of surveys on the topic; further, past field research on interracial marriages could be invaluable while you design a survey on the topic.

Because the literature review will appear early in your research proposal, you should write it with an eye toward introducing the reader to the topic you'll address, laying out in a logical manner what has already been learned on the topic by past researchers, then leading up to the holes or loose ends in our knowledge of the topic, which you propose to remedy. Or, a little differently, your review of the literature may point to inconsistencies or disagreements among existing findings. In that case, your proposed research will aim to resolve the ambiguities that plague us. I don't know about you, but I'm already excited about the research you're proposing to undertake.

Subjects for Study

Whom or what will you study in order to collect data? Identify the subjects in general, theoretical terms, and in specific, more concrete terms, identify who is available for study and how you'll reach them. Will it be appropriate to select a sample? If so, how will you do that? If there is any possibility that your research will affect those you study, how will you ensure that the research does not harm them?

Beyond these general questions, the specific research method you'll use will further specify the matter. If you're planning to undertake an experiment, a survey, or field research, for example, the techniques for subject selection will vary quite a bit. Lucky for you, Chapter 7 of this book discusses sampling techniques for both qualitative and quantitative studies.

Measurement

What are the key variables in your study? How will you define and measure them? Do your definitions and measurement methods duplicate or differ from those of previous research on this topic? If you have already developed your measurement device (a questionnaire, for example) or will be using something previously developed by others, it might be appropriate to include a copy of it in an appendix to your proposal.

Data-Collection Methods

How will you actually collect the data for your study? Will you conduct an experiment or a survey? Will you undertake field research or will you focus on the reanalysis of statistics already created by others? Perhaps you'll use more than one method.

Analysis

Indicate the kind of analysis you plan to conduct. Spell out the purpose and logic of your analysis. Are you interested in precise description? Do you intend to explain why things are the way they are? Do you plan to account for variations in some quality, such as why some students are more liberal than others? What possible explanatory variables will your analysis consider, and how will you know if you've explained variations adequately?

Schedule

Providing a schedule for the various stages of research is often appropriate. Even if you don't do this for the proposal, do it for yourself. Without a timeline for accomplishing the several stages of research and keeping track of how you're doing, you may end up in trouble.

Budget

When you ask someone to cover the costs of your research, you need to provide a budget that specifies where the money will go. Large, expensive projects include budgetary categories such as personnel, computers, supplies, telephones, and postage. Even if you'll be paying

What do you think?...Revisited

When the Provost and the student newspaper seemed to disagree over the extent of part-time faculty teaching, they used different units of analysis. The newspaper said 52 percent of the faculty were part-time; the Provost said about 70 percent of the credits were taught by full-time faculty. The table here demonstrates how they could both be right, given that the typical full-time faculty member teaches three courses, or nine credits, whereas the typical part-time faculty member teaches one course, or three credits. For simplicity, I've assumed that there are 100 faculty members.

In this hypothetical illustration, full-time faculty taught 432 of the 588 credits, or 73 percent. As you can see, being clear about what the unit of analysis matters a great deal.

Faculty Status	*Number*	*Credits Taught by Each*	*Total Credits Taught*
Full-time	48	9	432
Part-time	52	3	156
Total			588

for your project yourself, you should spend some time anticipating expenses: office supplies, photocopying, computer software, transportation, and so on.

Institutional Review Board

Depending on the nature of your research design, you may need to submit your proposal to the campus institutional review board for approval to ensure the protection of human subjects. Your instructor can advise you on this.

As you can see, if you're interested in conducting a social research project, it's a good idea to prepare a research proposal for your own purposes, even if you aren't required to do so by your instructor or a funding agency. If you're going to invest your time and energy in such a project, you should do what you can to ensure a return on that investment.

Now that you've had a broad overview of social research, you can move on to the remaining chapters in this book and learn exactly how to design and execute each specific step. If you've found a research topic that really interests you, you'll want to keep it in mind as you see how you might go about studying it.

The Ethics of Research Design

Designing a research project needs to include serious considerations of the ethical dimension. To begin, if your study requires the participation of human subjects, you must determine that the likely benefits of the research will do justice to the time and effort you'll ask them to contribute.

You'll also want to design the study in concurrence with the ethical guidelines discussed in Chapter 3. For example, you should ensure that the subjects' privacy and well-being are protected. As I indicated earlier, having your research design reviewed by an institutional review board may be appropriate.

MAIN POINTS

Introduction

- Any research design requires researchers to specify as clearly as possible what they want to find out and then determine the best way to do it.

Three Purposes of Research

- The principal purposes of social research include exploration, description, and explanation. Research studies often combine more than one purpose.
- Exploration is the attempt to develop an initial, rough understanding of some phenomenon.
- Description is the precise measurement and reporting of the characteristics of some population or phenomenon under study.
- Explanation is the discovery and reporting of relationships among different aspects of the phenomenon under study. Descriptive studies answer the question "What's so?"; explanatory ones tend to answer the question "Why?"

Idiographic Explanation

- Idiographic explanation seeks an exhaustive understanding of the causes producing events and situations in a single or limited number of cases.
- Pay attention to the explanations offered by the people living the social processes you are studying.
- Comparisons with similar situations, either in different places or at different times in the same place, can be insightful.

The Logic of Nomothetic Explanation

- Both idiographic and nomothetic models of explanation rest on the idea of causation. The idiographic model aims at a complete understanding of a particular phenomenon, using all relevant causal factors. The nomothetic model aims at a general understanding—not necessarily complete—of a class of phenomena, using a small number of relevant causal factors.
- There are three basic criteria for establishing causation in nomothetic analyses: (1) The variables must be empirically associated, or correlated; (2) the causal variable must occur earlier in time than the variable it is said to affect; and (3) the observed effect cannot be explained as the effect of a different variable.

Necessary and Sufficient Causes

- Mere association, or correlation, does not in itself establish causation. A spurious causal relationship is an association that in reality is caused by one or more other variables. We will examine this at length in Chapter 15 on the logic of multivariate analysis.
- A necessary cause is one that must be present for the effect to occur.
- A sufficient cause is one will always produce the effect in question.

Units of Analysis

- Units of analysis are the people or things whose characteristics social researchers observe, describe, and explain. Typically, the unit of analysis in social research is the individual person, but it may also be a social group, a formal organization, a social interaction, a social artifact, or another phenomenon such as lifestyles.
- The ecological fallacy involves applying conclusions drawn from the analysis of groups (election precincts) to individuals (voters).
- Reductionism is the attempt to understand a complex phenomenon in terms of a narrow set of concepts, such as attempting to explain the American Revolution solely in terms of economics (or political idealism or psychology) when there were many causes.

The Time Dimension

- The research of social processes that occur over time presents challenges that can be addressed through cross-sectional studies or longitudinal studies.
- Cross-sectional studies are based on observations made at one time. Although conclusions drawn from such studies are limited by this characteristic, researchers can sometimes use such studies to make inferences about processes that occur over time.
- In longitudinal studies, observations are made at many times. Such observations may be made of samples drawn from general populations (trend studies), samples drawn from more-specific subpopulations (cohort studies), or the same sample of people each time (panel studies).

Mixed Modes

- Most studies use a single method for collecting data (e.g., survey, experiment, field research), but using more than one method in a given study can yield a more comprehensive understanding.

How to Design a Research Project

- Research design starts with an initial interest, idea, or theoretical expectation and proceeds through a series of interrelated steps that narrow the focus of the study so that concepts, methods, and procedures are well defined. A good research plan accounts for all these steps in advance.
- At the outset, a researcher specifies the meaning of the concepts or variables to be studied (conceptualization), chooses a research method or methods (such as experiments versus surveys), and specifies the population to be studied and, if applicable, how it will be sampled.

- The researcher operationalizes the proposed concepts by stating precisely how the variables in the study will be measured. Research then proceeds through observation, processing the data, analysis, and application, such as reporting the results and assessing their implications.

The Research Proposal

- A research proposal provides a preview of why a study will be undertaken and how it will be conducted. Researchers must often get permission or necessary resources in order to proceed with a project. Even when not required, a proposal is a useful device for planning.

The Ethics of Research Design

- Your research design should indicate how your study will abide by the ethical strictures of social research.
- It may be appropriate for an institutional review board to review your research proposal.

KEY TERMS

cohort study
correlation
cross-sectional study
ecological fallacy
longitudinal study
panel mortality
panel study
reductionism
social artifact
sociobiology
spurious relationship
trend study
units of analysis

PROPOSING SOCIAL RESEARCH: DESIGN

This chapter has laid out many different ways social research can be structured. In designing your research project, you'll need to specify which of these ways you'll use. Is your purpose that of exploring a topic, providing a detailed description, or explaining the social differences and processes you may observe? If you're planning a causal analysis, for example, you should say something about how you'll organize and pursue that goal.

Will your project collect data at one point in time or compare data across time? What data-collection technique(s) will you employ?

REVIEW QUESTIONS

1. One example in this chapter suggested that political orientations cause attitudes toward legalizing marijuana. Can you make an argument that the time order is just the opposite of what was assumed?
2. Here are some examples of real research topics. For each excerpt, can you name the unit of analysis? (The answers are at the end of this chapter.)
   a. Women watch TV more than men because they are likely to work fewer hours outside the home than men. . . . Black people watch an average of approximately three-quarters of an hour more television per day than white people. (Hughes 1980: 290)
   b. Of the 130 incorporated U.S. cities with more than 100,000 inhabitants in 1960, there were 126 that had at least two short-term nonproprietary general hospitals accredited by the American Hospital Association. (Turk 1980: 317)
   c. The early TM [transcendental meditation] organizations were small and informal. The Los Angeles group, begun in June 1959, met at a member's house where, incidentally, Maharishi was living. (Johnston 1980: 337)
   d. However, it appears that the nursing staffs exercise strong influence over . . . a decision to change the nursing care system. . . . Conversely, among those decisions dominated by the administration and the medical staffs. . . . (Comstock 1980: 77)
   e. Though 667,000 out of 2 million farmers in the United States are women, women historically have not been viewed as farmers, but rather, as the farmer's wife. (Votaw 1979: 8)
   f. The analysis of community opposition to group homes for the mentally handicapped . . . indicates that deteriorating neighborhoods are most likely to organize in opposition, but that upper-middle class neighborhoods are most likely to enjoy private access to local officials. (Graham and Hogan 1990: 513)
   g. Some analysts during the 1960s predicted that the rise of economic ambition and political militancy among blacks would foster discontent with the "otherworldly" black mainline churches. (Ellison and Sherkat 1990: 551)
   h. This analysis explores whether propositions and empirical findings of contemporary theories of organizations directly apply to both private product producing organizations (PPOs) and public human service organizations (PSOs). (Schiflett and Zey 1990: 569)

i. This paper examines variations in job title structures across work roles. Analyzing 3,173 job titles in the California civil service system in 1985, we investigate how and why lines of work vary in the proliferation of job categories that differentiate ranks, functions, or particular organizational locations. (Strang and Baron 1990: 479)

3. Review the logic of spuriousness. Can you think up an example in which an observed relationship between two variables could actually be explained away by a third variable?
4. Make up a research example—different from those discussed in the text—that illustrates a researcher committing the ecological fallacy. How would you modify the example to avoid this trap?

ANSWERS TO UNITS OF ANALYSIS QUIZ, REVIEW QUESTION 2

a. Men and women, black and white people (individuals)
b. Incorporated U.S. cities (groups)
c. Transcendental meditation organizations (groups)
d. Nursing staffs (groups)
e. Farmers (individuals)
f. Neighborhoods (groups)
g. Blacks (individuals)
h. Service and production organizations (formal organizations)
i. Job titles (artifacts)