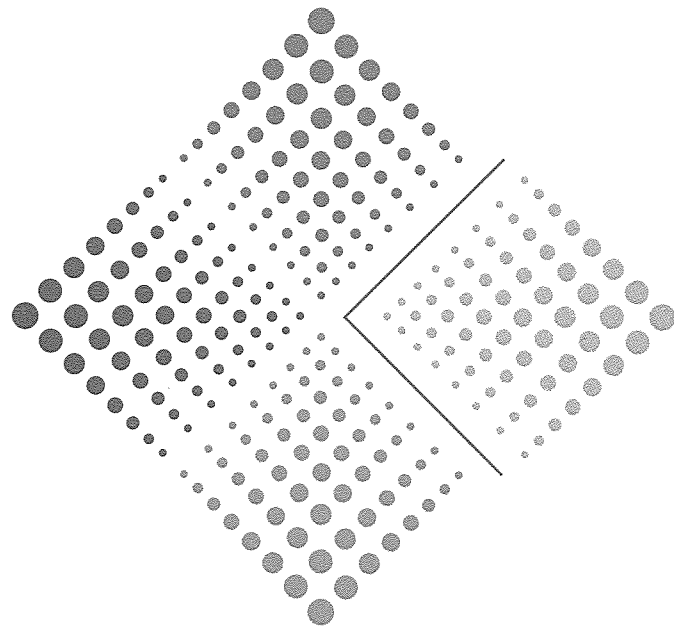# Research Design

Holographic Overview

A wide variety of research designs are available to social science researchers. Designing a study involves specifying exactly who or what is to be studied when, how, and for what purpose. ▪

Introduction

Science is an enterprise dedicated to "finding out." No matter what you want to find out, though, there will likely be a great many ways of doing it. That's true in life generally. Suppose that you want to find out whether a particular automobile—say, the new Burpo-Blasto—would be a good car for you. You could, of course, buy one and find out that way. Or you could talk to a lot of B-B owners or to people who considered buying one and didn't. You might check the classified ads to see if there are a lot of B-Bs being sold cheap. You could read a consumer magazine evaluation of Burpo-Blastos. You might combine several of these ways of finding out. A similar situation occurs in scientific inquiry.

Ultimately, scientific inquiry comes down to making observations and interpreting what you've observed, the subjects of Parts 3 and 4 of this book. Before you can observe and analyze, however, you need a plan. You need to determine what you're going to observe and analyze: why and how. That's what research design is all about.

Although the details vary according to what you wish to study, you face two major tasks in any research design. First, you must specify as clearly as possible what it is you want to find out. Second, you must determine the best way to do it. Interestingly, if you can handle the first consideration fully, you'll probably handle the second in the same process. As mathematicians say, a properly framed question contains the answer.

Let's say you're interested in studying corruption in government. That's certainly a worthy and appropriate topic for social research. But what do you mean by "corruption"? Specifically, what kinds of behavior do you have in mind? And what do you mean by "government"? Whom do you want to study: all public employees? elected officials? civil servants? Finally, what is your purpose? Do you want to find out how much corruption there is? Do you want to learn why corruption exists? These are the kinds of questions that need to be answered in the course of research design.

This chapter provides a general introduction to research design; the other chapters in Part 2 elaborate on specific aspects. In practice, all these aspects of research design are interrelated. As you proceed through Part 2, the interrelationships among these parts will become clearer.

We'll start by briefly examining the three main purposes of social research that help to define what kind of study to undertake. Then we'll consider units of analysis—the what or whom you want to study. Next we'll look at alternative ways of handling time in social research, or how to study a moving target that changes over time.

With these ideas in hand, we'll turn to how to design a research project. This overview of the research process serves two purposes: Besides describing how you might go about designing a study, it provides a map of the remainder of this book.

Finally, we'll look at the elements of research proposals. Often the actual conduct of research needs to be preceded by a detailing of your intentions—to obtain funding for a major project or perhaps to get your instructor's approval for a class project. You'll see that the research proposal provides an excellent opportunity for you to consider all aspects of your research in advance.

Three Purposes of Research

Social research can serve many purposes. Three of the most common and useful purposes are exploration, description, and explanation. Although a given study can have more than one of these purposes—and most do—examining them separately is useful because each has different implications for other aspects of research design.

Exploration

Much of social research is conducted to explore a topic, or to start to familiarize the researcher with that topic. This approach typically occurs when a researcher examines a new interest or when the subject of study itself is relatively new.

As an example, let's suppose that widespread taxpayer dissatisfaction with the government erupts into a taxpayers' revolt. People begin refusing to

pay their taxes, and they organize themselves around that issue. You might like to learn more about the movement: How widespread is it? What levels and degrees of support are there within the community? How is the movement organized? What kinds of people are active in it? An exploratory study could help you obtain at least approximate answers to some of these questions. For example, you might check figures with tax-collecting officials, collect and study the literature of the movement, attend meetings, and interview leaders.

Exploratory studies are also appropriate for more persistent phenomena. Suppose you're unhappy with your college's graduation requirements and want to help change them. You might study the history of such requirements at the college and meet with college officials to learn the reasons for the current standards. You could talk to several students to get a rough idea of their sentiments on the subject. Though this last activity would not necessarily yield a precise and accurate picture of student opinion, it could suggest what the results of a more extensive study might be.

Sometimes exploratory research is pursued through the use of focus groups, or guided small-group discussions. This technique is frequently used in market research; we'll examine it further in Chapter 10.

Exploratory studies are most typically done for three purposes: (1) to satisfy the researcher's curiosity and desire for better understanding, (2) to test the feasibility of undertaking a more extensive study, and (3) to develop the methods to be employed in any subsequent study.

A while back, for example, I became aware of the growing popularity of something called "channeling," in which a person known as a channel or medium enters a trance state and begins speaking with a voice that claims it originates outside the channel. Some of the voices say they come from a spirit world of the dead, some say they are from other planets, and still others say they exist on dimensions of reality difficult to explain in ordinary human terms.

The channeled voices, often referred to as "entities," sometimes use the metaphor of radio or television for the phenomenon they represent. "When you watch the news," one entity told me in the

course of an interview, "you don't believe Dan Rather is really inside the television set. The same is true of me. I use this medium's body the way Dan Rather uses your television set."

The idea of channeling interested me from several perspectives, not the least of which was the methodological question of how to study scientifically something that violates so much of what we take for granted, such as space, time, causation, and individuality.

Lacking any rigorous theory or precise expectations, I merely set out to learn more. Using some of the techniques of field research discussed later in this book, I began amassing information and forming categories for making sense of what I observed. I read books and articles about the phenomenon and talked to people who had attended channeling sessions. I then attended channeling sessions myself, observing those who attended as well as the channel and entity. Next I conducted personal interviews with numerous channels and entities.

In most interviews, I began by asking the human channels questions about how they first began channeling, what it was like, and why they continued, as well as standard biographical questions. The channel would then go into a trance, whereby the interview continued with the entity. "Who are you?" I might ask. "Where do you come from?" "Why are you doing this?" "How can I tell if you are real or a fake?" Although I went into these interview sessions with several questions prepared in advance, each of the interviews followed whatever course seemed appropriate in the light of the answers given.

This example of exploration illustrates where social research often begins. Whereas researchers working from deductive theories have the key variables laid out in advance, one of my first tasks was to identify some of the possibly relevant variables for determining the kinds of people most likely to participate. For example, I noted a channel's gender, age, education, religious background, regional origins, and previous participation in things metaphysical. I chose most of these variables because they commonly affect behavior.

I also noted differences in the circumstances of channeling sessions. Some channels said they must go into deep trances, some use light trances, and

others remain conscious. Most sit down while channeling, but others stand and walk about. Some channels operate under pretty ordinary conditions; others seem to require metaphysical props such as dim lights, incense, and chanting. Many of these differences became apparent to me only in the course of my initial observations.

Regarding the entities, I have been interested in classifying where they say they come from. Over the course of my interviews, I've developed a set of questions about specific aspects of "reality" in an attempt to classify the answers they give. Similarly, I ask each to speak about future events.

Over the course of this research, my examination of specific topics has become increasingly focused as I've identified variables that seem worth pursuing: gender, education, and religion, for example. Note, however, that I began with a relatively blank slate.

Exploratory studies are quite valuable in social scientific research. They are essential whenever a researcher is breaking new ground, and they almost always yield new insights into a topic for research. Exploratory studies are also a source of grounded theory, as discussed in Chapter 2.

The chief shortcoming of exploratory studies is that they seldom provide satisfactory answers to research questions, though they can hint at the answers and can suggest which research methods could provide definitive answers. The reason exploratory studies are seldom definitive in themselves has to do with representativeness; that is, the people you study in your exploratory research may not be typical of the larger population that interests you. Once you understand representativeness, you'll be able to know whether a given exploratory study actually answered its research problem or only pointed the way toward an answer. (Representativeness is discussed at length in Chapter 7.)

Description

A major purpose of many social scientific studies is to describe situations and events. The researcher observes and then describes what was observed. Because scientific observation is careful and delib-

erate, however, scientific descriptions are typically more accurate and precise than are casual ones.

The U.S. Census is an excellent example of descriptive social research. The goal of the census is to describe accurately and precisely a wide variety of characteristics of the U.S. population, as well as the populations of smaller areas such as states and counties. Other examples of descriptive studies are the computation of age-gender profiles of populations done by demographers, the computation of crime rates for different cities, and a product-marketing survey that describes the people who use, or would use, a particular product. A researcher who carefully chronicles the events that take place on a labor union picket line has, or at least serves, a descriptive purpose. A researcher who computes and reports the number of times individual legislators voted for or against organized labor also fulfills a descriptive purpose.

Many qualitative studies aim primarily at description. An anthropological ethnography, for example, may try to detail the particular culture of some preliterate society. At the same time, such studies are seldom limited to a merely descriptive purpose. Researchers usually go on to examine *why* the observed patterns exist and what these patterns imply.

Explanation

The third general purpose of social scientific research is to explain things. Descriptive studies answer questions of what, where, when, and how; explanatory questions, of why. So, when William Sanders (1994) set about describing the varieties of gang violence, he also wanted to reconstruct the process that brought about violent episodes among the gangs of different ethnic groups.

Reporting the frequency of church attendance is a descriptive activity, but reporting why some people attend and others don't is explanatory. Reporting the crime rates of different cities is a case of description; identifying variables that explain why some cities have higher crime rates than others involves explanation. A researcher who sets out to discover why an antiabortion demonstration ended in a violent confrontation with police, as opposed

to simply describing what happened, has an explanatory purpose.

In a similar vein, a survey of attitudes toward legalizing marijuana might serve the worthwhile descriptive purpose of simply reporting the attitudes of various segments of the population. Or a researcher might set out to discover what factors shape people's attitudes on this issue—a *why* question ("Why do people have the attitudes they do about marijuana?"). An explanatory analysis of 1993 General Social Survey (GSS) data indicates that 28 percent of men and 15 percent of women said marijuana should be legalized: While strong majorities of both genders oppose legalization, men were nearly twice as supportive as were women. Thus, gender seems to be one influence in attitudes toward marijuana.

Not surprisingly, political orientations also correlated with attitudes about marijuana legalization. Among liberals, 37 percent said marijuana should be legalized, compared with 15 percent each of moderates and conservatives. In terms of political party, 39 percent of the Democrats, 18 percent of Independents, and 15 percent of Republicans supported legalization.

Although it's useful to distinguish the three purposes of research, it bears repeating that most studies will have elements of all three. Suppose, for example, that you have set out to evaluate the effectiveness of a new form of psychotherapy. Your study will have exploratory aspects, as you explore possibly relevant variables and map out the impacts of the therapy. You will want to describe such things as recovery rates. And you will undoubtedly seek to explain why the therapy works better for some types of people than for others, or why it works more for some types of people (or problems) than do other forms of therapy.

You will see these several purposes at work in the following discussions of other aspects of research design. Let's turn now to a consideration of whom or what you want to explore, describe, and explain.

Units of Analysis

In social scientific research, there is virtually no limit to what or whom can be studied, or the **units of analysis.** This topic is relevant to all forms of social research, although its implications are clearest in the case of nomothetic, quantitative studies.

The idea for units of analysis may seem slippery at first, because research—especially nomothetic research—often studies large collections of people or things, or aggregates. It's important to distinguish between the unit of analysis and the aggregates that we generalize about. For instance, a researcher may study a class of people, such as Democrats, college undergraduates, African-American women under 30, or some other collection. But if the researcher is interested in exploring, describing, or explaining how different groups of individuals behave *as individuals*, the unit of analysis is the individual, not the group. This is so even though the researcher then proceeds to generalize about aggregates of individuals, as in saying that more Democrats than Republicans favor legalizing marijuana. Think of it this way: Having an attitude about marijuana is something that can only be an attribute of an individual, not a group; that is, there is no one group "mind" that can have an attitude. So even when we generalize about Democrats, we're generalizing about an attribute they possess as individuals.

In contrast, we may sometimes want to study groups, considered as individual "actors" or entities that have attributes *as groups*. For instance, we might want to compare the characteristics of different types of street gangs. In that case our unit of analysis would be gangs (not members of gangs), and we might proceed to make generalizations about different types of gangs.

Social scientists perhaps most typically choose individual people as their units of analysis. Researchers can note the characteristics of individual people—gender, age, region of birth, attitudes, and so forth. They can then combine these descriptions to provide a composite picture of the group the individuals represent, whether a street-corner gang or a whole society.

For example, you may note the age and gender of each student enrolled in Political Science 110 and then characterize the group of students descriptively as being 53 percent men and 47 percent women and as having a mean age of 18.6 years. Although the final description would be of the class as a whole, the description is based on characteristics that members of the class have as individuals.

The same distinction between units of analysis and aggregations occurs in explanatory studies. Suppose you wished to discover whether students with good study habits received better grades in Political Science 110 than did students with poor study habits. You would operationalize the variable *study habits* and measure this variable, perhaps in terms of hours of study per week. You might then aggregate students with good study habits and those with poor study habits and see which group received the best grades in the course. The purpose of the study would be to explain why some groups of students do better in the course than do others, but the unit of analysis is still individual students.

Units of analysis in a study are usually also the units of observation. Thus, to study success in a political science course, we would observe individual students. Sometimes, however, we "observe" our units of analysis indirectly. For example, suppose we want to find out whether disagreements about the death penalty tend to cause divorce. In this case, we might "observe" individual husbands and wives by asking them about their attitudes about capital punishment, in order to distinguish couples who agree and disagree on this issue. In this case, our units of observation are individual wives and husbands, but our units of analysis (the things we want to study) are couples.

Units of analysis, then, are those things we examine in order to create summary descriptions of all such units and to explain differences among them. In most research projects, the unit of analysis will probably be clear to you. When the unit of analysis is not so clear, however, it's essential to determine what it is; otherwise, you cannot determine what observations are to be made about whom or what.

Some studies try to describe or explain more than one unit of analysis. In these cases, the researcher must anticipate what conclusions she or he wishes to draw with regard to which units of analysis. For example, we may want to discover what kinds of college students (individuals) are most successful in their careers; we may also want to learn what kinds of colleges (organizations) produce the most successful graduates.

To make this discussion more concrete, let's consider several common units of analysis in social science.

Individuals

As we've just seen, individual human beings are perhaps the most typical units of analysis for social scientific research. Researchers tend to describe and explain social groups and interactions by aggregating and analyzing the descriptions of individuals.

Any type of individual may be the unit of analysis for social scientific research, and research generally deals with specific types or classes of individuals. This point is more important than it may seem at first reading. Inasmuch as social science seeks to understand human behavior in general, it would seem that scientific findings are most valuable when they apply to all kinds of people. In practice, however, social scientists seldom study all kinds of people. At the very least, their studies are typically limited to the people living in a single country, though some comparative studies stretch across national boundaries. Often, though, studies are quite circumscribed.

Examples of classes of individuals that might be chosen for study include college students, gays and lesbians, auto workers, U.S. voters, single parents, and churchgoers. Notice that each of these terms implies some population of individual persons. Descriptive studies with individuals as their units of analysis typically aim to describe the population that comprises those individuals, whereas explanatory studies aim to discover the social dynamics operating within that population.

As the units of analysis, individuals may be characterized in terms of their membership in social groupings. Thus, an individual may be described as belonging to a rich family or to a poor one, or as having a college-educated mother or not. We might examine in a research project whether people with college-educated mothers are more likely to attend college than those with non-college-educated mothers or whether high school graduates in rich families are more likely to attend college than those in poor families. In each case, the unit of analysis—the "thing" whose characteristics we are seeking to

describe or explain—is the individual. We then aggregate these individuals and make generalizations about the population they belong to.

Groups

Social groups can also be units of analysis in social scientific research. That is, we may be interested in characteristics that belong to one group, considered as a single entity. If you were to study criminals by looking at the members of a criminal gang, the individual (the criminal) would be the unit of analysis. But if you studied all the gangs in a city to learn the differences, say, between big gangs and small ones, between "uptown" and "downtown" gangs, and so forth, you would be interested in gangs rather than their individual members. In this case, the unit of analysis would be the gang, a social group.

Here's another example. Suppose you were interested in the question of access to computers in different segments of society. You might describe families in terms of total annual income and according to whether or not they had computers. You could then aggregate families and describe the mean income of families and the percentage of families who have computers. You would then be in a position to determine whether families with higher incomes were more likely to have computers than those with lower incomes. In this case, the unit of analysis would be families.

As with other units of analysis, we can derive the characteristics of social groups from those of their individual members. Thus, we might describe a family in terms of the age, race, or education of its head. In a descriptive study, we might find the percentage of all families that have a college-educated head of family. In an explanatory study, we might determine whether such families have, on average, more or fewer children than do families headed by people who have not graduated from college. In each of these examples, the family is the unit of analysis. In contrast, had we asked whether college-educated individuals have more or fewer children than do their less educated counterparts, then the individual person would have been the unit of analysis.

Other units of analysis at the group level could be friendship cliques, married couples, census blocks, cities, or geographic regions. As with individuals, each of these terms implies some population. Street gangs imply a population that includes all street gangs, perhaps in a given city. You might then describe this population by generalizing from your findings about individual gangs. For instance, you might describe the geographical distribution of gangs throughout a city. In an explanatory study of street gangs, you might discover whether large gangs are more likely than small ones to engage in intergang warfare. Thus, you would arrive at conclusions about the population of gangs by using individual groups as your unit of analysis.

Organizations

Formal social organizations may also be the units of analysis in social scientific research. For example, a researcher might study corporations, by which he or she implies a population of all corporations. Individual corporations might be characterized in terms of number of employees, net annual profits, gross assets, number of defense contracts, percentage of employees from racial or ethnic minority groups, and so forth. We might determine whether large corporations hire a larger or smaller percentage of minority group employees than do small corporations. Other examples of formal social organizations suitable as units of analysis include church congregations, colleges, army divisions, academic departments, and supermarkets.

Figure 4-1 provides a graphic illustration of some different units of analysis and the statements that might be made about them.

Social Artifacts

Another unit of analysis is the **social artifact,** or any product of social beings or their behavior. One class of artifacts includes concrete objects such as books, poems, paintings, automobiles, buildings, songs, pottery, jokes, student excuses for missing exams, and scientific discoveries. In the Robin

Wagner-Pacifici (1995) examination of the Philadelphia police attack on MOVE described in Chapter 3, official pronouncements were the units of analysis.

Just as people or social groups imply populations, each social object implies a set of all objects of the same class: all books, all novels, all biographies, all introductory sociology textbooks, all cookbooks. In a study using books as the units of analysis, an individual book might be characterized by its size, weight, length, price, content, number of pictures, number sold, or description of its author. Then the population of all books or of a particular kind of book could be analyzed for the purpose of description or explanation: what kinds of books sell best and why, for example.

Similarly, a social scientist could analyze whether paintings by Russian, Chinese, or U.S. artists showed the greatest degree of working-class consciousness, taking paintings as the units of analysis and describing each, in part, by the nationality of its creator. Or you might examine a newspaper's editorials regarding a local university for the purpose of describing, or perhaps explaining, changes in the newspaper's editorial position on the university over time. In this example, individual editorials would be the units of analysis.

Social interactions form another class of social artifacts suitable for social scientific research. For example, we might characterize weddings as racially or religiously mixed or not, as religious or secular in ceremony, as resulting in divorce or not, or by descriptions of one or both of the marriage partners (such as, "previously married," "Oakland Raider fan," "wanted by the FBI"). When a researcher reports that weddings between partners of different religions are more likely to be performed by secular authorities than are those between partners of the same religion, weddings are the units of analysis, not the individuals involved.

Other social interactions that might be units of analysis include friendship choices, court cases, traffic accidents, divorces, fistfights, ship launchings, airline hijackings, race riots, final exams, student demonstrations, and congressional hearings. Congressional hearings, for instance, could be characterized by whether or not they occurred during an election campaign, whether the committee chairs

were running for a higher office, whether they had received campaigns contributions from interested parties, and so on. Notice that even if we characterized and compared the hearings in terms of the committee chairs, the hearings themselves—not the individual chairpersons—would be our units of analysis.

Units of Analysis in Review

The examples in this section should suggest the nearly infinite variety of possible units of analysis in social scientific research. Although individual human beings are typical objects of study, many research questions can be answered more appropriately through the examination of other units of analysis. Indeed, social scientists can study just about anything that bears on social life.

Moreover, the types of units of analysis named in this section don't begin to exhaust the possibilities. Morris Rosenberg (1968:234–48), for example, speaks of individual, group, organizational, institutional, spatial, cultural, and societal units of analysis. John and Lyn Lofland (1995:103–13) speak of practices, episodes, encounters, roles, relationships, groups, organizations, settlements, social worlds, lifestyles, and subcultures as suitable units of study. The important thing here is to grasp the logic of units of analysis. Once you do, the possibilities for fruitful research are limited only by your imagination.

Categorizing possible units of analysis may make the concept seem more complicated than it needs to be. What you call a given unit of analysis—a group, a formal organization, or a social artifact—is irrelevant. The key is to be clear about what your unit of analysis is. When you embark on a research project, you must decide whether you are studying marriages or marriage partners, crimes or criminals, corporations or corporate executives. Otherwise, you run the risk of drawing invalid conclusions because your assertions about one unit of analysis are actually based on the examination of another. We'll see an example of this issue as we look at the ecological fallacy in the next section.
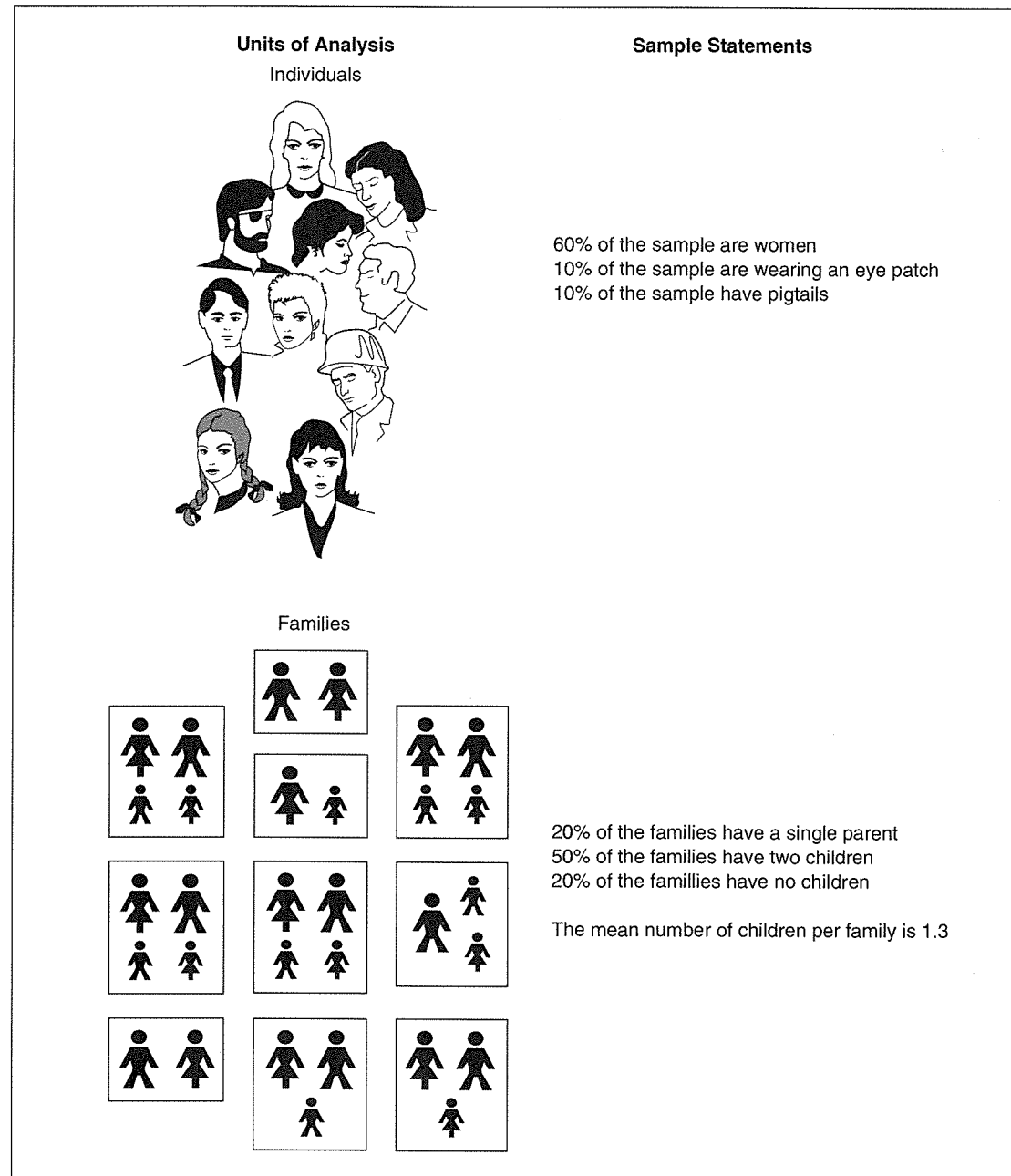
FIGURE 4-1

Illustrations of Units of Analysis

Units of Analysis	Sample Statements
Individuals	

60% of the sample are women
10% of the sample are wearing an eye patch
10% of the sample have pigtails

Families

20% of the families have a single parent
50% of the families have two children
20% of the famillies have no children

The mean number of children per family is 1.3

FIGURE 4-1

Illustrations of Units of Analysis (continued)

Units of Analysis	Sample Statements
Households	

20% of the households are occupied by more than one family

30% of the households have holes in their roofs

10% of the households are occupied by aliens

Notice also that 33% of the families live in multiple-family households with family as the unit of analysis
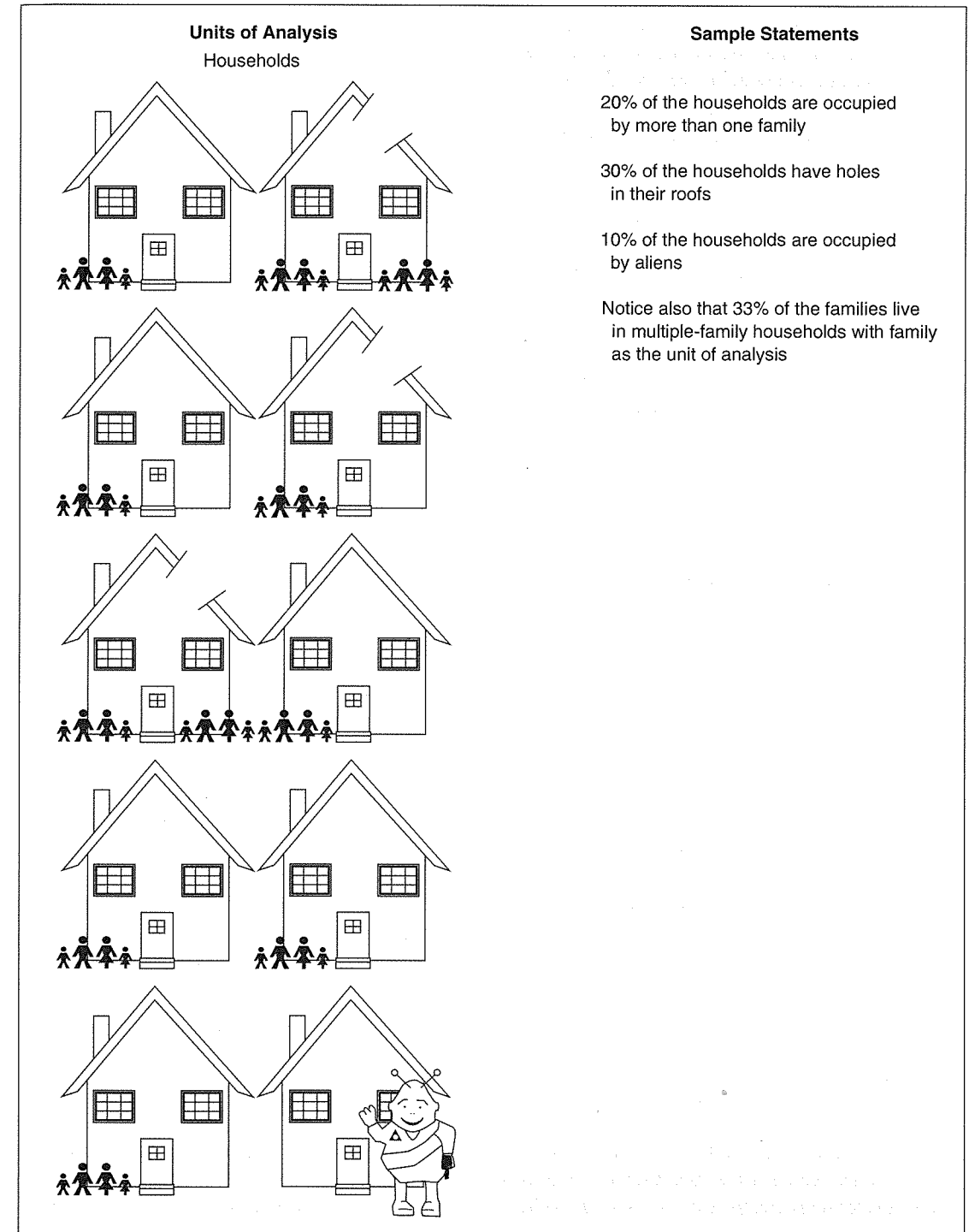
Faulty Reasoning about Units of Analysis: The Ecological Fallacy and Reductionism

At this point, it's appropriate to introduce two types of faulty reasoning that you should be aware of: the ecological fallacy and reductionism. Each represents a potential pitfall regarding units of analysis, either of which can occur in doing research and drawing conclusions from the results.

The Ecological Fallacy

In this context, "ecological" refers to groups or sets or systems: something larger than individuals. **The ecological fallacy** is the assumption that something learned about an ecological unit says something about the individuals making up that unit. Let's consider a hypothetical illustration of this fallacy.

Suppose we are interested in learning about the nature of electoral support received by a female political candidate in a recent citywide election. Let's assume that we have the vote tally for each precinct so that we can tell which precincts gave her the greatest support and which the least. Assume also that we have census data describing some characteristics of these precincts. Our analysis of such data might show that precincts with relatively young voters gave the female candidate a greater proportion of their votes than did precincts with older voters. We might be tempted to conclude from these findings that young voters are more likely to vote for female candidates than are older voters—in other words, that age affects support for women in politics. In reaching such a conclusion, we run the risk of committing the ecological fallacy because it may have been the older voters in those "young" precincts who voted for the woman. Our problem is that we have examined *precincts* as our units of analysis but wish to draw conclusions about *voters*.

The same problem would arise if we discovered that crime rates were higher in cities having large African-American populations than in those with few African Americans. We would not know if the crimes were actually committed by African Americans. Or if we found suicide rates higher in Protestant countries than in Catholic ones, we still could not know for sure that more Protestants than Catholics committed suicide.

In spite of these hazards, social scientists very often have little choice but to address a particular research question through an ecological analysis. Perhaps the most appropriate data are simply not available. For example, the precinct vote tallies and the precinct characteristics mentioned in our initial example might be easy to obtain, but we may not have the resources to conduct a postelection survey of individual voters. In such cases, we may reach a tentative conclusion, recognizing and noting the risk of an ecological fallacy.

While you should be careful not to commit the ecological fallacy, don't let these warnings lead you into committing what we might call the individualistic fallacy. Some people who approach social research for the first time have trouble reconciling general patterns of attitudes and actions with individual exceptions. As we discussed in Chapter 2, generalizations and probabilistic statements are not invalidated by individual exceptions. Your knowing a rich Democrat, for example, doesn't deny the fact that most rich people vote Republican—as a general pattern. Similarly, if you know someone who has gotten rich without any formal education, that doesn't deny the general pattern of higher education relating to higher income.

The ecological fallacy deals with something else altogether—confusing units of analysis in such a way that we draw conclusions about individuals based solely on the observation of groups. Although the patterns observed between variables at the level of groups may be genuine, the danger lies in reasoning from the observed attributes of groups to the attributes of the individuals who made up those groups when we have not actually observed individuals.

Reductionism

A second type of potentially faulty reasoning related to units of analysis is reductionism. Reductionism means seeing and explaining complex phenomena in terms of a single, narrow concept or set of concepts. Thus, we "reduce" what in reality is complex to a simple explanation.

For instance, scientists from different disciplines tend to look at different types of answers and ignore the others. Sociologists tend to consider only sociological variables (such as values, norms, and roles), economists only economic variables (such as supply and demand, marginal value), and psychologists only psychological variables (such as personality types, traumas). Explaining all or most human behavior in terms of economic factors is called economic reductionism; explaining all or most human behavior in terms of psychological factors is called psychological reductionism; and so forth. Notice how this issue relates to the discussion of theoretical paradigms in Chapter 2.

In another example, 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 founding fathers? As soon as we inquire about *the* single cause, we run the risk of reductionism.

Reductionism of any type tends to suggest that particular units of analysis or variables are more relevant than others. 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 13 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 scientists, especially across disciplinary boundaries, often debate this issue.

The Time Dimension

So far in this chapter, we have regarded research design as a process for deciding what aspects we shall 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. Chapter 3 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 available to deal 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 problem is somewhat akin to that of determining the speed of a moving object on the basis of a high-speed, still photograph that freezes the movement of the object.

Yanjie Bian, for example, conducted a survey of workers in Tianjin, China, for the purpose of studying 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 of 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)*

The problem of generalizations about social life from a "snapshot" is one this book repeatedly addresses. 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 phenomena 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 trends in newspaper editorials or Supreme Court decisions over time, for example, the studies are longitudinal whether the researcher's actual observations and analyses are 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. For example, when Ramona Asher and Gary Fine (1991) studied the life experiences of the wives of alcoholic men, they were in a position to examine the evolution of the women's troubled marital relationships over time, sometimes even including the reactions of the subjects to the research itself.

In a classic study, *When Prophecy Fails* (1956), Leon Festinger, Henry Reicker, and Stanley Schachter were specifically interested in learning what happened to a flying saucer cult when the cult's 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. (They 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.

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

TABLE 4-1

Age and Political Liberalism

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

earlier samples. When educational levels were taken into account, the researchers concluded that political knowledge had actually declined within specific educational groups.

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 those 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 1994, 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 15–20 years of age might be surveyed in 1960, another sample of those 35–40 years of age in 1980, and another sample of those 55–60 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.

James Davis (1992) turned to a cohort analysis in an attempt to understand shifting political orientations during the 1970s and 1980s in the United States. Overall, he found a liberal trend in issues such as race, gender, religion, politics, crime, and free speech. But did this trend represent people in general getting a bit more liberal, or did it merely reflect more liberal younger generations replacing the conservative older ones?

To answer this question, Davis examined national surveys conducted in four time periods, five years apart. In each survey, he grouped the respon-

dents into age groups, also five years apart. This strategy allowed him to compare different age groups at any given point in time as well as follow the political development of each age group over time.

One of the questions he examined was whether a person who admitted to being a communist should be allowed to speak in the respondents' communities. Consistently, the younger respondents in each period of time were more willing to let the communist speak than were the older ones. Among those aged 20–40 in the first set of the survey, for example, 72 percent took this liberal position, contrasted with 27 percent among respondents 80 and older. What Davis found when he examined the youngest cohort over time is shown in Table 4-1.

This pattern of a slight, conservative shift in the 1970s, followed by a liberal rebound in the 1980s, typifies the several cohorts Davis analyzed (J. Davis 1992:269).

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 could indicate that none of the

electorate had changed voting plans, that all of the voters had switched allegiance to the other candidate, 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.

Joseph Veroff, Shirley Hatchett, and Elizabeth Douvan (1992) wanted to learn about marital adjustment among newlyweds, looking for 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, 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 may have otherwise buried.

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: political party 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 Depression generation," specifically, say, people who were between 20 and 30 in 1932. We could study a sample of people 30–40 years old in 1942, a new sample of people aged 40–50 in 1952, and so forth. 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 religions as well as into or out of the "none" category. Cohort and trend studies would uncover only net changes.

Longitudinal studies in general 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 attrition. Some of the respondents studied in the first wave of the survey may not participate in later waves, whether by choice or circumstance. The danger is that those who drop out of the study may not be typical, thereby distorting the results of the study. Thus, when Carol S. Aneshensel and colleagues compared Latina and non-Latina adolescents' sexual behavior by means of a panel study, they looked for and found differences in characteristics of survey dropouts among Latinas born in the United States and those born in Mexico. These differences needed to be taken into account to avoid misleading conclusions about differences between Latinas and non-Latinas (Aneshensel et al. 1989). For a further comparison of the three types of longitudinal studies, see the box entitled "The Time Dimension and Aging."

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 several illegal drugs. The study

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The Time Dimension and Aging

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One way to identify the type of time dimension used in a study is to imagine a number of different research projects on growing older in the American society. If we studied a sample of individuals in 1990 and compared the different age groups, the design would be termed *cross-sectional*. If we drew another sample of individuals using the same study instrument in the year 2000 and compared the new data with the 1990 data, the design would be termed *trend*.

Suppose we wished to study only those individuals who were 51–60 in the year 2000 and compare them with the 1990 sample of 41–50-year old persons (the 41–50 age cohort); this study design would be termed *cohort*. The comparison could be made for the 51–60 and 61–70 age cohorts as well. Now, if we desired to do a *panel* study on growing older in America, we would draw a sample in the year 1990 and, using the same sampled individuals in the year 2000, do the study again. Remember, there would be fewer people in the year 2000 study because all the 41–50-year-old people in 1990 are 51–60 and there would be no 41–50-year-old individuals in the year 2000 study. Furthermore, some of the sampled individuals in 1990 would no longer be alive in the year 2000.

CROSS-SECTIONAL STUDY
1990
↑ 41–50
↓ 51–60
↕ 61–70
↕ 71–80

COHORT STUDY

1990	2000
41–50	41–50
51–60	51–60
61–70	61–70
71–80	71–80

TREND STUDY

1990	2000
41–50 ⟷	41–50
51–60 ⟷	51–60
61–70 ⟷	61–70
71–80 ⟷	71–80

PANEL STUDY

1990	2000
41–50*	41–50*
51–60*	51–60*
61–70*	61–70*
71–80*	71–80*
	+81*

⟷ Denotes comparison
*Denotes same individuals

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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, the researchers 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 discover 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 that took place across time.

Very often, age differences discovered in a cross-sectional study form the basis for inferring processes across time. Suppose you are interested in the pattern of worsening health over the course of the typical life cycle. You might pursue this subject by studying 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. Perhaps improved hearing examinations instituted in the schools had 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 1996. 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, aged 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 postelection 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, results based on a single question in a survey must be regarded with caution.

This discussion of the ways that time figures into social research suggest several questions you should confront in your own research projects. In designing any study, be sure to examine both the explicit and the implicit assumptions you're making about time. Are you interested in describing or explaining some process that occurs over time, or are you interested simply in 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 scientific research follows many paths. The following short excerpts further illustrate this point. As you read each excerpt, take note of 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)

How To Design a Research Project

You've just seen some of the options available to social researchers in designing projects. Now let's pull the parts together by looking at the actual process of designing a research project. Assume you were to undertake a research study. 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 both guidance on how to start a research project and an overview of the topics that follow in later chapters of this book.

Figure 4-2 presents a schematic view of the social science research process. 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.

At the top of the diagram are interest, idea, and theory, 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 in low-level service jobs (say, at a fast-food outlet) 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.

FIGURE 4-2

The Research Process
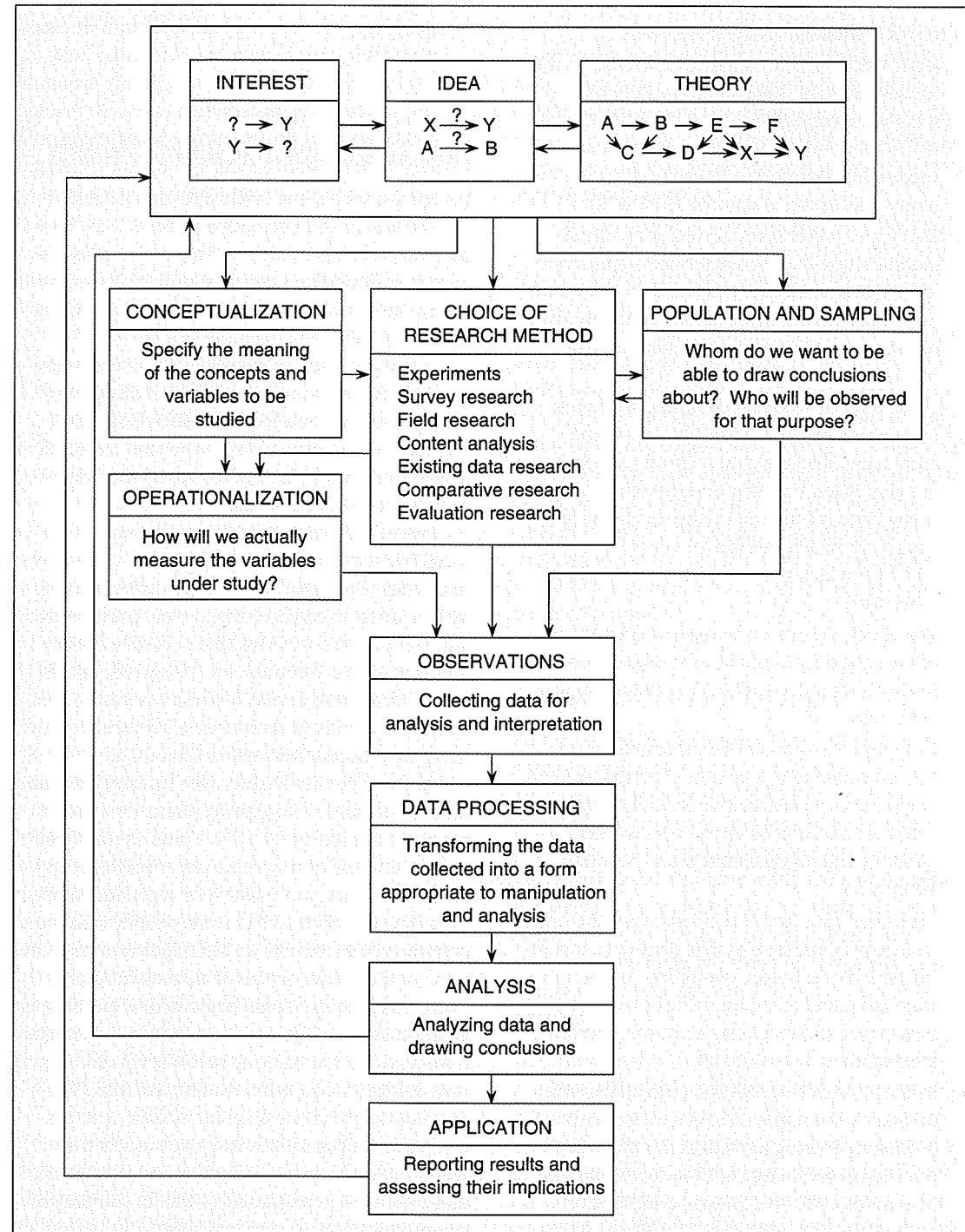
The double arrows between "interest," "idea," and "theory" are meant to suggest that there is often a movement back and forth across these several possible beginnings. An initial interest may lead to the formulation of an idea, which may be fit into a larger theory, and the theory may produce new ideas 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 the remainder of the diagram indicates.

To make this discussion more concrete, let's take a specific research example. Suppose you are concerned with the issue of abortion and have a special interest in learning why some college students support abortion rights and others oppose them. Going a step further, let's say you have 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.

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 are individuals: college students. Let's assume you'd 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 type of study would provide you with no direct evidence of processes, you might be able to approximate some longitudinal analyses if you pursue 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 pursuing your interest in 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 a college major, you

might find out what other researchers may 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 don't. You might attend meetings of abortion-related groups. All these activities could help prepare you to handle the various decisions of research design we are 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 in the form of a report. Appendix C of this book will help you organize a research report. I recommend outlining such a report as the first step in the design of your project. Although your final report may not look much like your initial image of it, this exercise will give you something to help you gauge the appropriateness of different research designs. During this step, clearly describe the kinds of statements you want to make when the research is complete. Doing so will help guide your choices of appropriate research strategies. 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 pretty casually about social science concepts such as prejudice, alienation, religiosity, and liberalism, but it's necessary to clarify what we mean by these concepts in order to draw meaningful conclusions about them. Chapter 5 examines 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 to specify is what you mean by "the right to an abortion." Since 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 include students' intentions as well. What will you do with those who have no major?

In surveys and experiments, it's necessary to specify such concepts 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 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. This is not to say that you couldn't 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 images 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. Other research methods introduced in Part 3 could also be used in studying this topic. 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 where the researchers used many methods in a single study.

Operationalization

Having 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). As we saw in Chapter 3, the meaning of variables in a study is determined 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 decided 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'd design the questionnaire so that it asked respondents to express approval or disapproval for each situation. Similarly, you would specify 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 you want to draw conclusions. We are 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 ideally could 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 give an adequate reflection of the whole population that interests us. Notice in Figure 4-2 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. (If you want to draw conclusions about college students in general, you'll learn how to do that in Chapter 7.) As we'll discuss later in the book, however, selecting a sample requires us to be ever more specific. 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, for example, 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, and by what method, you're now ready to make observations—to collect empirical data. The chapters of Part 3, which describe the various research meth-

ods, 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 spend a month observing a street-corner gang firsthand, you will have enough field notes to fill a book. In a historical study of ethnic diversity at your school, you might amass volumes of official documents, interviews with administrators and others, and so forth. Chapter 14 describes some of the ways social scientific data are processed or transformed 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 of a survey typically involves the classification (coding) of written-in answers and the transfer of all the 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 through 17 describe a few of the many options available to you in analyzing data. In Figure 4-2, 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 might 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 trapping other information about respondents, you could also look at men versus women; frosh, sophomores, juniors, seniors, and graduate students; or other categories that you have 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 of the conclusions you've reached. To start, you'll probably want to communicate your findings, so that others will know what you've learned. It may be appropriate to prepare—and even publish—a written report. Perhaps you will make oral presentations, such as papers delivered to professional and scientific meetings. Other students would also be interested in hearing what you have learned about them.

You may want to go beyond simply reporting what you have learned to discussing the implications of your findings. Do they 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.

Finally, be sure to consider what your research suggests in regard to further research on your subject. What mistakes should be corrected in future studies? What avenues—opened up slightly in your study—should be pursued further in later investigations? This aspect of the research process will be discussed in Chapter 19.

Research Design in Review

As this overview shows, research design involves a set of decisions regarding what topic is to be studied among which population with which 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 narrowing your choices and 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, such as prejudice). 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 militia 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, young adult women, neighborhoods, cities, or corporations? This question will probably be inseparable in your thoughts from the question of research topics. Then ask which aspects of the units of analysis would provide the information you need 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 already available somewhere (say, in a government publication), or would you have to collect them yourself? If you

have to collect the data, how would you go about 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 will find yourself well into the process of research design. Keep in mind your own research abilities and the resources available to you. There's 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 an 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's just as important in the social sciences, although social scientists tend to overlook that. Or, you might want to go beyond replication and study some aspect of the topic that you feel previous researchers have 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'd like to explore in greater detail through some 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 will have to lay out the details of your plan for someone else's review and/or approval. In the case of 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 most definitely want a detailed proposal that describes how you would spend their money.

This chapter concludes with a brief discussion of how you might prepare such a proposal. This will give you one more overview of the research process, which 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 elements you should include.

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 research has been done previously? Are there consistent findings, or do past studies disagree? Are there flaws in the body of existing research that you feel you can remedy?

Subjects for Study

Whom or what will you study in order to collect data? First, identify the subjects in general, theoretical terms; then, 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 insure that the research does not harm them?

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 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 will 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: for example, 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

It is often appropriate to provide a schedule for the various stages of research. Even if you don't do this for the proposal, do it for yourself. Unless you have a timeline for accomplishing the several stages of research and keeping in touch with 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, equipment, supplies, telephones, and postage. Even for a project you will pay for yourself, it's a good idea to spend some time anticipating expenses: office supplies, photocopying, computer disks, telephone calls, transportation, and so on.

As you can see, if you were interested in conducting a social science research project, it would be a good idea to prepare a research proposal for your own purposes, even if you weren'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 insure a return on that investment.

Now that you've had a broad overview of social research, let's 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.

MAIN POINTS

- 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 reporting and/or measurement 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. Whereas descriptive studies answer the question "What's so?" explanatory ones tend to answer the question "Why?"

- 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 artifact, or some other phenomenon such as lifestyles or social interactions.

- The ecological fallacy involves conclusions drawn from the analysis of the attributes of groups (e.g., neighborhoods) that are then assumed to apply to individuals (e.g., specific residents of different neighborhoods).

- 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).

- Research into processes that occur over time presents social challenges that can be addressed through cross-sectional studies or longitudinal studies.

- Cross-sectional studies are based on observations made at one time. Although such studies are limited by this characteristic, researchers can sometimes 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).

- Research design starts with an initial interest, idea, or theoretical expectation and proceeds through a series of interrelated steps to 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 (e.g., experiments versus surveys), and specifies the population to be studied and, if applicable, how it will be sampled.

- The researcher operationalizes the concepts to be studied by stating precisely how 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.

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

KEY TERMS

units of analysis	longitudinal study
social artifact	trend study
ecological fallacy	cohort study
reductionism	panel study
cross-sectional study	

REVIEW QUESTIONS AND EXERCISES

1. Using InfoTrac or the library, select a research report that illustrates exploration, description, or explanation. Identify which of these three purposes the report illustrates and briefly justify your judgment in that regard.

2. Here are some examples of real research topics. For each one, 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, 126 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. Look through an academic research journal until you find examples of at least three different units of analysis. Identify each and present quotations from the journal to justify your conclusions.

4. Make up a research example—different from those discussed in the text—that illustrates a researcher falling into the trap of the ecological fallacy. Then modify the example to avoid this trap.

5. Drop in at the Russell Sage Foundation (http://www.epn.org/sage.html) and look at their publications. Select one that illustrates a cross-sectional, trend, cohort, or panel study design. Justify your choice.

ADDITIONAL READINGS

Bart, Pauline, and Linda Frankel. 1986. *The Student Sociologist's Handbook.* Morristown, NJ: General Learning Press. A handy little reference book to help you get started on a research project. Written from the standpoint of a student term paper, this volume offers a particularly good guide to the periodical literature of the social sciences available in a good library.

Casley, D. J., and D. A. Lury. 1987. *Data Collection in Developing Countries.* Oxford: Clarendon Press. This book discusses the special problems of research in the developing world.

Cooper, Harris M. 1989. *Integrating Research: A Guide for Literature Reviews.* Newbury Park, CA: Sage. The author leads you through each step in the literature review process.

Hunt, Morton. 1985. *Profiles of Social Research: The Scientific Study of Human Interactions.* New York: Basic Books. An engaging and informative series of project biographies: James Coleman's study of segregated schools is presented, as well as several other major projects that illustrate the elements of social research in practice.

Iversen, Gudmund R. 1991. *Contextual Analysis.* Newbury Park, CA: Sage. Contextual analysis examines the impact of socioenvironmental factors on individual behavior. Durkheim's study of suicide offers a good example of this, identifying social contexts that affect the likelihood of self-destruction.

Maxwell, Joseph A. 1996. *Qualitative Research Design: An Interactive Approach.* Newbury Park, CA: Sage. Maxwell covers many of the same topics that this chapter does but with attention devoted specifically to qualitative research projects.

Menard, Scott. 1991. *Longitudinal Research.* Newbury Park, CA: Sage. Beginning by explaining why researchers conduct longitudinal research, the author goes on to detail a variety of study designs as well as suggestions for the analysis of longitudinal data.

Miller, Delbert. 1991. *Handbook of Research Design and Social Measurement.* Newbury Park, CA: Sage. A useful reference for introducing or reviewing numerous issues involved in design and measurement. In addition, the book contains a wealth of practical information relating to foundations, journals, and professional associations.

ANSWERS TO REVIEW QUESTIONS AND EXERCISES, ITEM 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)

SOCIOLOGY WEB SITE

See the Wadsworth Sociology Resource Center, Virtual Society, for additional links, Internet exercises by chapter, quizzes by chapter, and Microcase-related materials:

http://www.sociology.wadsworth.com

INFOTRAC COLLEGE EDITION

SEARCH WORD SUMMARY

Go to the Wadsworth Sociology Resource Center, Virtual Society, to find a list of search words for each chapter. Using the search words, go to Info-Trac College Edition, an online library of over 900 journals where you can do online research and find readings related to your studies. To aid in your search and to gain useful tips, see the Student Guide to Info-Trac College Edition on the Virtual Society Web site:

http://www.sociology.wadsworth.com