

FOURTH CANADIAN EDITION

FUNDAMENTALS OF

SOCIAL RESEARCH

EARL BABBIE



LANCE W. ROBERTS



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4

SOCIAL RESEARCH

EARL BABBIE

Chapman University

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by Earl Babbie and Lance W. Roberts

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Dedication

Suzanne Babbie

Henry and Charlie Lask, two delightful little men

ABOUT THE AUTHORS

EARL BABBIE

Writing is my joy, sociology my passion. I delight in putting words together in a way that makes people learn or laugh or both. Sociology is one way I can do just that. It represents our last, best hope

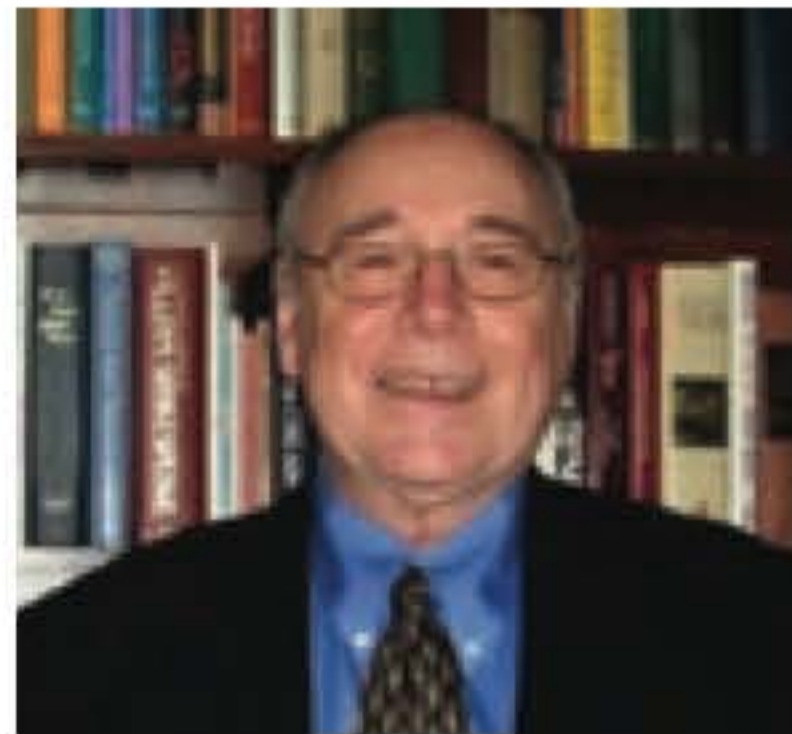
for planet-training our race and finding ways for us to live together. I feel a special excitement at being present when sociology, at last, comes into focus as an idea whose time has come.

I grew up in small-town Vermont and New Hampshire. When I announced I wanted to be an auto-body mechanic like my dad, my teacher told me I should go to college instead. When Malcolm X announced he wanted to be a lawyer, his teacher told him a coloured boy should be something more like a carpenter. The difference in our experiences says something powerful about the idea of a level playing field. The inequalities among ethnic groups run deep.

I ventured out into the outer world by way of Harvard, the USMC, U.C. Berkeley, and 12 years teaching at the University of Hawaii. Along the way, I married Sheila two months after our first date, and we created Aaron three years after that: two of my wisest acts.

I resigned from teaching in 1980 and wrote full-time for seven years, until the call of the classroom became too loud to ignore. For me, teaching is like playing jazz. Even if you perform the same number over and over, it never comes out the same twice, and you don't know exactly what it'll sound like until you hear it. Teaching is like writing with your voice.

At last, I have matured enough to rediscover and appreciate my roots in Vermont each summer. Rather than a return to the past, it feels more like the next turn in a widening spiral. I can't wait to see what's around the next bend.



Suzanne Babbie

LANCE W. ROBERTS

I grew up in a restricted, working-class world, where discipline and conformity were touted as the keys to success. Surrounding social realities were to be respected, even revered.

Some excellent teachers in public schools produced cracks in this rigid world view, allowing breathing room for individuality. My liberal arts undergraduate education widened the degrees of freedom and my graduate studies in sociology helped clarify my path toward optimizing autonomy within existing realities.

In short, like many before and after me, education provided an escape route from one form of social reality to another. I am truly grateful to the teachers, authors, and public education system that made this possible.

Two keys to growth through education come in the form of good teaching and good books. I have spent my academic career trying to contribute on both accounts.



Courtesy of Lance Roberts

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PREFACE

Our lives are shaped by the social forces that surround us. These forces are largely invisible. Sociological investigation makes these social forces more apparent, demonstrating how they affect our life chances and how our actions give these forces their power. By increasing awareness of the place and importance of social forces, studying the social sciences can be a liberating experience.

Everyone has ideas about how the social world operates and how to best adapt to its constraints. Our ideas are expressed in terms of concepts and theories. Concepts and theories provide a mental map of our understanding of the social maze surrounding us. The accuracy of our mental maps makes an important difference. An accurate map of the maze you inhabit is enormously helpful (knowledge is power!); an inaccurate map seriously compromises your navigation.

Enter the importance of research methods and analysis. This text introduces you to techniques for testing the accuracy of different maps of social reality. In this way, your course in research methods contains valuable tools for helping you understand, appreciate, and manage the social world that surrounds you.

When I was a student I used Earl Babbie's first book on methods, *Survey Research Methods*. As a professor I used various editions of his subsequent social research texts. It is now my pleasure to create the Fourth Canadian Edition of this text.

Fundamentals of Social Research, like all good works, has been improved over various editions through successive approximations. Lucia Benaquisto capably produced the first three Canadian editions on which this edition is built.

Professors' and students' experiences with the structure and content of the text have provided many useful suggestions for improvement. As have the many reviewers who have combed

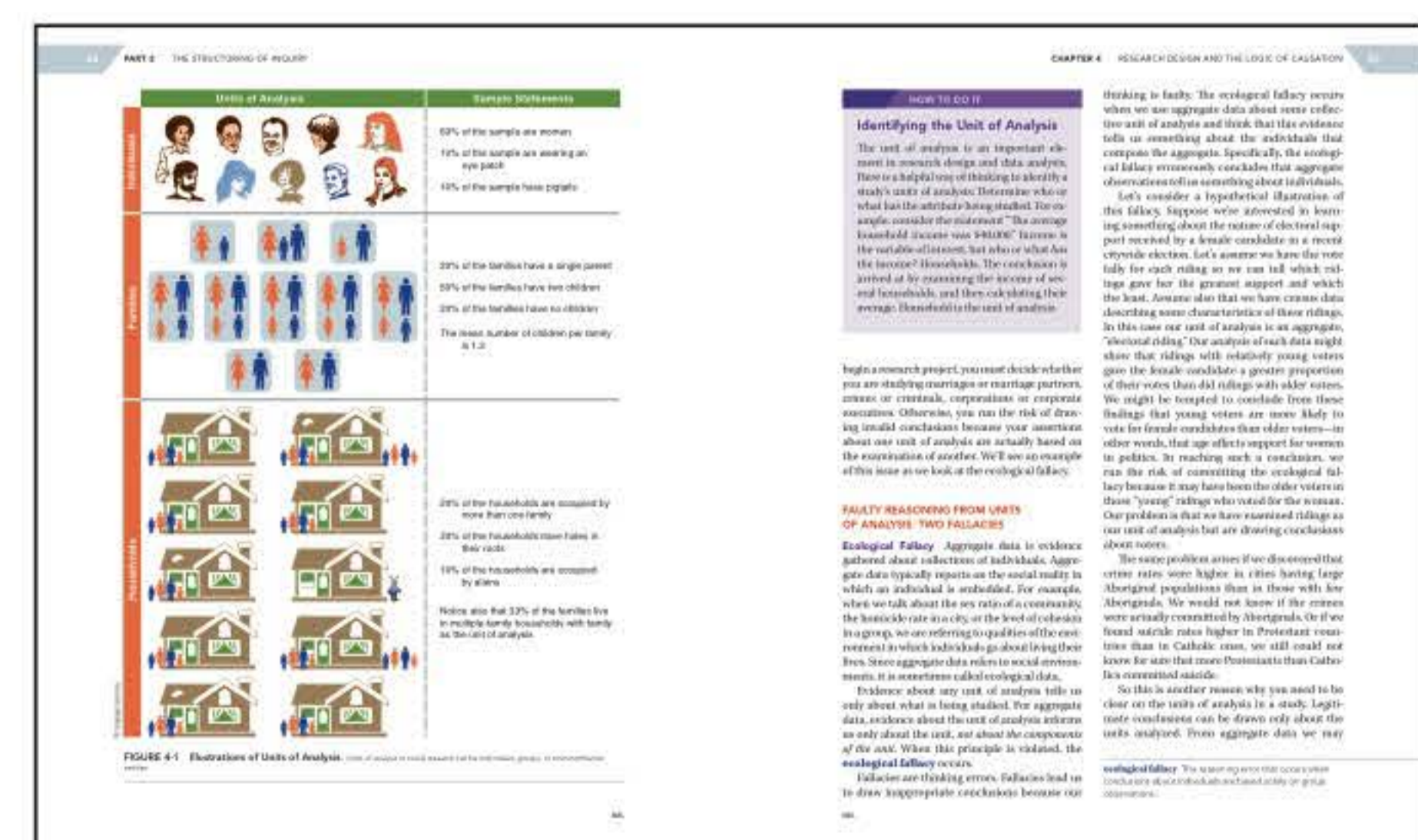
through the pages. In addition to these sources, I have drawn on my own experience teaching research methods and social statistics to students over several decades.

I hope students will find the ideas and techniques covered in this book challenging. Serious learning involves change and change is always challenging. With sustained effort, however, everyone can fully master the book's contents. And from that mastery will come different kinds of rewards—the most valuable of which is the genuine self-esteem derived from mastery of something worthwhile and difficult.

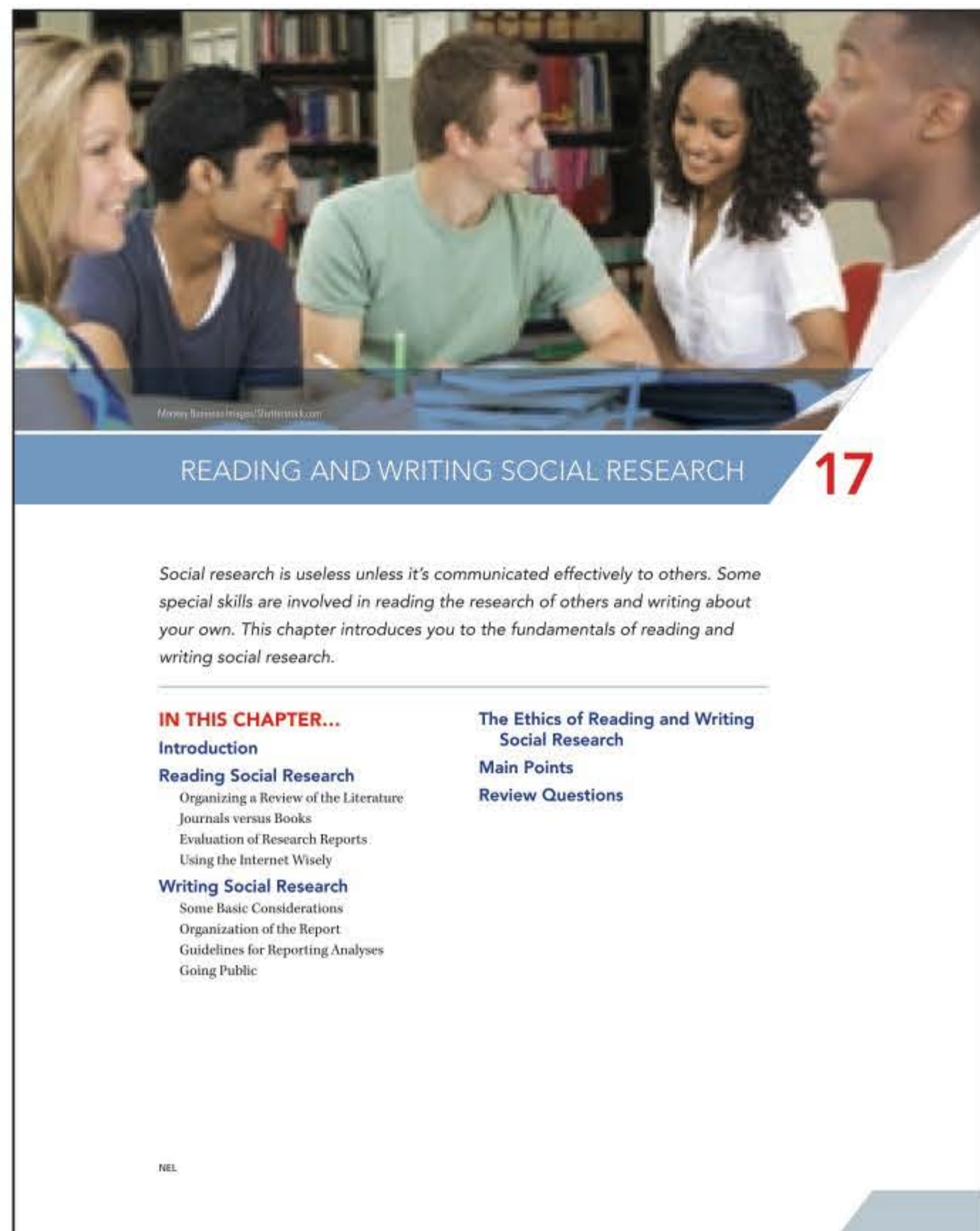
CHANGES IN THE FOURTH CANADIAN EDITION

The new edition of *Fundamentals of Social Research* has been revised in close consultation with instructors teaching research methods across Canada. The goal was to create a new edition that would generate enthusiasm among students with interesting and relevant examples, and facilitate the practical application of research methods with engaging boxes and activities. To meet this goal, the new edition boasts the following enhancements:

- A larger trim size with a fresh, vibrant, and student-friendly four-colour interior design.



- A NEW chapter called *Reading and Writing Social Research* (Chapter 17) that focuses on the special skills involved in reading the research of others and writing about your own.



- NEW **How to Do It** boxes offer practical guidance in the application of concepts such as framing a hypothesis, identifying the unit of analysis, conducting an online survey, and reading and evaluating documents.

CHAPTER 6 THE LOGIC OF SAMPLING 173

HOW TO DO IT

Sample Weighting

The Problem: In order to get sufficient cases of minority groups, researchers need to oversample. For example, Aboriginal people constitute about 4 percent of the population. Therefore, in a random sample of 2,000 Canadian adults, we would expect to select 80 Aboriginal cases. Let's say we need 160 cases and include that many in the sample. Now our sample overrepresents Aboriginal people.

The Solution: To make our sample representative, it needs to be weighted. Aboriginals comprise 8 percent of the sample, when they should be 4 percent; non-Aboriginals comprise 92 percent, when they should be 96 percent. To achieve representativeness, an appropriate weight (multiplying factor) needs to be applied to each group.

The Steps:

1. Determine the weight for each group by dividing desired (population) proportion by actual (sample) proportion.
 - Aboriginal weight: $0.04/0.08 = 0.50$
 - Non-Aboriginal weight: $0.96/0.92 = 1.04348$
2. Apply the weights by multiplying each group sample size by its weight.
 - Aboriginal weighted sample: $0.50000 \times 160 = 80$
 - Non-Aboriginal weighted sample: $1.04348 \times 1,840 = 1,920$

The weighted sample now reflects the correct proportions of Aboriginal and non-Aboriginal Canadians in the population.

- NEW **Applying Concepts in Everyday Life** boxes help students see how the ideas they're reading about actually apply to real research projects—as well as their own lives.

APPLYING CONCEPTS IN EVERYDAY LIFE

Ethics of Aboriginal Research

Three core principles govern the Tri-Council Policy (TCPS) on research ethics. These principles include respect for persons, concern for welfare, and justice. Beyond these basic principles, the TCPS has special requirements for research involving Aboriginal (Indian, Métis, Inuit) peoples. For instance, beyond individual consent, when proposed research may affect the welfare of the community to which participants belong, community consultation is required. Such community engagement must recognize and respect Aboriginal organizations and their leaders (York University 2012). The reason for these special considerations is rooted in the history of unethical treatment for the advancement of science. Here is an example (see also Brym et al. 2016:48).

In the 1940s relatively little was known about all kinds of nutritional issues. Vitamins and minerals had been discovered only a decade ago, and little was known about their effects.

In 1942 federal government researchers visiting remote reserve communities in northern Manitoba found the Aboriginal populations in bad shape. They were malnourished and demoralized. One researcher characterized these Aboriginal populations as marked by "shiftlessness, indolence, improvidence and inertia" (Mosby 2013:147).

Although the obvious response to malnourished populations under government care is to provide increased support, government researchers saw this situation as an opportunity for a field experiment. The researchers had encountered a ready-made laboratory. By defining Aboriginal malnourishment and demoralization as dependent variables and vitamin supplements as independent variables, the design was set to learn how different nutrient supplements affected health. The first experiments were conducted in 1942 on a population of 300 Norway House Cree in northern Manitoba. The experimental group of 125 received vitamin supplements. These supplements were withheld from the control group.

Recognizing that Aboriginal children in government-controlled residential schools provided ideal experimental subjects, the research program spread. By 1947 experiments involving 1,300 Aboriginal students in six residential schools were in place in British Columbia, Alberta, Manitoba, Ontario, and Nova Scotia. In some experiments, milk rations were reduced to half the recommended levels for two years to observe the effects. In other research different kinds of vitamin and mineral supplement combinations were provided to one group and not another. Since an important indicator of the dependent variable (health) was measured by observing the health of students' gums, dental services were withdrawn from participating students since fixing the children's teeth and gums would contaminate the results.

When these experiments were conducted in the 1940s, codified ethics for the treatment of human subjects in scientific research were just beginning.

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Even today the lead researcher's son defends his father's actions by rationalizing "He was just trying to do good work" (Livingstone 2013). As a Canadian, this research legacy is part of our heritage. How does it stack up against the current standards of respect for persons, concern for welfare, and justice? Do you think that the effects of this research were confined to the individual participants, or did it have broader impacts on the Aboriginal community? If so, are the additional ethical standards for Aboriginal research justified?

- NEW **Continuity Projects** found at the end of each chapter move students from thinking about selected topics in each chapter to applying them. These exercises put methods, concepts, principles, and techniques to work.

CHAPTER 2 PARADIGMS, THEORY, AND RESEARCH 53

CONTINUITY PROJECT

THINKING ABOUT INEQUALITY

Theories are narratives, composed of ideas systematically linked together. Three concepts are prevalent in the research literature:

- Inequality
- Social cohesion
- Violence

Review Figure 2-2 and create a model relating these three concepts. Write out the three propositions that connect the concepts in the model.

Imagine you are conducting a macro-level study of the effects of inequality on violence. Now take the theoretical narrative you just created and, using Figure 2-4 as a guide, translate it into a set of testable hypotheses.

Repeat the process, this time imagining you are conducting a micro-level study of the effects of inequality on violence.

As with the Third Canadian edition, this book also contains the features you have come to know and appreciate:

- **Key Terms** bolded in the text, defined in the margin, and compiled in a **glossary** at the end of the book.
- A summary of the **Main Points** found in each chapter.
- **Review Questions and Exercises**

All chapters in the book have been thoroughly updated. To enhance students' understanding, many new terms are defined and discussed. Early on, a model of social reality construction is introduced and, throughout the text, various quantitative and qualitative approaches are presented in reference to this model. The goal is to allow students to see that all methods are versions of the same exercise—building a better understanding of empirical experience.

Throughout the book material has been updated. Some material has been deleted and new sections have been added. More recent examples have been included and the number of examples increased. Wherever applicable, current Canadian data from the census and other data sources have been used. Likewise, many new examples of Canadian research are illustrated. Here are some further, specific changes to this edition presented by chapter:

CHAPTER 1

- A NEW section introducing the distinction and relationships between concrete and abstract experience.
- A NEW section clarifying and illustrating the social construction of reality, including how research methods techniques contribute to constructed realities.
- A NEW section clarifying the nature of variables and their place in description and explanation.

CHAPTER 2

- Focused discussion of substantive sociological theories.
- A NEW section on the connections between reasonableness, rationality, and objectivity.

- A NEW section on theory construction through interrelating propositions.
- Revised and expanded discussion of the traditional model of science.
- Illustration of the inductive approach to theory construction through reference to Websdale's study of familicide.

CHAPTER 3

- Updated material on the Tri-Council Policy Statement.
- A NEW figure emphasizing the importance of ethical concerns related to research on Aboriginal groups.

CHAPTER 4

- Thoroughly revised and updated section on units of analysis.
- Thoroughly revised section on the logic of causation in nomothetic explanations.
- Clarification of the discussion of the meaning of non-spuriousness and how it is identified.
- A revised section on the logic of causation in idiographic explanations.

CHAPTER 5

- A NEW section on concept formation, connecting it to the reality construction introduced in Chapter 1.
- Thorough revision of the discussion connecting conceptualization, definitions, and meaning.
- A NEW section on the use of concepts in explanation as well as description.
- A NEW discussion of the use of indicators in both qualitative and quantitative research.

CHAPTER 6

- Updated Canadian polling and market research findings.

CHAPTER 7

- Updated description and illustration of various types of experimental designs.
- A NEW section illustrating the place and importance of Web-based experiments.

CHAPTER 8

- Emphasis on the importance of articulated purpose in writing and including survey items.
- Updated material regarding online surveys and digital technologies for data collection.

CHAPTER 9

- Updated discussion of secondary analysis and content analysis.
- Inclusion of new Canadian research illustrations.
- Introduction and illustration of the approach of visual sociology.

CHAPTER 10

- A NEW chapter introduction with an example illustrating the place and importance of inductive, situated understanding.
- Illustration of the scope of case study-based field research through four contemporary examples.
- Extended examples of two Canadian fieldwork projects, one on parkour in the city and the other on being a rural police officer.

CHAPTER 11

- Addition and/or clarification of the definition of several terms, including unstructured and semi-structured interviews, rapport, interview guide, transcription.

CHAPTER 12

- NEW Canadian examples of evaluation research.
- NEW illustrations using experimental design in evaluation.
- NEW Canadian examples of focus group studies and social indicators research.

CHAPTER 13

- Extended NEW illustrations of the coding process.
- Extended the illustration of using qualitative software.

CHAPTER 14

- Extended the illustration of developing coding categories.

- NEW Canadian examples using analysis of the Aboriginal Peoples Survey and the General Social Survey.
- Updated the discussion of collapsing response categories and handling “don’t know” responses using the World Values Survey.

CHAPTER 15


- Thoroughly revised the discussion on the elaboration model logic and technique.

CHAPTER 16

- Revised the discussion of probability theory, sampling distributions, and sampling error as an introduction to inferential statistics.

Introductions to all four parts of the book have been revised to correspond to these changes. Finally, in our continued effort to keep the material in this text clear and accessible to students, explanations and discussions have been modified in places to enhance clarification.

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are saved. Codes normally reflect the chapter number (e.g., C01 for Chapter 1), the figure or photo number (e.g., F15 for Figure 15), and the page in the textbook. C01-F15-pg26 corresponds to Figure 1-15 on page 26.

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FINAL WORD

All worthwhile endeavours deserve to be improved. Successive approximation models how this occurs. I encourage all users of this book to send me your feedback, especially constructive suggestions for improvement. I am at Lance.Roberts@umanitoba.ca and look forward to hearing from you.

Lance W. Roberts

AN INTRODUCTION TO INQUIRY

Science is a familiar word used by everyone. Yet people's understandings of science differ greatly. For some, science is mathematics; for others, it's white coats and laboratories. It's often confused with technology or equated with tough high school or university courses.

Science is, of course, none of these things *per se*. It's difficult, however, to specify exactly what science is. Scientists themselves disagree on the proper definition. For the purposes of this book, we'll look at science as a method of inquiry—a way of learning and knowing things about the world around us. Contrasted with other ways of learning and knowing about the world, science has some special characteristics. It is a conscious, deliberate, and rigorous undertaking. We'll examine these and other traits in this opening set of chapters. Before you've read very far, it will become clear to you that you already know a great deal about the practice of scientific social research. In fact, you've been using basic features of scientific research all your life. From that perspective, the purpose of this book is to help you sharpen skills you already have and perhaps to show you some tricks that may not have occurred to you.

Part 1 of this book lays the groundwork for the rest of the book by examining the fundamental

characteristics and issues that make science different from other ways of knowing things. In Chapter 1, we'll begin with a look at native human inquiry, the sort of thing you've been doing all your life. In the course of that examination, we'll see some of the ways people go astray in trying to understand the world around them, and we'll summarize the primary characteristics of scientific inquiry that guard against those errors.

Chapter 2 deals with social theories and the links between theory and research. We'll look at some of the theoretical paradigms that shape the nature of inquiry and largely determine what scientists look for and how they interpret what they see.

Chapter 3 introduces some of the ethical considerations that social researchers deal with, and guidelines they should follow, when designing and implementing social research. Although much of this book concerns the scientific aspects of social research, the ethical dimension of social research is an important and integral part of the process of conducting research studies.

The overall purpose of Part 1 is to construct a backdrop against which to view the specifics of research design and execution. After completing Part 1, you'll be ready to look at some of the more concrete aspects of social research.

-
- ▶ **CHAPTER 1** Human Inquiry and Science
 - ▶ **CHAPTER 2** Paradigms, Theory, and Research
 - ▶ **CHAPTER 3** Ethical Issues for Social Researchers



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1

HUMAN INQUIRY AND SCIENCE

All of us try to understand and predict the social world. Science—and social research in particular—are designed to avoid the common pitfalls of ordinary human inquiry.

IN THIS CHAPTER ...

Introduction

Looking for Reality

- Ordinary Human Inquiry
- Tradition
- Authority
- Errors in Inquiry and Some Solutions
- What's Really Real?

The Foundations of Social Science

- Theory, Not Philosophy or Belief
- Social Regularities
- Aggregates, Not Individuals
- A Variable Language
- Explaining Differences
- Variables, Relationships, and Explanations
- Individuals, Systems, and Purposes

Some Dialectics of Social Research

- Idiographic and Nomothetic Explanation
- Inductive and Deductive Approaches
- Quantitative and Qualitative Data
- Pure and Applied Research

Main Points

Review Questions and Exercises

Continuity Project

INTRODUCTION

This book is about knowing things—not so much *what* we know as *how* we know it. Let’s start by examining a few things you probably know already. You know the world is round. You may also know it’s cold on the dark side of the moon, and that people speak Swahili in Uganda. You probably know that vitamin C helps prevent colds and that unprotected sex can result in AIDS.

How do you know? Unless you’ve been to the dark side of the moon lately or done experimental research on the virtues of vitamin C, you know these things because somebody told them to you, and you believed what you were told. You may have read in *National Geographic* that people speak Swahili in Uganda, and that made sense to you, so you didn’t question it. Perhaps your physics or astronomy instructor told you it was cold on the dark side of the moon, or maybe you read it in a magazine.

Some of the things you know seem absolutely obvious to you. If you were asked how you know the world is round, you’d probably say, “Everybody knows that.” There are a lot of things everybody knows. Of course, at one time, everyone “knew” the world was flat.

Most of what you know is a matter of agreement and belief. Little of it is based on personal experience and discovery. A big part of growing up in any society, in fact, is the process of learning to accept what everybody around you “knows” is so. If you don’t know those same things, you can’t really be a part of the group. If you were to question seriously whether the world is really round, you’d quickly find yourself set apart from other people. You might be sent to live in a hospital with other people who question things like that.

Although it’s important to realize that most of what we know is a matter of believing what we’ve been told, there’s nothing wrong with us in that respect. It’s simply the way human societies are structured. The basis of knowledge is agreement. Because we can’t learn all we need to know through personal experience and discovery alone, things are set up so we can simply believe what others tell us. We know some things through tradition, some things from “experts.”

There are other ways of knowing things, however. In contrast to knowing things through agreement, we can know them through direct experience—through observation. If you dive into a glacial stream flowing through the Canadian Rockies, you don’t need anyone to tell you it’s cold. You notice it all by yourself. The first time you stepped on a thorn, you knew it hurt before anyone told you.

When our experience conflicts with what everyone else knows, though, there’s a good chance we’ll surrender our experience in favour of the agreement.

For example, imagine you’ve come to a party at one of our homes. It’s a high-class affair, and the drinks and food are excellent. In particular, you’re taken by one of the appetizers brought around on a tray: a breaded, deep-fried tidbit that’s especially zesty. You have a couple—they’re so delicious! You have more. Soon you find yourself subtly moving around the room so that you’ll be wherever the person next arrives with a tray of these nibblies.

Finally, you can’t contain yourself any more. “What are they?” you ask. “How can I get the recipe?” And you are let in on the secret: “You’ve been eating breaded, deep-fried worms!” Your response is dramatic: your stomach rebels, and you promptly throw up all over the living room rug. Awful! What a terrible thing to serve guests!

The point of the story is that both of your feelings about the appetizer would be quite real. Your initial liking for them, based on your own experience, was certainly real. But so was the feeling of disgust you had when you found out that you’d been eating worms. It should be evident, however, that this feeling of disgust was strictly a product of the agreement you have with those around you that worms aren’t fit to eat. That’s an agreement you entered into the first time your parents found you sitting in a pile of dirt with half of a wriggling worm dangling from your lips. You learned that worms are not acceptable food in our society when they pried your mouth open and reached down your throat for the other half of the worm.

Aside from these agreements, what’s wrong with worms? They’re probably high in protein and low in calories. Bite-sized and easily

packaged, they're a distributor's dream. They are also a delicacy for some people who live in societies that lack our agreement that worms are disgusting. Some people might love the worms but be turned off by the deep-fried breading.

Here's a question you might consider: "Are worms *really* good or *really* bad to eat?" And here's a more interesting question: "*How could you know* which was really so?" This book is about answering the second kind of question.

The rest of this chapter looks at how we know what is real. We'll begin by examining inquiry as a natural human activity, something we all have engaged in every day of our lives. We'll look at the source of everyday knowledge and at some kinds of errors we make in normal inquiry. We'll then examine what makes science—in particular, social science—different. After considering some of the underlying ideas of social research, we'll conclude with an initial consideration of issues in social research.

LOOKING FOR REALITY

Reality is a tricky business. You probably already suspect that some of the things you "know" may not be true, but how can you really know what's real? People have grappled with this question for thousands of years.

One answer that has arisen out of that grappling is **science**, which offers an approach to both **agreement reality** and **experiential reality**.

Scientists have certain criteria that must be met before they'll accept the reality of something

they haven't personally experienced. In general, a scientific assertion must have both **logical** and **empirical** support: it must make sense, and it must be supported by actual observation. Why do earthbound scientists accept the assertion that it's cold on the dark side of the moon? First, it makes sense, because the moon's surface heat comes from the sun's rays, and the dark side of the moon is dark because it's turned away from the sun. Second, the scientific measurements made on the moon's dark side confirm this logical expectation. So, scientists accept the reality of things they don't personally experience—they accept an agreement reality—but they have special standards for doing so.

More to the point of this book, however, science offers a special approach to the discovery of reality through personal experience. In other words, it offers a special approach to the business of inquiry. That special approach is called **methodology**. Methodology is the set of practices and techniques used to collect, process, and interpret information aimed at enhancing our understanding of reality. Methodology illuminates procedures for scientific investigation. This book is an examination and presentation of social science methodology, or how social scientists find out about human social life.

Why do we need social science to discover the reality of social life? To find out, let's first consider what happens in ordinary, nonscientific inquiry.

ORDINARY HUMAN INQUIRY

Practically all people, and many other animals as well, exhibit a desire to predict their future circumstances. Humans seem predisposed to undertake this task using *causal* and *probabilistic* reasoning. **Causal reasoning** recognizes that future circumstances are somehow rooted in or conditioned by present ones. We learn that getting an education will affect how much money we earn later in life and that swimming beyond the reef may bring an unhappy encounter with a shark. As students, we learn that studying hard will result in better examination grades.

science A body of knowledge about reality as well as a set of systematic methods for generating this knowledge.

agreement reality What we "know" as part and parcel of the culture we share with those around us.

experiential reality What we "know" from personal experience and discovery.

logical The criterion for assessing the validity of arguments.

empirical The criterion requiring sensory experience as evidence.

methodology A set of practices and techniques used to collect, process, and interpret information aimed at enhancing our understanding of reality.

causal reasoning The recognition that future circumstances are rooted in or conditioned by present ones.

We also learn that such patterns of cause and effect are *probabilistic* in nature. **Probabilistic reasoning** argues that effects occur more often when the causes occur than when the causes are absent—but not always. Thus, students learn that studying hard produces good grades in most instances, but not every time. We recognize the danger of swimming beyond the reef without believing that every such swim will be fatal. As we'll see throughout the book, science makes these concepts of causality and probability more explicit and provides techniques for dealing with them more rigorously than does casual human inquiry. It sharpens the skills we already have by making us more conscious, rigorous, and explicit in our inquiries.

In looking at ordinary human inquiry we need to distinguish between making predictions through the identification of causes, and predictions without understanding causes. This reliance on causal identification distinguishes clinical from actuarial prediction. **Clinical prediction** is the type used by “experts,” who rely on their detailed understanding of causes and effects to make predictions. Think of a physician who examines a patient and declares she has six months to live, or a psychiatrist telling the court that if a patient is released from jail they will not reoffend. The expertise of these forecasters is rooted in their intimate understanding of how causes and effects are related.

Predictions can be made, however, without understanding the causal mechanisms at work. This type of forecasting uses actuarial prediction. **Actuarial prediction** relies on looking for patterns in the past and projecting them into the future. Actuarial prediction is what makes life insurance companies so successful. When they are setting premiums and selling insurance to a healthy 30-year-old, they have no idea what will cause his death. But they do know that a particular constellation of sex (male), hobbies (skydiving), and consumption of comforting chemicals (tobacco) make early death more likely. Similarly, when your grandmother predicts rain based on her aching knees, or when a criminologist predicts an offender's future criminal conduct based on a record of prior violence, they are using actuarial prediction.

As we suggested earlier in the chapter, our attempts to learn about the world are only partly linked to direct personal inquiry or experience. Another, much larger, part comes from the agreed-upon knowledge that others give us, those things “everyone knows.” This agreement reality both assists and hinders our attempts to find out for ourselves. To see how, consider two important sources of our secondhand knowledge—tradition and authority.

TRADITION

Each of us inherits a culture made up, in part, of firmly accepted knowledge about the workings of the world. We may learn from others that eating too much candy will decay our teeth, that the circumference of a circle is approximately 22 sevenths of its diameter, that masturbation will blind us, or even that great fortunes are primarily the result of hard work. We may test a few of these “truths” on our own, but we simply accept the great majority of them. These are things that “everybody knows.”

Tradition, in this sense of the term, offers some clear advantages to human inquiry. By accepting what everybody knows, we are spared the overwhelming task of starting from scratch in our search for regularities and understanding. Knowledge is cumulative, and an inherited body of information and understanding is the jumping-off point for the development of more knowledge. We often speak of “standing on the shoulders of giants”—that is, of previous generations.

At the same time, tradition may hinder human inquiry. If we seek a fresh understanding of something everybody already understands and has always understood, we may be marked as fools for our efforts. More to the point, however, it rarely occurs to most of us to seek a different understanding of something we all “know” to be true.

probabilistic reasoning The recognition that effects occur more often, but not always, when specific causes are present.

clinical prediction Expert prediction relying on an understanding of the linkages between causes and effects.

actuarial prediction Forecasting future events based on observed historical patterns.

AUTHORITY

Despite the power of tradition, new knowledge appears every day. Quite aside from our own personal inquiries, we benefit throughout our lives from new discoveries and understandings produced by others. Often, acceptance of these new acquisitions will depend on the status of the discoverer. You're more likely to believe the medical researcher who declares that the common cold can be transmitted through kissing, for example, than to believe your uncle Pete.

Like tradition, authority can both assist and hinder human inquiry. We do well to trust in the judgment of the person who has special training, expertise, and credentials in a given matter, especially in the face of controversy. At the same time, inquiry can be greatly hindered by the legitimate authorities that err within their own province. Biologists, after all, make mistakes in the field of biology. Moreover, biological knowledge changes over time.

Inquiry is also hindered when we depend on the authority of experts speaking outside their realm of expertise. For example, consider the political or religious leader with no medical or biochemical expertise who declares that marijuana can fry your brain. The advertising industry plays heavily on this misuse of authority by, for example, having popular athletes discuss the nutritional value of breakfast cereals or having movie actors evaluate the performance of automobiles.

Both tradition and authority, then, are double-edged swords in the search for knowledge about the world. Simply put, they provide us with a starting point for our own inquiry, but they can lead us to start at the wrong point and push us off in the wrong direction.

ERRORS IN INQUIRY AND SOME SOLUTIONS

Quite aside from the potential dangers of tradition and authority, we often stumble and fall when we set out to learn for ourselves. Let's look at some of the common errors we make in our casual inquiries and look at the ways science guards against those errors.

Inaccurate Observations Frequently, we make mistakes in our observations. For example, what was your methodology instructor wearing on the first day of class? If you have to guess, it's because most of our daily observations are casual and semiconscious. That's why we often disagree about what really happened.

In contrast to casual human inquiry, scientific observation is a conscious activity. Simply making observation more deliberate helps reduce error. In trying to recall what your instructor was wearing on the first day of class, you'd probably make a mistake. However, if you had gone to the first class with a conscious plan to observe and record what your instructor was wearing, you'd be far more likely to be accurate.

In many cases, both simple and complex measurement devices help guard against inaccurate observations. Moreover, they add a degree of precision well beyond the capacity of the unassisted human senses. Suppose, for example, that you had taken colour photographs of your instructor that day.

Overgeneralization When we look for patterns among the specific things we observe around us, we often assume that a few similar events are evidence of a general pattern. That is, we overgeneralize on the basis of limited observations. Probably the tendency to overgeneralize is greatest when the pressure to arrive at a general understanding is high. Yet it also occurs without such pressure. Whenever overgeneralization does occur, it can misdirect or impede inquiry.

Imagine you are a reporter covering an animal-rights demonstration. You have orders to turn in your story in just two hours, and you need to know why people are demonstrating. Rushing to the scene, you start interviewing them, asking for their reasons. If the first three demonstrators you interview give you essentially the same reason, you may simply assume that the other 3,000 are also there for that reason. Unfortunately, when your story appears, your editor gets scores of letters from protesters who were there for an entirely different reason.

Scientists guard against overgeneralization by committing themselves in advance to a sufficiently large and representative sample of

observations. The **replication** of inquiry provides another safeguard. Basically, replication means repeating a study and checking to see whether the same results are produced each time. Then, as a further test, the study may be repeated again under slightly varied conditions.

Selective Observation One danger of overgeneralization is that it may lead to selective observation. Once we have concluded that a particular pattern exists and have developed a general understanding of why it exists, we tend to focus on future events and situations that fit the pattern and ignore those that don't. Racial and ethnic prejudices depend heavily on selective observation for their persistence.

Listen to any bigot calling in to a radio talk show and you will hear selective observation at work. The pattern of argument is predictable. The caller complains about the conduct of the group that is the target of their hostility. They recite well-worn stereotypes of the racial, ethnic, religious, or other category under consideration. When asked for evidence of their views, they emphatically recite an illustrative example as though that is the end of the story.

Selective observation is a part of **confirmation bias**, the tendency to seek out, recall, or interpret information that supports one's existing views. To guard against selective observation, research designs will often specify in advance the number and kind of observations to be made, as a basis for reaching a conclusion. If we wanted to learn whether women were more likely than men to support freedom to choose an abortion, we'd commit ourselves to making a specified number of observations on that question in a research project. We might select 1,000 carefully chosen people to be interviewed on the issue. Alternately, when making direct observations of an event, such as attending the animal-rights demonstration, social scientists make a special effort to find "deviant cases"—precisely those who do not fit into the general pattern.

Illogical Reasoning There are other ways in which we often deal with observations that contradict our understanding of the way things are in daily life. One example is the often heard idea

that "the exception proves the rule." This idea makes no sense at all. An exception can draw attention to a rule or to a supposed rule, but in no system of logic can it prove the rule it contradicts. Yet we often use this pithy saying to brush away contradictions with a simple stroke of illogic.

What statisticians call the **gambler's fallacy** is an illustration of illogic in day-to-day reasoning. Often we assume that a consistent run of either good or bad luck foreshadows its opposite. An evening of bad luck at poker may kindle the belief that a winning hand is just around the corner. Many a poker player has stayed in a game much too long because of that mistaken belief. Conversely, an extended period of good weather may lead you to worry that it is certain to rain on the weekend picnic.

Although all of us sometimes fall into embarrassingly illogical reasoning, scientists try to avoid this pitfall by using systems of logic consciously and explicitly. Chapter 2 will examine the logic of science in more depth. For now, just note that logical reasoning is a conscious activity for scientists and that other scientists are always around to keep them honest.

Science, then, attempts to protect its inquiries from the common pitfalls in ordinary inquiry. Accurately observing and understanding reality is not an obvious or trivial matter, as we'll see throughout this book.

WHAT'S REALLY REAL?

Philosophers sometimes use the term "naïve realism" to describe the way most of us operate in our daily lives. When you sit at a table to write, you probably don't spend a lot of time thinking about whether the table is really made up of atoms, which in turn are mostly empty space. When you step into the street and see a city bus

replication Repetition of a research study in order to either confirm the findings of a previous study or bring them into question.

confirmation bias The tendency to seek out, recall, or interpret information that supports one's existing views.

gambler's fallacy The mistaken belief that random events will "balance out" over time.

hurtling toward you, it's not the best time to reflect on methods for testing whether the bus really exists. We all live with a view that what's real is pretty obvious—and that view usually gets us through the day.

We don't want this book to interfere with your ability to deal with everyday life. We hope, however, that the preceding discussions have demonstrated that the nature of “reality” is perhaps more complex than we tend to assume in our everyday functioning. Since the subject of this book (research methods) centres on obtaining a better understanding of social reality, we need to enlarge our view beyond naïve realism. The following description of terms and their relationships aims to expand your understanding. The model is based on the idea that there are different levels of experience and that reality is socially constructed (Brym et al. 2016; Roberts et al. 2015).

Two Levels of Experience The slogan on a student's t-shirt declared: *La vie est simple*. It is doubtful whether many university students juggling academic studies, employment, family, and romantic, recreational, and other obligations would agree. Your life experience is more likely complex and confusing, and occurring at many levels.

For current purposes it is useful to distinguish three levels of experience, the first of which is concrete. **Concrete experience** is empirical; it is composed of sensations. Concrete experience includes touching, tasting, smelling, hearing, and seeing. The components of concrete experience are called **percepts**, which come together to form **patterns**. For example, a single dot on this page is a visual percept, while a collection of dots forms a pattern (letter, word, paragraph, etc.).

concrete experience The empirical experience of sensation including touch, taste, sight, smell, and hearing.

percepts Components of concrete experience.

patterns Aggregations of percepts.

abstract experience Imaginary experience occurring in the mind.

concepts Abstract terms for organizing sensory experience.

propositions Statements (ideas) expressing the relationship between concepts.

Two features of concrete experience are worth noting. First, we share this form of experience with other living creatures. Like you, a goldfish and a gorilla experience the world concretely. Second, by itself, concrete experience is meaningless. Think of a newborn infant, thrust into a world of light, sounds, and smells of which she has no understanding.

Fortunately, your experience is not restricted to concrete meaningfulness. You also have abstract experiences. **Abstract experience** occurs in your mind; it is imaginary. Abstract experience is composed of **concepts** that, when related, form **propositions**. Concepts are abstract terms for organizing sensory experience. Take three pens and examine them carefully. You will notice that they are concretely different objects. They are different sizes, colours, shapes, and the like. But in your mind, these very different concrete objects are organized in *the same* abstract category. You label each of them by the same term, “pen.”

When you express a relationship between different concepts you are stating a proposition. In everyday language, propositions are called ideas. The proposition “the pen is on the table” states an understanding of how two concepts (pen and table) are related (one is “on” the other).

Abstract experience is important because through it you give meaning to your life. One wonder of childhood is the acquisition of language. Through it, children learn the shared concepts of their cultural community and, in doing so, add meaning to their lives. This imaginative understanding expands dramatically when they begin to link concepts together in the form of ideas. What parent does not melt when their little one says “Mommy, I love you.”

Social Construction of Reality It is possible to have experiences that are mostly concrete (e.g., noise) or largely abstract (i.e., fantasies). However, most of the time people report living in the “real” world, which is a third level of experience. Sociologists have a long tradition of referring to the social construction of reality (Berger and Luckmann 1966; Elder-Vass 2013), and here is one way of understanding what they are talking about: *Reality appears through a merger of concrete and abstract experience*. Figure 1-1 illustrates the merger.