

KENNETH R. HOOVER



The Elements of Social Scientific Thinking

FOURTH EDITION

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THE ELEMENTS OF SOCIAL SCIENTIFIC THINKING

Fourth Edition

KENNETH R. HOOVER

The University of Wisconsin–Parkside

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PREFACE

This little book is not very complicated. It is, rather, an initiation to social science intended for those who use the results of social science research and for those taking their first steps as researchers. Where do concepts come from? What is a variable? Why bother with scientific thinking? How is a hypothesis different from other statements about reality? How is it similar? These and other fundamental questions are dealt with here.

My intent has been to help readers see through some false images of social science, and to say enough to make the first steps in research possible, while leaving to more detailed and specialized sources the elaboration of the technicalities of research operations. Throughout, the emphasis is on reality testing as a process by which we can know what to make of the world. This presentation of science is not a narrow one—I encourage the reader to be scientific in daily thought as well as in the specific application of social scientific methods.

Most books are meant to be read straight through. For many readers, that will be the best approach for this book. However, the reader should be aware that each chapter surveys social scientific thinking at a different level. For that reason, there can be various points of access to the book depending on the reader's needs. The first chapter, "Thinking Scientifically," sets social science in the general context of the ways people try to answer questions about the world around them. Chapter Two, "The Elements of Science," develops the basic outline of the scientific method by discussing concepts, variables, measurements, hypotheses, and theory.

For those faced with the immediate task of doing or under-

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standing research, Chapter Three, entitled “Strategies,” may be a good place to begin since it deals directly with the nuts and bolts of scientific inquiry. Chapter Four, “Refinements,” presumes a basic understanding of the scientific method explained in Chapter Two and provides additional research tools. Chapter Five is devoted to the art and science of measurement. Chapter Six, “Reflections: Back to the Roots,” should be read, I think, by those who use the book for whatever purpose. The point of this concluding chapter is to place scientific understanding in perspective and to suggest generally where humility is advisable and achievement possible.

For convenience of access and review, each chapter begins with an outline of the topics covered and ends with a list of the major concepts introduced, in their order of appearance.

In Appendix A, an article entitled “Work Life and Political Attitudes” by Professor Lewis Lipsitz of the University of North Carolina is reprinted. The article is cited frequently in the text; those who need a good model for the design and discussion of a research project will want to consider it carefully. In Appendix B, an excerpt is reprinted from the article “Pathways to Participation” by Paul Allen Beck and M. Kent Jennings. This excerpt pertains only to the section on regression and path analysis in Chapter Five.

One of the pleasures of revision is communicating with those who have used the book as a text. The responses to requests for suggestions have been heartening and helpful. In those instances where advice leads in contradictory directions, my instinct in this edition, as in previous ones, has been to leave the text alone.

Most of the changes in this edition amount to clarifications of language and improvements of examples. However, there are some additions: a fuller explanation of various classes of independent variables in Chapter Four, a revised presentation of path analysis in Chapter Five, and an expanded discussion of “Morality and the Limits of Science” in Chapter Six. The need to be clear about the latter seems to grow with each new discovery and

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each new application of scientific methods to the study of human society.

Acknowledgments

I especially thank those who responded to my request for suggestions for the fourth edition, as well as the anonymous critics who so carefully reviewed this edition. I have tried to accommodate the spirit, if not always the letter, of these comments and to arbitrate between various conceptions of key issues. In addition, I would also like to thank Norman Cloutier, Sheryl Lahti, and Sue Strickler, colleagues at the University of Wisconsin-Parkside, and the students in our research methods course for their interest and assistance.

My list of acknowledgments from previous editions includes some especially helpful colleagues. Bob Blair was a good friend and trusty resource throughout the project. For comments and suggestions at various stages may I again thank Philip Zweifel, Gene Pollock, Frank Miller, Steve Victor, Bradlee Karan, and Gordon Shull. Welcome assistance was provided by the National Science Foundation, the College of Wooster Leave Program, and the Faculty Development Fund.

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Judy Hoover contributed some helpful suggestions in the writing, and a lot more that I couldn't begin to acknowledge. Andrew and Erin appear briefly in the second chapter and are present throughout in the nurture of the spirit they provide to their father.

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THE ELEMENTS OF SOCIAL SCIENTIFIC THINKING

OUTLINE

- I. Introduction to the Uses of Science*
- II. Why Bother To Be Systematic?*
- III. The Role of Reasoned Judgment and Opinion*
- IV. The Role of Imagination, Custom, and Intuition*

CHAPTER ONE

THINKING SCIENTIFICALLY

"Science searches the common experience of people; and it is made by people, and it has their style."

JACOB BRONOWSKI

"Social science" in cold print gives rise to images of some robot in a statistics laboratory reducing human activity to bloodless digits and simplified formulas. Research reports filled with mechanical-sounding words such as "empirical," "quantitative," "operational," "inverse," and "correlative" aren't very poetic. Yet the stereotypes of social science created by these images are, I will try to show, wrong.

Like any other mode of knowing, social science can be used for perverse ends; however, it can also be used for humane personal understanding. By testing thoughts against reality, science helps liberate inquiry from bias, prejudice, and just plain muddleheadedness. So it is unwise

to be put off by simple stereotypes—too many people accept these stereotypes and deny themselves the power of social scientific understanding.

The word “science” stands for a very great deal in our culture—some even consider it the successor to religion in the modern age. Our objective here is not to examine the whole tangle of issues associated with science; it is to find a path into the scientific way of thinking about things. In order to find that path, we will begin by allowing some descriptions of science to emerge out of contrasts with other forms of knowledge.

First, we have to identify some distractions that should be ignored. Science is sometimes confused with technology, which is the application of science to various tasks. Grade-school texts that caption pictures of voyages to the planets with the title “Science Marches On!” aid such confusion. The technology that makes such voyages possible emerged from the use of scientific strategies in the study of propulsion, electronics, and numerous other fields. It is the mode of inquiry that is scientific; the spacecraft is a piece of technology.

Just as science is not technology, neither is it some specific body of knowledge. The popular phrase “*Science tells us* [for example] that smoking can kill you” really misleads. “Science” doesn’t tell us anything; people tell us things, in this case people who have used scientific strategies to investigate the relationship of smoking to cancer. Science, as a way of thought and investigation, is best conceived of as existing not in books, or in machinery, or in reports containing numbers, but rather in that invisible world of the mind. Science has to do with the way questions are formulated and answered; it is a set of rules and forms for inquiry created by people who want reliable answers.

Another distraction comes from identifying particular persons as “scientists.” That usage isn’t false, since the peo-

ple so labeled practice the scientific form of inquiry, but neither is it fully honest to say that some people are scientists, whereas others are nonscientists. Some people specialize in scientific approaches to knowledge, but we are all participants in the scientific way of thinking. *Science is a mode of inquiry that is common to all human beings.*

In becoming more self-conscious of your own habits of thought, you will find that there is some science in all of us. We measure, compare, modify beliefs, and acquire a kind of savvy about evidence in the daily business of figuring out what to do next and how to relate to others. The simplest of games involves the testing of tactics and strategies against the data of performance, and that is crudely scientific. Even trying out different styles of dress for their impact on others has an element of science in it.

The scientific way of thought is one of a number of strategies by which we try to cope with a vital reality: the uncertainty of life. We don't know what the consequences of many of our actions will be. We may have little idea of the forces that affect us subtly or directly, gradually or suddenly. In trying to accomplish even the simplest task, such as figuring out what to eat, we do elementary calculations of what might taste good or what might be good for us. If there's enough uncertainty on that score, a little advance testing is a good idea: the king has his taster, and the rest of us, at least when it comes to a certain hamburger, have the assurance that billions have already been sold.

The scientific approach has many competitors in the search for understanding. For many people throughout most of history, the competitors have prevailed. Analysis of reality has usually been much less popular than myths, superstitions, and hunches, which have the reassuring feel of certainty *before* the event they try to predict or control, though seldom afterwards. Sometimes unverified belief sponsors an inspired action or sustains the doubtful until a

better day. Certainly personal beliefs are a vital part of our lives. The point is that the refusal to analyze is crippling, and the skilled analyst is in a position of strength.

Why Bother To Be Systematic?

Most human communication takes place among small groups of persons who share a common language and much common experience and understanding of the world they live in. There is a ready-made arena for mutual agreement. Not so in a more complex social environment. Though families can transmit wisdom across generations by handing down stories and maxims, societies run into trouble. In its most cynical form, the question is, "Whose story is to be believed?" The need to understand what is happening around us and to share experiences with others makes systematic thought and inquiry essential.

Because society is interesting for the drama it contains, there is a tendency to dispense with systematic understanding and get on with the descriptions, stories, and personal judgments. Although these can be illuminating, they often have limited usefulness, because highly subjective accounts of life form a poor basis for the development of common understanding and common action.

The intricate task of getting people to bridge the differences that arise from the singularity of their experience requires a more disciplined approach to knowledge. *Knowledge is socially powerful only if it is knowledge that can be put to use.* Social knowledge, if it is to be useful, must be *communicable, valid, and compelling.*

In order to be communicable, knowledge must be in clear form. And if the knowledge is intended to be used as a spur to action, it must be valid in light of the appropriate evidence and compelling in the way that it fits the question

raised. A personal opinion such as “I think that capitalism exploits the poor” may influence your friends and even your relatives to think that there is some injustice in our society. But it probably won’t make any waves with others. If, however, you can cite the evidence that “In our capitalistic system, 10 percent of the people control 50 percent of the wealth, and 50 percent of the people control less than 10 percent of the wealth,” a more compelling argument results, because you relate a judgment to a measurement of reality. People who don’t even like you but who favor some kind of fairness in wealth distribution might find such a statement a powerful cue to examine our economic system critically. Knowledge built on evidence, and captured in clear transmissible form, makes for power over the environment.

Accumulating knowledge so that past mistakes can be avoided has always intrigued civilized humanity. One can record the sayings of wise persons, and that does contribute greatly to cultural enrichment. Yet there is surely room for another kind of cumulative effort: the building up of statements evidenced in a manner that can be double-checked by others. To double-check a statement requires that one know precisely what was claimed and how the claim was tested. This is a major part of the enterprise of science. The steps to be discussed in Chapter Two in the section on the scientific method are the guideposts for accomplishing that kind of knowing.

The Role of Reasoned Judgment and Opinion

All this vaguely ominous talk about systematic thinking is not meant to cast out reasoned judgment, opinion, and imagination. There is no particular sense in limiting the facilities of the mind in any inquiry.

Reasoned judgment is a staple of human understanding. A reasoned judgment bears a respectable relationship to evidence. Because people inevitably have to act in the absence of complete evidence for decision making, the term “judgment” is important. Judgment connotes decision making in which all the powers of the mind are activated to make the best use of available knowledge.

Reasoned judgment is the first part of systematic thought. The proposition that “A full moon on the eve of election day promotes liberal voting” could be correct, but it does not reflect much reasoned judgment, since there is neither evidence for linking the two events nor a logical connection between them. An investigator with time and resources might look into such a proposition, but in a world of scarce time, inadequate resources, and serious problems of social analysis to engage rare talents, such an investigation makes little sense.¹ Although the proposition may be intuitive, even intuition usually bears some relationship to experience and evidence.

Opinion likewise plays an inescapable role in scientific analysis, because all efforts at inquiry proceed from some personal interest or other. No one asks a question unless there is an interest in what the conclusion might be. Furthermore, each person’s angle of vision on reality is necessarily slightly different from the angle of another. Opinion can’t be eliminated from inquiry, but it can be controlled so that it does not fly off into complete fantasy. One practice that assists in reducing the role of opinion is for the researcher to be conscious of his or her values and opinions.

Plato’s famous aphorism, “Know thyself,” applies here

¹However, police and bartenders will tell you that the night of a full moon does in fact bring out some pretty bizarre behavior; the hypothesis isn’t completely preposterous.