PREFACE

THIS IS A DIFFERENT SORT OF LOGIC BOOK. It might even be described as a book for people who like to think but don't like logic books. Logic texts offered to undergraduates and those few books that seek to address the small part of the general public curious about logic frequently, at least in the English-speaking world, have three properties I find very odd: They proceed with great self-assurance as if the basic questions of logical theory were long ago settled; they avoid disputed theoretical questions; and they concentrate almost exclusively on the logics associated with philosophers like Russell, Frege and Quine, logics much favoured by thinkers in what is usually called the "analytic tradition." Not only do they ignore the logics of Hegel, Bradley, Bosanquet and other idealistic thinkers and the dialectical logics offered by Marx, they also have little to say about the logics derived from John Dewey and others like him.

This is currently a serious problem. The logics most favoured in text books were designed to talk about the world as a collection of bits and pieces of things, a world composed of individual things, some concrete (like humans, mountains and pigs) and others abstract (like classes or sets). Most people in the environmental movement now insist that the world must be seen as a whole and that a radical reconceptualization is required. If this notion can work at all, it will certainly require rethinking basic logical notions, and philosophers like Dewey as well as philosophers in the Hegelian tradition (which includes Marxists) have made contributions to this. Thus there are obvious uses for dialectical logics and for logics like those of John Dewey. This book is not, however, written in a missionary spirit, for I certainly do not believe that all the problems associated with a rethinking have been addressed, much less solved. The book poses problems and makes suggestions, but it does not, of course, seek to ignore or to denigrate the logics widely regarded as "standard," unless arguments to the effect that standard logics do not contain all that is interesting by way of logic are taken to be denigration.

Behind its order and approach, there is, though, a well-known philosophical story—about which we can form our own judgements. Immanuel Kant, whose ideas and problems have never been far from the minds of serious philosophers since he published his *Critique of Pure Reason* in 1781 and 1787, claimed to have discovered something very important: Reason, left to itself

and without reference to experience, ends in paradox. Unrestrained, it can support *both* members of pairs of contradictory propositions, and itself generate contradictions. Experience, by contrast, if we simply think of its content, is anchored in individual perception or "intuition" and is, therefore, subjective. Only bringing reason and experience together will enable us to reason successfully.[1]

The order of exposition here begins with those logics (especially the modern ones in the tradition of Russell and Frege) which take themselves to be independent of experience. The paradoxes produced by logics—particularly the central paradox developed by Russell himself—form a major part of the theme. It then proceeds to John Dewey's logic, which incorporates empirical elements and asks how well Dewey succeeded in overcoming the subjectivity in such ideas. Dialectical logics, in a tradition associated with Hegel, are then explored to see whether they provide the basis for some effective integration that will not (or, at least, need not) end in paradox or subjectivity.

Even apart from such theoretical concerns, however, the exclusion of various interesting "logics" is another reason that undergraduates not infrequently find the standard logic books arrogant and uninformative and wish they were enrolled in other courses, while the general public ignores them more often than one would wish. (How often does one find a logic book reviewed in a daily newspaper or a periodical for general readers?)

Ultimately, however, this book is predicated on the belief that a knowledge of logic is an important element of human freedom in the kind of society in which we live—one in which information and argument are crucial to one's understanding and survival. One must be able to assess the claims of politicians, bureaucrats, scientists, manufacturers, used car salespeople, editorial writers and even the clergy who enter our homes every day via television. If we cannot defend ourselves against them and make up our own minds, we become victims.

This book is also predicated on the belief that many of the most central issues in dispute in logical theory can be stated simply so that any serious person can understand them. It is not, to be sure, meant to perform all the tasks that other books address. For particular courses, books that offer more details about the calculus of propositions or moral or scientific reasoning can easily be used as additional materials.

For the general reader, though, it should be possible to read this book through and to follow, from the footnotes, only those issues of particular interest.

I have tried everywhere to indicate doubts where doubts ought to be indicated, to allow such expressions as "perhaps," "maybe" and "it is possible that," which one finds all too seldom in logic books. The reader is invited to argue with the authors and with all the others mentioned in the book.

Curiously, for two thousand years, despite important writings to the contrary, many people thought that Aristotle had settled the most important

questions in logic. In fact, whenever a system of logic has been laid out, it has enabled us to see beyond its limits, and so to ask new questions. In logic, nothing is settled. Perhaps it is the very nature of the human spirit, as R.G. Collingwood thought, that it no sooner lays out a system than it has, by its very nature, transcended it.

The origins of this book are in the complaints that my students in Cleveland and Ottawa raised against the logic books they had been given to read. I therefore owe thanks to students at the University of Ottawa and at Cleveland State University who took part in courses in which these questions were raised. I also owe thanks to Cindy Bellinger, who struggled to decipher and get straight some early drafts, and to Diana Armour, without whose editorial work this would have been a much worse book.

More recently, Richard Feist has used it in several of *his* classes. Significant improvements—and some simplifications—are the result of his knowledge of mathematics and logic while others stem from the reactions of his classes.

Leslie Armour,
The Dominican College of Philosophy and Theology,
Ottawa, October, 2004

THE HISTORY OF MATHEMATICS AND LOGIC demonstrates an interesting combination. Although the truths of mathematics and logic never really change, they are constantly susceptible to new and deeper understandings and interpretations. This text, in my opinion, is the only one that has managed to encapsulate this combination and portray it in an accessible manner. I am pleased to have played a role in this text's development.

Richard Feist,
Saint Paul University,
Ottawa, October, 2004

Note

1. Immanuel Kant, *Kritik der reinen Vernunft,* Riga: Johann Friedrich Hartknock, 1781, 1787. The translation as *Critique of Pure Reason* by Norman Kemp Smith, London: Macmillan, 1929 is standard in English. Kant also wrote his own *Logic*, Konigsburg: Friedrich Nicolovius, 1800, tr. Robert Hartman and Wolfgang Schwartz, Indianapolis: Bobbs-Merrill, 1974. Though the edition of the *Logic* regarded as standard dates from 1782 (a year after the first version of the *Critique*), it only partially covers the ideas in Kant's major works.