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# INTRODUCTION TO LOGIC



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# Foreword

“In a republican nation, whose citizens are to be led by persuasion and not by force, the art of reasoning becomes of the first importance.

—*Thomas Jefferson*”

Logic has sometimes been defined as the science of the laws of thought. This is inaccurate. Thinking is one of the processes studied by psychologists. If thought refers to any process that occurs in people’s minds, not all thought is an object of study for the logician. Thus, one may think of a number between one and ten without doing any reasoning about it. One may also remember, imagine, free-associate, or perform any of a number of mental processes. All reasoning is thinking, but not all thinking is reasoning. The laws that describe the movements of the mind are psychological laws rather than logical principles. To define logic in this way is to include too much.

Logic has also been called the science of reasoning. This is better, but reasoning is a kind of thinking in which inference takes place and conclusions are drawn from premises. This process is extremely complex, characterized by a combination of trial and error, occasionally illuminated by flashes of insight. Logicians are not concerned with the ways in which the mind arrives at its conclusions in the process of reasoning; they are concerned only with the correctness of the completed process: Does the conclusion reached *follow* by necessity from the premises? The study of the methods and principles used to distinguish correct from incorrect reasoning is the central issue with which logic deals.

Reason is the instrument on which one must depend when reliable judgments are needed. Nonrational instruments—feelings, beliefs, habits, hunches, and the like—are commonly employed, but when a great deal depends on the judgments one makes—when one must decide how to act in complicated circumstances, or determine what is true in matters that have a serious impact—reason is our best recourse; nothing can replace it.

There are rational methods, methods well tested and confirmed, for determining what is true. There are well-established, rational techniques, for drawing new inferences from what is already known to be true. Our ignorance is vast, and therefore people often resort to some authority in reaching judgment—but the need for reason cannot be escaped even then, because one must decide which authorities deserve respect. Every serious intellectual pursuit comes ultimately to rely on reasoning, because there is nothing that can successfully replace it.

By nature humans are endowed with powers of reasoning. Logic is the study of the uses of those powers. Intuitively, we may have long acted on sound principles, only partly grasped. With care, these principles can be brought to the surface, formulated precisely, and applied with confidence to problems solvable by reason. Through studying logic, people come first to recognize their own native capacities, then to learn to strengthen them through practice. The study of logic helps one to reason well by illuminating the principles of *correct* reasoning.

Whatever the sphere in which knowledge is sought—whether in science, politics, or in the conduct of one’s private life—logic is used to reach warranted conclusions. In the formal study of logic, with which this book is concerned, the student will learn how to acquire truths and how to evaluate competing claims for truth, to critique arguments, recognize inconsistencies, detect logical fallacies, and construct formal arguments according to demonstrably valid inference patterns. In sum, the study of logic will help the student to reason more carefully and, in general, to think and act more rationally.

Ideally, every college course should contribute to this end, yet many do not. Much that is taught in college classes soon grows out of date. But the skills of accurate thinking never become obsolete, and the development of these skills lies squarely within the province of the study of logic. The study of logic helps us to identify arguments that are good and to understand why they are good. The study of logic helps us to identify arguments that are bad and to understand why they are bad. No study is more useful or more widely relevant to serious concerns than this.

This considered assurance we give to our readers: A command of the fundamental principles of correct reasoning, which the study of this book promotes, will make a deeply satisfying, significant, and permanent contribution to one’s intellectual life.