C. Glymour, *Thinking Things Through: An Introduction to Philosophical Issues and Achievements*, A Bradford Book, The MIT Press, Cambridge, Massachusetts, London, England 1992, XII + 382 pages.

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This book, conceived as a modern introduction to philosophy, discusses three fundamental questions: (1) what is a demonstration, and why do proofs provide knowledge? (2) how we can use experience to gain knowledge or to alter our beliefs in a rational way? (3) what is the nature of minds and of mental events and mental states? The structure of Glymour's book is closely related to these three issues. Part I concerns the idea of proof. This part is divided into 6 chapters: 1. Proofs; 2. Aristotle's theory of demonstration and proof; 3. Ideas, combinations, and the mathematics of thought; 4. Frege's new logical world; 5. Modern logic. Part II focuses on experience, knowledge and belief. Chapters of the second part are these: 7. Skepticism; 8. Bayesian solutions; 9. Kantian solutions; 10. Knowledge and reliability. The third part (Minds) covers: 11. Mind and meaning; 12. The computable; 13. The computational concept of mind. The book ends with a small (3 pages) part IV (Conclusion) on the enterprise of philosophy.

A general task and spirit of *Thinking Things Through* may be illustrated by a quotation from Glymour's preface: "In our century the tradition of philosophical reflection on these questions [that is (1) - (3) as listed above – J.W.] helped to create the subjects of cognitive psychology, computer science, artificial intelligence, mathematical logic, and the Bayesian branch of statistics. The aim of this book is to make these connections accessible to qualified students and to give enough detail to challenge the very best of them. I have selected the topics because the philosophical issues seem especially central and enduring and because many of the con temporary fields they gave given rise to are open-ended and exciting." (pp. IX–X).

Glymour's book programmatically considers logic as something particularly important for doing philosophy. Logical matters are presented by Glymour historically as well as systematically. He gives a fairly detailed account of Aristotle's, Boole's and Frege's logical theories as well as mentioning several other facts in the history of logic. However, there are

also some serious omissions, for example, those concerning Stoic and medieval contributions to propositional calculus, the algebra of logic from Leibniz to Boole, the influence of 19th century mathematics (Cauchy, Weierstrass, Dedekind) on the growth of logic, or Peano's system. Also Russell's and Whitehead's achievements in *Principia Mathematica* deserve much more attention than the incidental remarks made by Glymour in his book. Although he certainly did not intend to produce a treatise on development of logic, his treatment of historical matters seems too selective.

It is not quite clear which level of logical maturation is assumed on the part of readers of Glymour's book. The above quoted fragment indicates "qualified students". On the next page, Glymour says that his textbook is addressed to "a well-educated high school graduate who is willing to do some work." Thus, one could expect that the book offers a relatively detailed course in modern logic. However, this not the case. Related information is spread over several chapters. A general philosophical survey of what is going on in modern logic occupies chapter 1. In chapter 6 we find a very short course in contemporary logic with brief sections on relational structures, formal languages, truth and satisfaction, the concept of formalized proof, soundness and completeness, models and theories, and paradoxes. This chapter has exactly 24 pages, but it covers material which usually requires a separate book. I have very serious doubts whether this chapter is accessible to persons without intensive training in mathematical logic and the foundations of mathematics. Further logical problems are considered in chapter 12 (The computable). It begins with a historical sketch of how computation theory arose from logic. Then, we find concise information on Gödel's theorems, Turing machines, Church's thesis, fundamental concepts of recursion theory (recursive and recursively innumerable sets), decision problems, the notion of computation, and complexity of computations. My evaluation of this chapter is very similar to that of chapter 6: it is decisively too brief and covers too much material for an introductory textbook of logic. Moreover, a more experienced reader may seriously wonder why this chapter is included in the part on minds, because it does not concern psychological matters. The following chapter 13 (on the computational model of mind) does not provide such a justification.

To complete my remarks on *Thinking Things Through* as a textbook of logic, let me add that exercises (divided into study questions and review questions) are often too difficult for beginners. The author expects, for example, that such students are sufficiently prepared to analyze the extended Liar.

Part II of Glymour's book also contains a sketch of inductive logic based on Bayesianism. Personally, I agree with Glymour that Bayesianism provides perhaps the best way for inductive logic and confirmation theory, because this view is much closer to actual probabilistic inferences than its rivals. On the other hand, there is rather a considerable difference between deductive and inductive logic in their character. This difference is simply that although deductive logic is a fully legitimate field, its inductive

cousin is rather a highly debatable philosophical project. Unfortunately, Glymour who regards both kinds of logic as equally justified and even usable, simply blurs the situation. A similar remark concerns the computational approach to mind which appears in Glymour's book as something obvious. However, Bayesianism in inductive logic as well as the computational model of mind do not exhaust varieties of approaches in related fields. This should be very clearly stated in any introductory textbook.

I have evaluated Glymour's book as a textbook of logic for beginners. My evaluation is rather critical: the book is simply misdirected. On the other hand, *Thinking Things Through* looks very impressive as a philosophical monograph on logic and its uses in philosophical analysis. Philosophers who have lost their contact with modern logic can refresh their knowledge of logical matters. Philosophers who have not forgotten logic can skip chapters on logic and concentrate on more philosophical topics of which the Bayesian-oriented logic of induction and the computational model of mind are particularly valuable. Since most graduate philosophers are probably aware that both approaches do not exhaust related fields, the warning that Glymour blurs the contemporary situation in inductive logic and philosophy of mind are not as important.

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Bertrand Russell, *Logical and philosophical papers, 1909–13*, edited by John G. Slater with the assistance of Bernd Frohmann, vol. 6 of *The collected papers of Bertrand Russell*, London and New York, Routledge, 1992.

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The purpose of critical/scholarly editions is to "set *standards* for future scholarship by providing authoritative texts *reconstructed* to represent not only the authors' last