



Introduction to Logic: and to the Methodology of Deductive Sciences

Alfred Tarski

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First published in Polish in 1936, this classic work was originally written as a popular scientific book — one that would present to the educated lay reader a clear picture of certain powerful trends of thought in modern logic. According to the author, these trends sought to create a unified conceptual apparatus as a common basis for the whole of human knowledge.

Because these new developments in logical thought tended to perfect and sharpen the deductive method, an indispensable tool in many fields for deriving conclusions from accepted assumptions, the author decided to widen the scope of the work. In subsequent editions he revised the book to make it also a text on which to base an elementary college course in logic and the methodology of deductive sciences. It is this revised edition that is reprinted here.

Part One deals with elements of logic and the deductive method, including the use of variables, sentential calculus, theory of identity, theory of classes, theory of relations and the deductive method. The Second Part covers applications of logic and methodology in constructing mathematical theories, including laws of order for numbers, laws of addition and subtraction, methodological considerations on the constructed theory, foundations of arithmetic of real numbers, and more. The author has provided numerous exercises to help students assimilate the material, which not only provides a stimulating and thought-provoking introduction to the fundamentals of logical thought, but is the perfect adjunct to courses in logic and the foundation of mathematics.

Introduction to Logic: and to the Methodology of Deductive Sciences Details

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Dev Null says

I've been reading this off-and-on for a couple of months now, in between other things, but I think its time to give up on it. (It was, among other things, due back at the library...)

I think the book was doing an excellent job on the material... but the material is so basic it was hard to keep any interest. Its possible that the material gets more interesting by the end, but formal definitions of concepts as fundamental as "equals" - while important mathematically - are dull.

One gripe; there's really not much point in putting exercises in a textbook if you're not going to provide the answers, or at least - since some of the exercises are a bit open-ended (which is a good thing!) - some discussion of what the answers might look like and why. I imagine that was left to the role of the teacher using the book, but I didn't have one of those.

Mishehu says

December 30:

Just finished this one. Another indication that the non-expert readers of yesteryear were a breed apart: "The reader will easily guess how the concepts of a field and an ordered field are to be extended to arbitrary classes, operations and relations :-)." (Ok, the smiley face was my own addition, but I'm sure Tarski was giggling maniacally or staring Soviet-stone-facedly as he wrote this; either way, a chipper emoticon seemed in order.) Which is to say, Alfred T., not all readers arrive lickety-split at said deduction. The fact that I did manage to get there eventually, and that I understood most everything else in this concise and highly rigorous intro to logic, testifies to the author's great talents as a popularizer. This is a challenging and terrific book.

December 25:

Just beginning this one, but wanted to weigh in with a thought that exceeded the progress update character limit:

From the preface: "In its original form [this book] was intended as a popular scientific book; its aim was to present to the educated layman...a clear idea of that powerful trend of contemporary thought which is concentrated about modern logic. This trend arose originally from the somewhat limited task of stabilizing the foundations of mathematics. In its present phase, however...it seeks to create a unified conceptual apparatus which would supply a common basis for the whole of human knowledge." (1940)

They sure don't make science popularizers (or educated laymen) like they used to...

Gavin Rebeiro says

I was introduced to mathematics and deduction through other treatments. But this book would have led me straight to the stuff that captivates me the most today.

Would be a great book to hand to any motivated reader interested in actually understanding the fabric of the mathematical method. Proof-writing skills and such is likely to follow from dedicated study of this book.

Variables and quantifiers play an essential role in reasoning about mathematics. This is tied in with proving mathematical statements with respect to properties held by an 'infinite' number of 'objects'.

Equality/identity has a very specific 'meaning' in mathematics.

Mathematical implications - "if...then..." statements - do not have the same 'meaning' as the ordinary language use of the terms. This causes a lot of confusion to students new to doing proof-based mathematics. The early sections of this book contains many helpful comments on mathematical implication.

Modern, pure mathematics is inaccessible to one uneducated in the rudiments of modern set/class theory.

Relations play a fundamental role in pure mathematics.

There are wonderful explanations in this book of all the topics mentioned above, and more.

Pure mathematics could be claimed to be the only deductive 'science' there is. A pure mathematician does not do experiments the same way a physicist or chemist would. We have a specific way to 'prove' things, claim something 'true', and claim which statements follow from which.

Alfred Tarski revolutionised a field called mathematical logic back in the early twentieth century. This book is a window into that world. It will teach you the basics of doing mathematics, in the mathematician's sense.

Brian says

Not too clear to me. I will reread after a few more semesters of math.

Icy Hedron says

Very clear introduction to many concepts in formal logic! Even covers arithmetic through Abelian groups. Would share with interested laymen.
