PRACTICAL LOGIC

PRACTICAL LOGIC

by

ZYGMUNT ZIEMBIŃSKI

Adam Mickiewicz University, Poznań

with the Appendix on

DEONTIC LOGIC

by

ZDZISŁAW ZIEMBA

University of Warsaw

Springer-Science+Business Media, B.V

This translation has been made from
LOGIKA PRAKTYCZNA
Published in 1973 by Państwowe Wydawnictwo Naukowe, Warszawa

THE APPENDIX ON DEONTIC LOGIC
has been written for the English edition

Translated from the Polish by Leon Ter-Oganian

Distributors for Albania, Bulgaria, Chinese People's Republic, Czechoslovakia,
Cuba, German Democratic Republic, Hungary, Korean People's Democratic Re-
public, Mongolia, Poland, Rumania, Democratic Republic of Vietnam, the U.S.S.R.
and Yugoslavia

ARS POLONA
Krakowskie Przedmieście 7, 00-068 Warszawa, Poland

ISBN 978-94-017-5589-4 ISBN 978-94-017-5604-4 (eBook)
DOI 10.1007/978-94-017-5604-4

Copyright © by Springer Science+Business Media Dordrecht 1976
Originally published by PWN-Polish Scientific Publishers-Warszawa in 1976.
Softcover reprint of the hardcover 1st edition 1976

No part of the material protected by this copyright notice may be reproduced
or utilized in any form or by any means, electronic or mechanical, including
photocopying, recording or by any informational storage and retrieval system,
without written permission from the copyright owner

INTRODUCTION TO THE ENGLISH EDITION

The present book is an elementary textbook on logic for university undergraduates. It is intended mainly for students of law. For nineteen years this book has served students of law as well as those of other branches of the humanities in Poland. Apart from the two mimeographed editions (of 1956 and 1958), its subsequent editions (in 1959, 1960, 1963, 1965, 1969, 1971 and 1973) have undergone various modifications. A number of highly valuable contributions towards these improvements were made by the staff of the Section of Juridical Applications of Logic of the Adam Mickiewicz University in Poznań where this textbook was written, namely: Leszek Nowak, Assistant Professor, LL.D., Maciej Zieliński, LL.D., and Sławomira Wronkowska, LL.D. We are also indebted for good advice to numerous logicians and jurists in Poznań.

In comparison with the seventh Polish edition of 1973 the English translation contains modifications of a number of examples that were specifically Polish. It is first of all a contribution of the translator, Mr Leon Ter-Oganian, M. A. The eighth Polish edition of this textbook recently published in 1974 contains many corrections, particularly in the Chapter XVIII on logical foundation of the interpretation of law and of juridical reasonings. The most important amplification, however, is the addition of a supplementary section on Deontic Logic written by Zdzisław Ziemia (Assistant Professor, Ph.D., of Warsaw University), since it is this part of formal logic that should be of particular interest to jurists. In contrast to the rest of the book this section contains new and original conceptions.

The textbook contains the fundamental elements of knowledge in the field of semiotics (Part One: 'Formulation of Thoughts by Means of Words'), and in the field of formal logic and general methodology of sciences (Part Two: 'Foundation of Statements'). Semiotics, formal logic and the general methodology of sciences are jointly called by the name of *logic* in the widest sense of this word. The selection of materials from these fields and of supplementary information concerning other adjacent branches of knowledge, has been made primarily with a view

to making more evident and contributing to the mastery of those skills which turn out to be useful in practice for the thinking processes of lawyers. This does not, of course, mean that the whole subject matter has been restricted to a choice of examples that might in one way or another be connected with juridical problems. In any cases such examples might not always be the most appropriate in view of their complicated character.

The final part of the textbook (Part Three: 'The Intellectual Work of Lawyers') contains the presentation of some specifically juridical applications of logic and an analysis of the intellectual activities of lawyers. The first two parts of the textbook constitute, however, an independent entity and may be used as an elementary textbook on logic for students of various branches of the humanities.

The juridical examples are borrowed from the body of laws in force in the Polish People's Republic. Consequently, they are concerned with a legal system of the Continental type which presents to the jurist mental problems completely different from those raised by Common Law systems. We would, however, expect that this book in its English version would be read not only by English or American readers. Besides, it might be very risky for a Polish jurist to express his opinions about problems belonging to the English juridical doctrine.

The textbook is intended also as an aid for student taking correspondence courses. It can be used independently of university lectures, but an effort must be made to study it systematically and to solve the exercises connected with each particular chapter.

The aim of the present book is not so much to transmit any definite amount of fundamental information belonging to the domain of logic, as to transmit some elements of a basic logical knowledge which is becoming increasingly more and more indispensable for any modern lawyer. It has also become the initial condition of progress in the juridical sciences. For that very reason the idea of introducing a course in logic into the curriculum of legal studies at Universities in Poland has proved to be highly useful over the past 29 years.

The disciplines embraced by the syllabus of the course in logic (in the wide sense of the word), in spite of their heterogeneous character, are linked together by the fact that they are all concerned in one way or another with forms of efficient thinking.

In order to think efficiently it is necessary, first of all, to be able to formulate one's own thoughts clearly and unequivocally; to be conscious of how statements are used for description of the world, for the expression of our thoughts, for suggesting to other people some definite kind of behaviour or action. So it is necessary to become familiar with the fundamental principles in the field of *semiotics*, that is to say, the general science concerning signs, particularly word-signs (or linguistic signs). Within the scope of semiotics the following main branches are distinguished: (1) *semantics*, the general science of relations between linguistic signs on the one hand and what these signs refer to, on the other; (2) *syntactics*, the general science describing the types of linguistic signs and the rules of correctly joining them into compound expressions, and finally (3) *pragmatics*, the science dealing with problems concerning the relations between the linguistic signs and either the person uttering (the speaker) or the person receiving the utterances (the listener). Semiotics is a branch of science very close to linguistics. But it does not deal with studies of the meaning of certain definite expressions used in some national languages, or the syntax of particular languages, or actual acts of expressing some experience in the given languages. On the contrary, it is concerned with such general problems as: what does the meaning of expressions consist in; what are the fundamental kinds of expressions with regard to their syntactical role; what does the process of communication consist in; what is the manner in which misunderstandings arise, and so on. Consequently, we can distinguish general semantics from philological semantics, which deals with concrete national languages; we can also distinguish logical syntax, general syntax and the syntax of particular, individual natural languages. Differentiation between the problems belonging to logic and those belonging to philology have repeatedly created difficulties in researches concerning linguistic signs. The results of these two kinds of investigations are also not adequately co-ordinated.

In order to think efficiently, we must know which proposition results from what proposition. *Formal logic* (or logic in the narrow sense of the word) is the science of the relations occurring between the truth or falseness of some propositions with regard to their structure (form, formation), and particularly the relation of one proposition being implied by others. For instance, it asserts that from any proposition of

he structure 'No *S* is *P*' (thus, 'No *Swede* is *Polish*', 'No *judge* is a *prosecutor*', 'No *student* is *illiterate*', and so on) is implied a corresponding proposition of the structure 'No *P* is *S*' (hence, for instance, 'No *Pole* is a *Swede*', 'No *prosecutor* is a *judge*', 'No *illiterate person* is a *student*', and so on). This means: if the former of such propositions is true, then the corresponding latter must also be true. On the other hand, formal logic points out that from a proposition of the structure 'Some *S* is not *P*' does not follow, by virtue of its structure alone, a proposition of the type 'Some *P* is not *S*'. It may happen that the proposition of the former type is true (for instance, 'Some *officers* are not *prosecutors*'), but the corresponding proposition of the latter type is false (for instance, 'Some *prosecutors* are not *officers*'). Formal logic, particularly in its contemporary state, is a science similar in many respects to mathematics, except that it is a more general branch of science than mathematics.

The general *methodology* of science is concerned with the methods (rules) of procedure applied for cognition of the world. Primarily its concern is the methods of foundation or demonstration of the truth of the statements formulated by us. It also deals with various intellectual activities which aim at ordering our knowledge into a coherent set of propositions constituting the corpus of a given scientific discipline, that is to say, a distinctly separate branch of learning. Methodology is a science similar in some respects to the technical sciences. Methodology describes the performance of certain actions, as do the technical sciences; in our case the description concerns the performance of some intellectual activities, such as inference, demonstration, explanation, or formulation of hypotheses. At the same time it teaches or instructs how these actions are to be performed in order to attain the required aim—the founded cognizance of truth.

CONTENTS

INTRODUCTION TO THE ENGLISH EDITION

V

Part I

FORMULATION OF THOUGHTS BY MEANS OF WORDS

CHAPTER I. SPEECH

§ 1. Speech and Thought	3
§ 2. A General Definition of Sign	3
§ 3. Verbal Signs and Their Shape	8
§ 4. Communication by Means of Words	9
§ 5. Functions of Utterances	11
§ 6. Language	14
§ 7. Syntactical Categories. Syntactical Correctness of Expressions	17
Exercises	22

CHAPTER II. NAMES

§ 1. The Concept of Names	24
§ 2. Concrete Names and Abstract Names	24
§ 3. The Designatum of a Name	26
§ 4. Individual Names and General Names	27
§ 5. Connotation of a Name	28
§ 6. Denotation of a Name	32
§ 7. Determining and Abstracting	33
§ 8. Division of Names in Relation to the Number of Designata	34
§ 9. Collective Names	35
§ 10. Cleancuttness of the Denotation of a Name	37
Exercises	39

CHAPTER III. RELATIONS BETWEEN DENOTATIONS OF NAMES

§ 1. Usefulness of Determining the Relations between Denotations of Names	41
---	----

§ 2. Universal Class, Complementary Class	41
§ 3. Kinds of Relations between Denotations of Names	44
§ 4. Instances of Relations between Denotations of Names	47
Exercises	49

CHAPTER IV. DEFINITIONS

§ 1. Real Definition and Nominal Definition	51
§ 2. The Tasks of Definitions	52
§ 3. Structure of Definitions	56
§ 4. Conditions for Correctness of Definitions	61
Exercises	65

CHAPTER V. PROPOSITIONS

§ 1. The Proposition (Statement) in the Logical Sense	67
§ 2. Logical Value of Propositions	69
§ 3. Objectiveness of Truth and Falseness of Propositions	70
§ 4. Elliptical Propositional Utterances	73
§ 5. Propositional Functions (Formulas)	75
§ 6. Structure of Propositions	77
§ 7. Proposition Equivalents in our Consciousness	83
Exercises	85

CHAPTER VI. TRUTH-FUNCTORS AND INTERPROPOSITIONAL CONNECTIVES OF NATURAL LANGUAGES

§ 1. The Concept of Truth-Functors	87
§ 2. Negation	94
§ 3. Conjunction	99
§ 4. Non-exclusive Disjunction, Exclusive Disjunction and Alternative Denial	101
§ 5. Equivalence	104
§ 6. Implication and the Relation of Entailment	105
Exercises	111

CHAPTER VII. FUNDAMENTAL CONCEPTS CONCERNING RELATIONS

§ 1. Propositions Stating a Relation	114
§ 2. Symmetric, Asymmetric, and Non-Symmetric Relations	115

§ 3. Transitive Relations	117
§ 4. Relation Ordering in a Class of Objects	118
Exercises	121

CHAPTER VIII. EVALUATIVE UTTERANCES AND NORMS

§ 1. Evaluative Utterances versus Descriptive Utterances	122
§ 2. The Concept of Norms of Conduct	126
§ 3. Validity of Norms	130
§ 4. Verbal Form of Norms	136
§ 5. Structure of Norms of Conduct	138
Exercises	143

CHAPTER IX. MODAL EXPRESSIONS

§ 1. Interpretation of 'Must' and 'May'	146
§ 2. Modality of Propositions	151
§ 3. Deontic Modalities	153
Exercises	155

CHAPTER X. QUESTIONS AND ANSWERS

§ 1. The Structure of a Question	157
§ 2. Methods of Asking Questions	159
§ 3. Answers	162
Exercises	164

CHAPTER XI. CAUSES OF MISUNDERSTANDINGS

§ 1. Ambiguity of Words	165
§ 2. Specific Kinds of Ambiguity in Words and Linguistic Expressions	166
§ 3. Equivocations. Verbal Contentions	168
§ 4. Ambiguity in Compound Expressions	170
§ 5. Amphibolies	172
§ 6. Literal and Non-Literal Meaning	173
Exercises	174

Part II

FOUNDATION OF STATEMENTS

CHAPTER XII. DIRECT FOUNDATION

§ 1. Methods of Foundation	179
§ 2. Impressions and Apperceptions	180
§ 3. Observation	183
Exercises	185

CHAPTER XIII. DEDUCTIVE INFERENCE AND ITS LOGICAL BASES

A. GENERAL CONCEPTS

§ 1. Inference	186
§ 2. Inference Process and Relation of Entailment	187
§ 3. Logical Laws	188
§ 4. Deductive Inference	192

B. LOGICAL LAWS WITH PROPOSITIONAL VARIABLES

§ 5. Negation of Compound Propositions	194
§ 6. Transposition	197
§ 7. Laws of Syllogistic Structure	199
§ 8. Other Laws with Propositional Variables	203

C. LOGICAL LAWS WITH NAME VARIABLES

§ 9. Traditional Theory of Classes	209
§ 10. Relations of the Square of Opposition	211
§ 11. Conversion, Obversion and Contraposition	214
§ 12. Laws of Categorical Syllogisms	217

D. FALLACIES IN DEDUCTIVE INFERENCE

§ 13. Material Fallacy	223
§ 14. Formal Fallacy	224
Exercises	225

CHAPTER XIV. PROBABILIFYING INFERENCES

§ 1. Reductive Inference	232
§ 2. Inductive Inference	235

§ 3. Methods of Induction	239
4. Inference by Analogy	243
Exercises	245

CHAPTER XV. THINKING WITH PRE-ASSIGNED TASKS

§ 1. Spontaneous Thinking and Thinking with Pre-Assigned Tasks	248
§ 2. Demonstration	249
§ 3. Testing	252
§ 4. Explanation	253
§ 5. Explanatory Hypotheses	254
§ 6. Theories	257
Exercises	258

CHAPTER XVI. PROBABILITY

§ 1. The meaning of the Word 'Probability'	261
§ 2. Probability as a Mathematical Concept	262
§ 3. Probability as a Frequency Concept	265
§ 4. Determination of Probability of a Complex of Events	267
Exercises	270

Part III

THE INTELLECTUAL WORK OF LAWYERS

CHAPTER XVII. LOGICAL FOUNDATIONS OF JUSTIFYING
COURT JUDGEMENTS

§ 1. Structure of Judgement Justification	275
§ 2. Establishment of Facts	276
§ 3. Determination of Reliability of Witnesses	278
§ 4. Expert Opinions	281
§ 5. Legal Presumptions	282
§ 6. Circumstantial Evidence	284
§ 7. Types of Inference from Evidence in Court	287
§ 8. Establishment of the Actual State of Affairs and Subsumption	289
§ 9. Leeway of Subsumption	290
Exercises	291

CHAPTER XVIII. LOGICAL FOUNDATION OF THE INTERPRETATION
OF LAW

§ 1. The Concept of Interpretation	293
§ 2. Types of Legal Provisions	297
§ 3. Linguistic Rules of Interpretation	305
§ 4. Teleological Rules of Interpretation	310
§ 5. Restrictive Interpretation and Extensive Interpretation	314
§ 6. Juridical Inference	316
§ 7. Inferences Based on Logical Entailment of Norms	319
§ 8. Inferences Based on Instrumental Entailment of Norms	322
§ 9. Inferences Based on Assumption of Consistency of the 'Law-giver's' Evaluations	324
Exercises	327

CHAPTER XIX. LOGICAL DIVISION AND ORGANIZATION OF WORK

§ 1. The Concept of Logical Division	330
§ 2. Conditions of Correct Logical Division	331
§ 3. Classification	335
§ 4. Differentiation of Types and Logical Division	337
Exercises	338

CHAPTER XX. METHODOLOGICAL CHARACTERISTICS
OF JURIDICAL SCIENCES

§ 1. General Methodology of Sciences and Specialistic Methodologies	340
§ 2. Variety of Problems and of Investigatory Methods in Juridical Sciences	343

CHAPTER XXI. THE ART OF ARGUMENTATION

§ 1. Arguing and Proving	349
§ 2. Disputation and its Kinds	352
§ 3. Organizing a Discussion	353
§ 4. Objections in Disputation	355
§ 5. Sophisms	356

CONTENTS

XV

APPENDIX

DEONTIC LOGIC

§ 1. Introduction	360
§ 2. A System of Deontic Logic	361
§ 3. Relative Deontic Systems	373
§ 4. Deontic Systems Based on Modal Logic	376
§ 5. A System of Deontic Logic with Quantifiers	381
§ 6. Consistency of Obligations	394
§ 7. Deontic Permission	401
§ 8. 'Paradoxical' Theorems of Deontic Logic	413
§ 9. Commitment	421
§ 10. Conclusion	425
INDEX	431