

(with the authorities which justify it) of the "relationship of the realty-personalty distinction to the moveable—immoveable distinction".⁵

The book is a mine of such useful materials, and has a value far beyond its usefulness to the practitioner at a bread-and-butter level.

R. G. HENDERSON.*

Outlines of Modern Legal Logic, by Ilmar Tammelo. Franz Steiner Verlag, Wiesbaden, 1969. Pp. 167 + vii. (\$U.S. 9.00).

Tammelo's book may be said to confirm to a high degree two statements of Abraham Fraunce (in his "The Lawiers Logike", published 1588) which are placed in its preface: "I see no reason, why that Law and Logike should not bee The nearest and the dearest freends, and therefore best agree." And: "I sought for Logike in our Law, and found it as I thought." There is a huge number of books on logic in general. But there are very few which are both a good introduction to logic and at the same time a good application of logic to some of the scientific disciplines; it can be said of Tammelo's book that it has both properties.

In more detail, the book is divided into three parts. Chapter I deals with traditional logic, especially with the system of syllogistic logic, and with non-syllogistic forms of hypothetic and disjunctive inference of propositional logic, which was introduced by the Megaric and Stoic schools and extended by Boethius and by the Scholastics. Chapter II is devoted to Modern Logic, especially to Propositional Logic, to Predicate Logic and to the Logic of Classes. In Chapter III the author deals with Legal Logic and with Deontic Logic, and with the application of Modern Logic in legal discourse. It is this chapter which gives to the book the name "Outlines of Modern Legal Logic". The Appendices are devoted to more special problems—methods and notations in Modern Logic.

Already in the preface Tammelo corrects some of the commonly used prejudices and misunderstandings about logic and its relation to law. This is very important because such prejudices hinder progress in legal discourse, in jurisprudence and in special subdisciplines of logic such as Deontic Logic and Legal Logic. The reviewer agrees with the author that "the so-called irrationalities of law are really not lack of logic in law or legal thought but rather manifestations of intricacies of the structure of law and reflections of intractabilities or uncertainties of its substance". (p. V).

After that the author states the task of the book to be an introductory compendium of Legal Logic, which means, first, that it is devoted to the understanding of formal aspects of legal reasoning (in general), and, second, that it is intended as a ground work for a more extensive and detailed treatment of logic in the service of law. (p. VI). It can be said that both aspects of the task are satisfied to a considerable degree by the book.

In the Introduction Tammelo tries to give a simple characterization of the two terms, "law" and "logic", which serves as an orientation for beginners. (pp. IX and XI). The introduction also shows that Tammelo is not a formalist. His view is that every legal formalism which places law in a straitjacket is an abuse of logic. (p. X). At the end of the Introduction the author gives reasons for choosing the so-called Polish Notation and for restricting the book to the chapters mentioned without treating more exten-

⁵ At 228.

* Q.C., B.A., LL.B. (Sydney), Barrister-at-Law.

sively special disciplines like semantics, interpretation, inductive and statistical methods.

Chapter I ("A System of Traditional Logic") begins with the introduction of the four categoric propositions (p. 4) and explains them clearly with the help of circles (p. 6). On page 2 the principles of identity, non-contradiction and of the excluded middle are stated. On this it may be mentioned that Tammelo's formulation of the principle of non-contradiction—although very general—is not the most general one that can be given. As N. Rescher shows in his *Many Valued Logic* (1969), Chapter 22, the formulation "the proposition p and its negation $\neg p$ cannot both be true" (already used by Aristotle in his *Metaphysics*) is probably invariant to all possible systems of logic which have negation. On the other hand it is possible to construct systems of logic which violate the formulation of the principle given by Tammelo. (Rescher calls such systems quasi-truth-functional; see Chapter 26 of his book cited above). But since Tammelo deals only with two-valued systems in his book the generality of the formulation of the principle he uses is sufficient (it is indeed sufficient for a part of many-valued systems). On the following pages the author refers to simple syllogistic inferences, explains the "Aristotelian Square" and states the laws of conversion, obversion, inversion and contraposition.

A kind of historical addition should be made to page 2, where it is said that systems dispensing with the *tertium non datur* principle are not systems of traditional logic, and also to page 15, where the author says that systems of logic in which empty terms are allowed are not systems of traditional logic. This is true in general. But there are exceptions like Ockham who—although he did not construct other systems of logic—has suggested at least a fragment of three-valued Propositional Logic where the implication is defined as in the three-valued system of Lukasiewicz (put forward in 1920). (See Ockham's *Tractatus de Praedestinatione*, ed. Ph. Boehner, New York, 1945, p. 112ff. and A. N. Prior, *Formal Logic*, Oxford, 1962, p. 241ff.); moreover he made proposals for dealing with empty terms in logical inference in his *Summa Logicae*.

On page 19 the rules of simple syllogism are stated in the known and uncomplicated form of four rules. After that Tammelo describes all four figures of syllogism, illustrating each mood with an example from legal discourse. Finally, he deals with the reduction of the moods of other figures to the moods of the First Figure and with some well-known complex syllogisms.

The paragraph about hypothetical and disjunctive inference of Propositional Logic (pp. 29-36) is short but instructive. It explains the most important rules which are most frequently used (like *modus ponens* and *modus tollens*) and which are applied everywhere in science and in any other discipline.

Summarizing Chapter I, one may say that the author has shown great ability to give a clear and informative exposition of syllogistic logic as the most important part of traditional logic.

Chapter II ("A System of Modern Logic") begins with the truth table method to define the connectives of propositional calculus (pp. 39-49). Tammelo calls it "Protological Calculus". He defines, in addition to the four usual connectives, four others (converse implication, negated disjunction, negated conjunction and exclusive disjunction), without giving any interpretation to these connectives at this stage. The interpretation is only given in the next paragraph (p. 50), where the Propositional Calculus with its most important laws is stated.

The name "Autology", used for the laws $EpKpp$ and $EpApp$ (p. 53), is—if it is not a misprint—at least very unusual and misleading since many books on logic use here "Tautology". ("Autology" also occurs on p. 58

and in the Index, p. 161). Finally, 9 elementary valid argument forms and 10 valid equivalence forms are stated for the use of formal proof. Moreover, the rules of conditional and indirect proof are explained with examples.

Predicate Calculus (p. 64ff.) begins with the usual rules for well formed formulas and the explanation of quantifiers, continues with the four general quantification rules, and deals finally with the logic of relations (more than one-place predicates) and their properties (p. 70ff.). On a more critical point of view I would like to say that the whole chapter of Predicational Calculus is rather short (pp. 64-78). Perhaps this is due to the limitations on the scope of the book which were mentioned in the Introduction. It may be also a consequence of these limitations that the exposition of the four quantification rules lacks necessary rigor. First of all, there is only a very short discussion of these rules, with examples; secondly the rules are formulated without their necessary restrictions. The formulation of the special interpretation of the four forms of syllogistic logic seems to be a little vague: since the individual tortfeasors are not predicated of the individual trespassers a better formulation would perhaps be "x means the predicate 'tortfeasor' and y means the predicate 'trespasser'".

The paragraph on the Calculus of Classes is short (pp. 78-85), but informs the reader about the most important features of it and seems sufficient for the purposes of the book. Although the notation is a little complicated, it fits very well to the signs of the connectives in the Polish Notation.

Chapter III ("Modern Logic in the Legal Universe of Discourse") shows the ability of the author to apply Modern Logic to legal discourse. First he analyses the norm (differentiating between norm-subject, norm-object and norm-nexus), then he describes the varieties of the norm-nexus in the following expressions: ought to carry out, ought to refrain from, may carry out, may refrain from. These four elements he interprets as deontic operators; but in reporting systems of Legal and Deontic Logic he rather uses deontic class symbols and deontic functors; with the help of these he constructs so-called deontic modalities like "permissory conduct-to-be-carried-out" (symbolized as "pa"), "licensory conduct-to-be-carried-out" (symbolized as "lo") etc. On the following pages (p. 90ff.) Tammelo discusses two legal systems, a closed one and an open one. These systems represent two main views on law by philosophers of law throughout history. The closed legal system is best characterized by "the sealing legal principle", according to which any instance of conduct is either obligatory or licensory. It is also often expressed in the form "Whatever is legally not prohibited is legally permitted". On the other hand, an open legal system allows for neutral conduct.

At pages 96ff. Tammelo deals with the problem of precise logical formulations of some legal structures, especially of the validity-levels of norms. The following three paragraphs are devoted to a logical analysis of defects, antinomies, and fallacies in legal discourse. The importance of these paragraphs cannot be emphasized enough. They show how much can be done for scientific investigation of the difficult problems in the structure of law if logic is applied by a scholar like Tammelo who knows both sides.

Appendix A offers a syntactic method for recognizing valid syllogisms. Appendix B a shorter truth-table method, whereas Appendix C deals with *normal forms*. Appendix D gives a detailed exposition of the decision method by Vennian Diagrams. Appendices E and F deal with a method for the elimination of variables and with other notations.

Summarizing the impression of the whole book, it might be said that it is what one may expect from the title: an Outline of Modern Legal Logic. It fills really, in Chapters I and III, a gap which is not filled in such detail

in those other books of logic which are especially written for legal scholars and for philosophers of law. The point may be raised why there are no exercises in the book. But it should be remembered that it is not so much a book for learning logic as an outline of the most basic aspects of legal reasoning in order to give a more extensive and detailed treatment of logic in the service of law. May I add that it is to be hoped that this book is soon followed by another book on logic for legal discourse which is especially devoted to learning purposes and which is written by an author with abilities like Tammelo.

PAUL WEINGARTNER*

Automobile Insurance . . . For Whose Benefit?, State of New York Insurance Department, New York, 1970, xii and 164 pp.

This is a Report prepared by the New York State Insurance Department at the request of Governor Rockefeller, and subsequently used as the basis for a Bill which was recommended by the Governor to the State Legislature. Since then the Bill has twice been rejected by the Legislature, but the Report is by no means dead. It has in fact aroused widespread interest in the United States where proposals are now coming thick and fast for fundamental alterations to the tort system of compensating road accident victims.

The Report is written in simple layman's language (which bears comparison with the Woodhouse Report in many ways) and clearly gives the impression of having been intended (quite literally) for the eye of the man in the street (the premium payer and the potential accident victim) in the hope that public pressure would force action by the Legislature. The Report contains little original material in making the now all too familiar attacks on tort law as a method of compensating accident victims, but it does support all its arguments from the fruits of previous independent research. Reference here is made to the huge numbers of victims who receive no damages, or less than they have lost, the delays in payments, the unpredictability of the system, the maldistribution of benefits 'with no discernible regard for priorities, let alone intelligent or human priorities' (p. 25), the lack of co-ordination in benefits stemming from the collateral benefits rule, its operation as a hindrance to rehabilitation and its incredible costliness and inefficiency in operation. This part of the Report concludes by condemning the 'futility of palliatives' and demanding a completely new system.

The Report then goes on to specify what it regards as criteria for a good system. The most important of these are that it should provide compensation for all victims (pp. 62-63); that benefits should be generous in payment of economic losses, and that the system should be efficient and as cheap to operate as it can reasonably be made (pp. 63-65).

The next part of the Report contains a blueprint for a new system. First, tort liability arising out of road accidents should be abolished. Secondly, every vehicle owner should be compelled to buy a first-party insurance policy (and not a third-party policy). This policy would provide unlimited benefits for net economic loss for the insured, anyone injured in the insured's own car, and anyone else injured by the insured's car on a no-fault basis, but excluding anyone injured in another car (who will of course be covered by the other car owner's insurance policy). The benefits payable would include

* Professor of Philosophy and Director of the Institute for the Theory of Science at the University of Salzburg.