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DEONTIC LOGIC AND IMPERATIVE LOGIC

by

HSIU-HWANG HO

Assistant Professor of Philosophy
Stanislaus State College

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To the memory of

PROFESSOR HENRY S. LEONARD

PREFACE

This monograph deals with the problem of whether current systems of deontic and imperative logic formalize satisfactorily our intuitive deontic and imperative notions, and the problem of whether those systems can be used to justify normative reasonings. Some semantical inadequacies of the current systems are noted and suggestions are made for their removal.

Chapter One contains reconstructions of certain well-known systems of deontic logic: von Wright's system vW, Fisher-Åqvist's system FÅ, a family of systems called OT*, OS4* and OS5*, and Anderson's systems OM, OM′ and OM.″ The systems OT*, OS4* and OS5* are developed quite thoroughly: a number of important theorems are proved, the problem of irreducible deontic modalities is solved for each system and containment relations among the systems are studied. Certain familiar problems and difficulties of current deontic logic are examined, for instance, the paradoxes of "derived obligation", contrary-to-duty imperatives and Chisholm's dilemma, the Kantian Principle and the paradox of the Good Samaritan.

In Chapter Two certain amendments are made to the systems OT*, OS4* and OS5*. The deontic operator 'O' (obligation) is explained in terms of, and hence relativized to, a set of moral rules. Deontic variables are taken to range over propositions that we call *circumstantialized act-propositions,* or simply CM-act-propositions, in which the

elements of agent, time and location of endeavoring are specified. An attempt is made to justify these amendments by metaethical observations. Hintikka-style semantics is furnished. Quantifiers are readily introducible into the amended systems, and it is argued that quantified deontic logic is necessary to express some moral codes or moral principles. Some suggestions about solving in the amended systems the paradoxes and difficulties listed above are advanced. Finally, the problem of introducing alethic modalities into deontic logic is raised. The Kantian Principle and the "law" that what is necessary is obligatory and what is impossible is forbidden are discussed.

In the last chapter the relation between the evaluative and directive uses of language in a moral context is examined. An attempt is made to show that a deontic logic and the corresponding imperative logic are isomorphic models of a related normative logic. An attempt is also made to explicate the notion of normative validity. A partial characterization of the truth conditions for deontic (or imperative) sentences is proposed, and it is argued that the usual definition of (assertoric) validity is applicable to normative arguments. Finally, the problem of the possibility of imperative logic is raised. Jφrgensen's dilemma and related problems are examined. Two unorthodox imperative operators, which are imperative counterparts of 'You are permitted to do...' and 'It is indifferent that you do...', are introduced. Attention to these operators seems to contribute to a correct understanding of certain disputed argument forms.

Three appendices are included: a list of axioms and rules, a list of definitions, and a list of theorems. There is

also a comprehensive bibliography that lists most of the important works in deontic and imperative logic through 1968.

The author wishes to express his deep gratitude to Professor Gerald J. Massey for his untiring and time-consuming careful reading of the material when it was submitted as the author's doctoral dissertation to Michigan State University in 1969. Professor Massey's detailed criticism and helpful suggestions have led to many improvements both in formulation and in argumentation.

Thanks are also due to Professor Herbert E. Hendry and Professor George C. Kerner with whom discussions always turned out to be fruitful and beneficial to the author.

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§ 1. INTRODUCTION

The behavior of deontic predicates such as 'obligatory', 'permissible' and 'forbidden' has long been receiving philosophers' attention. As early as in the Middle Ages, it was observed that there exists a similarity between the concept obligation and the concept necessity on the one hand, and the behavior of the concept permission and of the concept possibility on the other. However, the philosophical treatment of these deontic concepts had been largely peripheral and made in passing until early this century when Ernst Mally tried to formalize systematically the deontic concepts.[1] It was he who first used the word 'deontik' and called his study of these concepts 'Deontik Logik'.

Subsequently, a remarkable number of efforts have been made either directly in deontic logic or in fields closely related to it, e. g., in the logic of imperatives or in the logic of commands. Examples of these efforts made before 1950 can be found most significantly in the following literature: Kurt Grelling [1939], Karel Reach [1939], Karl Menger [1939], Albert Hofstadter and John Charles Chinoweth McKinsey [1939], Alf Ross [1941] and Herbert Gaylord Bohnert [1945].

It is perhaps sound to say, however, that the ice of

1 See Mally [1926]. The author-*cum*-date reference is made to the bibliography at the end of this book.

modern deontic study was not really broken until the late 1950's when the Finnish logician Georg Henrik von Wright published his earliest studies in deontic logic with an effort to formalize the deontic concepts of permission, obligation, prohibition and commitment.[2] Since the publication of the earliest papers by von Wright, the study of deontic concepts has received widespread philosophical attention both in the English-speaking world and in Scandinavian countries.[3]

Although hardly twenty years have elapsed, we find a wide range of deontic logics on display. Among them some systems are based upon standard propositional logic,[4] others take alethic modal logics as their cornerstones.[5] There are still others in which quantifiers play an indispensable role.[6] Besides, of all the varieties some systems are two-valued,[7] others three-valued;[8] some systems formalize the relativized deontic concepts,[9] others incorporate tense-logical notions as their basic concepts.[10] Furthermore, some philosophers discuss deontic logic in the context of, or in coordination with, imperative logic or directive logic;[11] others base their deontic logics on another formalized or formalizable system,

2 In English, the word 'deontic' was coined, according to von Wright, by Charles Dunbar Broad. See von Wright [1951a].

3 See, especially, von Wright [1951a] and [1951b].

4 For example, von Wright [1951a], [1951b], [1956], [1965a] and Fisher [1961b].

5 E. g., Anderson [1956] and Prior [1957].

6 See Hintikka [1957].

7 Von Wright [1951b].

8 Fisher [1961b] and Åqvist [1963b].

9 Von Wright [1956] and Rescher [1958].

10 Von Wright [1965b] and Åqvist [1966]. cf. §14.

11 E. g., Geach[1958], Castañeda [1958], [1968], and Ross [1968].

such as the "logic of better",[12] and so on. This list of variety in deontic logic can be extended considerably, and all of the deontic systems are devised to capture the formal structure of deontic concepts.

In the course of development of these various deontic systems, different types of procedure to single out the "deontic truths" have also been advanced. Among them, axiomatics is hardly a new technique as one may expect. The truth table or matrix method and the normal form method are also commonly used. In addition, Quine's truth-value analysis, Hintikka's model-set method, Kripkean model structure together with Beth's semantical tableaux, and Fitch's subordinate proof, all have found their ways into deontic logic.

This brief description of deontic logic may lead one to conclude that the modern development of deontic logic has now reached a mature and advanced stage. This conclusion, however, is too hasty if not totally unjustifiable. For one thing, logic may not be just a game of manipulating symbols. We usually intend a logic to be a formalization or systematization of a set of concepts of which the underlying "logic" is intuitively conceived. In our present case, this set of concepts is the so-called deontic concepts: obligation, permission, prohibition (forbiddance) and commitment. A deontic logic is meant to explicate these concepts. Hence, the success of a deontic logician depends not only on whether he has a syntactically well-built system, but also on whether his system admits of a sound semantical interpretation which is genuinely deontic. From this point of

12 Åqvist [1963c].

view, it is not without good reason that some philosophers also call deontic logic the *logic of obligation*. This reminds us from the very beginning what deontic logic aims at, and provides us with an intuitive ground to justify its degree of success.

It is a common belief, and a usual practice, too, among deontic logicians that the concepts of obligation, permission and prohibition are interdefinable with the help of some logical constants (e. g., the negation and conjunction connectives).[13] It follows immediately that the logic of obligation, the logic of permission, and the logic of prohibition are, or could be, one and the same logic. But what about the logic of commitment? Is the concept "commitment" definable in terms of one or several of the other deontic concepts with perhaps the help of certain logical constants? The answer is far less definite.

Von Wright first tried to formalize the concept of commitment in terms of obligation and the material conditional.[14] Since that proposal was put forward, criticism and new proposals have been mounting in the literature. But until now there seems to be no single satisfactory formulation which is commonly accepted by deontic logicians. To make the situation even worse, Roderick M. Chisholm introduced the so-called contrary-to-duty imperative into deontic studies,[15] thereby adding to the already puzzling problem a new dimension of difficulty.

This is just an indication of the semantic difficulties which a deontic logician encounters. In addition, the problems

13 See, for example (D2. 1) — (D2. 3) in next section.
14 Von Wright [1951a].
15 Chisholm [1963a].

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