Chapter 1

Introduction

1.1 Thesis summary

Norms pervade various aspects of life, and deontic logic delves into their logical analysis, revealing their contextual nature in the form of conditional statements.

In this habilitation thesis, I showcase my contributions to the field of deontic logic, spanning over the past 20 years, with a primary focus on the logic of conditional norms. My contributions aim to address two fundamental gaps in the area, and they are thus organized along two axes, a main one devoted to axiomatization (with two sub-axes), and a secondary one devoted to automation.

The first axe revolves around the elucidation of axiomatization problems, with a particular emphasis on two prevailing paradigms: the modal logic paradigm (sub-axe 1) and the norm-based (or rule-based) paradigm (sub-axe 2).[a] The norm-based paradigm treats the normative system as a first-class citizen, and originates in the work on conflict-tolerant deontic logics, see e.g. [114]. Deontic modalities are analyzed not in terms of possible worlds, but with respect to a set of explicitly defined norms—whether regulative, such as obligations and permissions, or constitutive, which are rules that define or create the very possibility of certain actions or institutions (e.g., "a valid contract requires mutual consent"). This approach moves away from a truth-functional semantics in favor of an operational one, where detachment (modus ponens) serves as the core mechanism. The central question becomes:

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[a]The term "norm-based" was first introduced by Hansen [48] and has since entered common usage in the field. The term "rule-based" is also occasionally used.