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Editorial

Selected and revised papers from the Ninth International Conference on Deontic Logic in Computer Science (DEON 2008)

The International Conference on Deontic Logic in Computer Science, has been since its first meeting in 1991, a gathering point for researchers interested in deontic logic and normative systems, drawing together work from computer science, artificial intelligence, philosophy, organisation theory and law. The 9th edition of the conference, DEON 2008 continued in this interdisciplinary tradition. The meeting was held in Luxembourg, in July 2008, and the proceedings published as volume 5076 of the Springer Lecture Notes in Computer Science series.

This special issue of the *Journal of Applied Logic* is based on selected papers from DEON 2008. The conference papers were revised and significantly extended by the authors, and were improved through the usual rigorous journal review process.

The papers reflect both the diverse strands of thinking in the area as well as the cross-fertilisation of research areas that has been fostered through the DEON series. The authors include both philosophers and computer scientists, but many of the papers demonstrate that ideas or concerns from one area are being adopted in the other, often in ways that provide fresh insight or motivation to the parent field.

The underlying ontology of agency is one of the issues that work in the area must wrestle with. Nuel Belnap, one of the DEON invited speakers, approaches this problem by outlining a theory of branching space–times with agents and choices in his "Prolegomea to norms in branching space–times". Starting from the theory of branching time developed with several co-authors in the book "Facing the Future", agents are represented as a kind of tree, of which each trace is a "life history" of "life events", from birth to death. As also emphasised by Horty in his book "Agency and Deontic Logic", the central notion of causality is addressed, using so-called causal loci.

It is generally held that normative facts are of a different ontological category from empirical facts and cannot be reduced to them. On the other hand, empirical facts are able to affect the status of normative facts: e.g., the fact that "I pronounce you man and wife" was uttered in certain circumstances activates a complex set of obligations. This raises the question of how these two distinct categories of facts are related.

One of the ways the relationship has been logically modelled is through a "counts-as" relation, that captures how empirical facts are related to normative facts. Another perspective in the literature starts from the observation that the introduction of norms has a "language-creating" aspect, requiring the introduction of new properties for the expression of the normative content. The paper "Norms as ascriptions of violations: An analysis in modal logic" by Davide Grossi proposes a new formal theory of norms that aims to bring together these perspectives. To do so, the paper draws on recently developed ideas from modal logic intended originally to express notions of irrelevancy, as well as the classical Andersonian reduction of normative notions to a modal logic of necessity together with a proposition expressing that a norm has been violated. The paper argues that the resulting framework can be applied to give insights into some of the classical puzzles of deontic logic: Chisolm's paradox and Jorgensen's dilemma.

Counts as relations are used also to define intermediate concepts, such as purchase, ownership, and power. In their paper "Stratification of normative systems with intermediaries", Lindahl and Odelstad define so-called intervenients in their algebraic framework for normative systems, and study properties such as closeness, minimality, and combinations of intervenients. They distinguish three kinds of intervenient minimality, thereby establishing a typology. Such refinements can be used in a theory of norm change.

That normative facts go beyond empirical facts is also apparent once one considers the epistemic state of agents. For example, the legal treatment of a simple act performed as an unknowing reflex action (pulling the trigger of a gun in shock at a stroke of lightning) is likely to be different from its treatment when the actor knew that the act was being performed and was likely to have the consequence of causing death of another. The paper "Deontic epistemic *stit* logic distinguishing modes of 'Mens Rea'" by Jan Broersen develops a logical framework capable of expressing both deontic and epistemic notions, that aims to provide sufficient expressiveness to make distinctions of this kind. The tools of modal logic applied in this paper include operators for obligation, knowledge and several forms of STIT ("see to it that") operators.

Last, but not least, in his paper "Praise, blame, obligation, and DWE: Toward a framework for classical supererogation and kin", Paul McNamara continues his explorations on "Doing Well enough" (DWE) or "actions beyond the call of duty"

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by exploring various relationships between deontic concepts and praiseworthiness and blameworthiness. This emphasised the evaluation of agents, and allows him to represent schemes for supererogation and kin. For example, risking one's life to save a child from a burning house is praiseworthy, but refusing to help a friend may be blameworthy – even in some cases where it is obligatory not to help him. Using this theory, he argues that the classical analysis of supererogation is fundamentally flawed.

In addition to these papers, the DEON 2008 programme had a special focus on normative concepts in computer security, reflected both in invited talks and contributed papers covering issues such as access control (in an invited talk by Martin Abadi), information security economics (in an invited talk by Ross Anderson), intrusion detection, and trust. Other contributions dealt with topics such as the dynamics of obligations (in an invited talk by Dov Gabbay), proof theory for deontic logic, administrative procedures, as well as decision theoretic perspectives on norms. We encourage the reader who has enjoyed the papers presented here to look to the proceedings for further evidence that deontic logic remains a fertile area of research, with many interesting and challenging problems remaining to be solved.

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