ABSTRACTS

A2.20 Philosophical Logic

Product Update for Dynamified Deontic Logic of Speech Acts

Tomoyuki Yamada, Philosophy, Hokkaido University, Sapporo, JAPAN

Inspired by the development of PAL (Public Announcement Logics), dynamic logics that deal with the effects of speech acts of commanding, promising, requesting, asserting, conceding, and so on are developed in the style similar to PAL. For example, a dynamic logic that deals with effects of acts of commanding and promising is developed by adding modal operators that stand for the types of acts of these kinds to a multi-agent variant of deontic logic. These new modalities are interpreted by model updating operations that cut deontic accessibility links between worlds. When this logic is combined with a multi-agent static epistemic logic, these operations, called ``deontic updates'', yield a slightly surprising result: namely, the epistemic states of agents are updated in such a way that every agent comes to know what illocutionary acts has been performed. This happens because the language of this logic cannot represent the uncertainties agents may have about what has happened. Since one and the same sentence of natural language can be used to perform two or more kinds of illocutionary acts, however, the illocutionary force of an utterance can remain underspecified even if the addressee recognizes the sentence uttered, and knows the context of the utterance and the status of the utterer very well. The purpose of this paper is to examine how the ``product update'' introduced in DEL (dynamic epistemic logic) can be adapted to represent such uncertainties agents have about what has happened in a dynamified deontic logic. It will turn out that the task is not trivial. Since the performing of an illocutionary act is standardly supposed to involve what Austin calls ``the securing of the uptake'', if the addressee remains uncertain about what has been performed, it means that the uptake is not secured, and thus the attempted illocutionary act fails.

Justice-Based Responsibility

Andrzej Malec, Department of Law, S.Staszic College of Public Administration, Bialystok, POLAND

In this paper, a concept of justice-based responsibility is discussed. We explicate the notion of an act used in law and ethics, in terms inspired by Wolniewicz’s ontology of situations. We perceive any act as a choice between some alternative events. We define the internal value of an act as the difference between the value of the chosen alternative event and the value of the best of the remaining alternative events. Respectively, we
define the external value of an act as the difference between the value of the chosen alternative event and its consequences, and the value of the best of the remaining alternative events and their consequences. This way, the evaluation of acts is reduced to comparing values of situations. Afterwards, we define: (i) a bad act as any act with negative internal value in an elementary choice situation (i.e. in a choice situation with exactly two alternative events, which both are atoms in Wolniewicz’s sense), (ii) an internally wrong act as any act with negative internal value, and finally (iii) an externally wrong act as any act with negative external value. Among these three notions, the notion of an externally wrong act seems to be the most suitable criterion for the attribution of a justice-based responsibility. This is because if one admits as the criterion in question the internal value of an act, one consequently arbitrarily excludes from assessment all consequences of alternative events. However, if we choose the notion of an externally wrong act as the criterion for evaluation of the acts, we must admit that the attribution of a justice-based responsibility depends on the consequences of alternative situations. This fact sets down the limits for the objective attribution of a justice-based responsibility.

Temporal Enclosure Structures

Claudio Mazzola, School of HPRC, The University of Queensland, Brisbane St Lucia, AUSTRALIA

Formal models of time are extensively applied in various disciplines, ranging from metaphysics and the foundations of science to tense logic and artificial intelligence. For the most part, however, such models are based on some primitive binary relation of temporal precedence, which is generally assumed to be a partial order. This choice has two major disadvantages: firstly, it rules out closed or partially closed temporal structures by fiat; and secondly, it makes the resulting models hardly generalizable to the spatial case, where no analogous relation of precedence can be found. This paper presents an alternative approach to temporal modelling, which aims to overcome such limitations while retaining the advantages of the standard approach. The assumed primitive is the reflexive, and transitive relation of temporal enclosure, which is meant to hold between two events just in case the former one takes place while the second one occurs. On this basis, the derivate relations of overlap, connection and external connection are defined. This makes the proposed model akin to the region connection calculus approach to spatial reasoning in artificial intelligence, whose fundamental notions it replicates, though with a different interpretation. This ensures that a generalization of the model to the spatial case be possible, thus overcoming the latter of the two problems generally affecting temporal models. Furthermore, three fundamental axioms are assumed: one in order to allow the model to distinguish between differing temporal topologies, one in order to allow for the composition of neighboring events, and one in order to ensure the internal connectedness of each event. The resulting model is then demonstrated to be compatible with closed temporal structures, as well as with linear and branching ones.
Future contingents, partial models and the flow of time

Guillaume Massas, Philosophy, Ecole Normale Supérieure / ILLC, Paris, FRANCE

Contemporary solutions to the problem of future contingents involve rejecting at least one of the following very intuitive principles: sempiternality of truth (i.e., sentences do not become true or false through time), necessity of the present (i.e., whatever is true now is irrevocably true), or the law of excluded middle. This work proposes a new solution to the problem which preserves all three intuitions, while rejecting an often overlooked fourth logical principle, namely that a disjunction is true only if one of the two disjunct is.

I will first provide a simple reconstruction of the fatalist argument, proving that no model of temporal logic satisfying the four principles above can allow for future contingent statements, and then motivate a solution based on the rejection of the fourth principle. Understanding the contingency of the future as closely related to partiality and indeterminacy rather than genuine modalities, I will propose a new model of temporal logic, based on linear rather than branching semantics for time, and I will make use of partial logic and supervaluations in order to represent both the settledness of the past and the openness or indeterminacy of the future.

Finally, I will shed light on some conceptual issues raised by this solution regarding the relationship between models of temporal logic and the actual flow of time: I will argue that, if time is really indeterministic, then branching models of time are mistaken in claiming that they can eternally represent time, i.e. give a static representation of the actual world that does not vary over time. By contrast, the dynamic view that I will present is not committed to a complete, eternal description of the actual world, but rather to a partial description that gets completed as time itself passes.