The Prague Seminar on Paraconsistent Logic

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Hitoshi Omori: Sette, Jaśkowski, and beyond. One of the simple approaches to paraconsistent logic is in terms of three-valued logics. Assuming the standard behavior with respect to the "classical" values, there are only two possibilities for paraconsistent negation, namely the negation of the Logic of Paradox and the negation of Sette's logic $\mathbf{P}^1$. From a philosophical perspective, the paraconsistent negation of $\mathbf{P}^1$ is less discussed due to the lack of an intuitive reading of the third value. Based on these, the aims of the paper are twofold. First, I present a semantics for $\mathbf{P}^1$ à la Jaśkowski. The new semantics can be seen as an improved version of the so-called society semantics devised by Carnielli and Lima-Marque. Second, based on the new semantics, I discuss a classification of paraconsistent logics.

Vít Punčochář: A relevant logic of questions. In my talk, I will present a generalized version of inquisitive semantics. In this semantics I will define a general concept of the inquisitive extension of L, for any substructural logic L. The inquisitive extension of L enriches L with questions in the style of inquisitive semantics. The general concept will be illustrated with one particular example, the inquisitive extension of the relevant logic **R**. The inquisitive extension of R will be axiomatized and provided with a suitable semantics.

Adam Přenosil: Four-valued clones from a logical perspective. The lattice of four-valued (De Morgan) clones, i.e. four-element algebras abstracted from a particular choice of basis, is known to be a large and complicated object whose structure is not very well understood. In this talk I shall single out some parts of this lattice which have some intrinsic interest from the point of view of four-valued logic. The relationship between this lattice and Post's lattice of two-valued (Boolean) clones will also be discussed.

Ryosuke Igarashi: Reconstruction of the principle of exposion via quasi-multiple-conclusion natural deduction. In this paper, we will investigate natural understanding of the so-called Principle of Explosion (EFQ) and intuitionistic logic. Firstly, we argue that there is no intuitionistically well-explained validation to EFQ. Secondly, we show that intuitionistic logic is well-formulated with quasi-multiple-conclusion natural deduction, and that intuitionistic λ-calculus is better understood as one equipped with a catch/throw mechanism with computation abort.

Ondrej Majer: Paraconsistent epistemic logic. We develop a framework allowing inconsistent but non-trivial bodies of information to be available to cognitive agents. We outline a paraconsistent epistemic logic based on the logic paraconsistent modal logic **BK** studied by Odintsov and Wansing ("Modal logics with Belnapian truth values", *J. Appl. Non-Class. Log.*, 20, 279–301, 2010). Our framework is based on the interpretation of the modal accessibility relation as a *(reliable) source* relation, akin to the approach adopted in (Bílková et al., "Epistemic logics for sceptical agents", *J. Log. Comput.*, 26, 1815–1841, 2016). If a state x represents an information state of an agent, a piece of information φ available at x is justified if it holds at some source y accessible from x. Unlike Bílková et al. we allow sources to be mutually incompatible or even contradictory. Our framework distinguishes various kinds of inconsistency allowing an agent to gain some information even in an environment with faulty sources.

Igor Sedlár: Weak negation in public announcement logic. In standard epistemic logic, a body of information available to an agent (represented as a set of possible worlds) supports φ iff it rules out the Boolean negation of φ ($\neg\varphi$ is false in every world in the set). We explore a weaker notion of support corresponding to ruling out $\sim\varphi$, where $\sim$ is some negation weaker that Boolean negation. We apply the weak negation in formalising non-monotonic information updates by means of standard public announcements.