

- CARLOS CALEIRO AND RICARDO GONÇALVES, *Algebraic perspective on valuation semantics*.

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The theory of valuation semantics [4] arose from the attempt to give some reasonable sort of semantics to logics that lack a meaningful truth-functional semantics. These logics constitute a challenge to the usual algebraic based semantic tools, such as logic matrices [3], since they can have connectives that are not always interpreted homomorphically in a given algebra. The key idea of valuation semantics is to drop the condition that formulas should always be interpreted homomorphically. Although satisfactory, the existing proposal of valuation semantics is, nevertheless, not as general as one would expect. It lacks a workable algebraic theory, such as that relating logical matrices to the Blok-Pigozzi theory of AAL [2]. Herein, we propose and study an algebraic generalization of the notion of valuation semantics.

Our aim is to give an algebraic perspective to the theory of valuation semantics, not only by extending it to the many-sorted case, but also by strictly generalizing the existing notion in the one-sorted (propositional) case. Since our notion of valuation semantics arises naturally in semantical considerations from the novel behavioral approach to the algebraization of logics [1], we will study the relation between them. As a byproduct we reinvent a complete valuation semantics for the paraconsistent logic \mathcal{C}_1 of da Costa, now in an algebraic behavioral disguise. This work was partially supported by FCT and EU FEDER, namely via the QuantLog POCI/MAT/55796/2004 and KLog PTDC/MAT/68723/2006 projects of SQIG-IT. The second author was also supported by FCT under the PhD grant SFRH/BD/18345/2004/SV7T.

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