Four Players Semantics for a Family of Paraconsistent and Paracomplete Logics

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Abstract

In [1] it was introduced two players semantics for classical logic, by viewing it as a game between two players, one of them trying to prove **P**, and the other one trying to prove not **P**. This metaphor provides a nice way for understanding the interplay among the connectives and quantifiers, specially the behavior of negation and implication.

However, when dealing with certain non classical logics, we observe that a semantics with four players (instead of only two) is more intuitive and allows for technical advantages which shed some light upon the definition of some non classical connectives.

In this paper, we propose a generalization of Hintikka's Game Theoretical Semantics, with four players, which constitutes a robust technical tool for providing semantics for logics in general.

In particular, we show formalizations for a family of paraconsistent and/or paracomplete logics, using four players, which present some important improvements over the semantics with only two players presented in [2].

References

[1] J. Hintikka & J. Kulas, The Game of Language, D. Reidel Publishing, 1983.

[2] Arthur Buchsbaum & Tarcisio Pequeno, Uma Família de Lógicas Paraconsistentes e/ou Paracompletas com Semânticas Recursivas, Monografias em Ciência da Computação nº 5, Departamento de Informática, Pontifícia Universidade Católica do Rio de Janeiro, 1991. Republished by Coleção Documentos - Série de Lógica e Teoria da Ciência nº 14, Instituto de Estudos Avançados, Universidade de São Paulo, 1993.