

A GAME CHARACTERIZATION OF PARAconsistent NEGATION

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Abstract

Is it true that in order to deserve to be called a negation a monadic connective should keep all the characteristic properties of classical negation, such as unrestricted application of the *axiom of absurd*, or contrapositive reasoning, and tautological disjunction of a formula with its negation? Such a requirement seems to be too strong. It would rule out some respectable negations, such as intuitionistic negation. But, if classical negation is not the only form of logical negation allowed by God to suffice the needs of the human beings, what else is to be admitted as negation? What are the least properties to be fulfilled in order to a connective may legitimately be taken as such? To contribute to the answer of these questions is the aim of the present paper. We hope to add a new insight towards a demarcation criterion by observing the role negation is supposed to play when a logic is viewed through its semantic game. Traditionally, the role of negation in a game is to provoke the swapping of positions between the opponents. So, our strategy here is to replace the question on whether paraconsistent negations are really negations by the one of how they behave in the semantic games of the logics they belong to.

Following a tradition started in Aristotle, more precisely in the Book IV of his *Metaphysics*, the negation of a predicate is often thought as its *complement*. A predicate and its negation are thus mutually exclusive, the *non-contradiction principle* following analytically from the negation defined as such. Although some logicians have undertaken an effort towards making this concept a little bit more general and inclusive, in general they remained committed to the idea of keeping exclusion as one essential feature of negation. This attitude preserves in its integrity the Aristotelian rejection of contradiction and rules out any possibility of a paraconsistent logic and of attaching a meaning to anything as a paraconsistent negation.

But, if in place of this Aristotelian view we take a dialogical view of reasoning typical of the Socratic method, our picture of negation may radically change. In a dialog the most prominent effect of negation is the swapping of positions between the contenders. In a classical setting there is equivalence between exclusion and swapping, coming from the fact that a classical game is a zero sum game. However, two opponent games which are not of zero sum are perfectly conceivable. Thus, the key ideas in this paper is the suggestion of looking for an essential feature of negation by viewing a logical argument as a dialectic game, and the realization that the game that corresponds to paraconsistent logics is not a zero sum game, but a positive one. It can happen, in a paraconsistent game, that both opponents win by concluding a thesis and its negation.