

Three Existence Principles in a Modal Calculus Without Descriptions Contained in A. Bressan's MC^v

EUGENIO GIOVANNI OMODEO

1 Introduction In this paper an axiomatization is provided for an interpreted modal calculus similar to MC^v . Several variants of this axiomatization—which I have striven to make as concise as possible—are also proposed.*

Essentially, we extend the logical calculus without descriptions that was defined and named K^λ in [8] by adding to it the axiom of choice. Recall that K^λ is equivalent to MC^v deprived of four axioms (namely, AS12.20, AS12.23, AS25.1, AS45.1 in [1], pp. 46, 48, 95, 184).

The existence principle for functions (AS12.17 in [1], p. 45; AS.3.16 in [8]) does not appear among the axioms of our calculus, which are no stronger than those of MC^v . Nonetheless, our short version of the axiom of choice makes it possible to infer that principle, along with the most customary version of the axiom of choice. More interestingly, it allows us to simplify considerably the axiom that was introduced in [8] in order to eliminate descriptions from MC^v (named, in its new formulation of this paper, the “existence principle for descripta”).

The axiom about the existence of predicates (AS12.19 in [1], p. 46) has also been simplified in this paper and the new version is shown to be as strong as the original one.

A formal analogue for the concept of elementary possible case (or “ Γ -case”) is defined within our calculus. Although we are making no assumptions about the plurality of Γ -cases, the new definition seems to be as powerful as

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