A Generalization of the Adequacy Theorem
for the Quasi-Senses

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Abstract   In the present paper, based on Bressan's sense language SL_α^ν, a version of the adequacy theorem for quasi-senses is proved that is applicable in every case, even when SL_α^ν collapses into an extensional language. Thus this version affords a new result also for Bressan's modal language ML^ν, which is substantially identical to SL_1^ν. Furthermore, some conditions of the adequacy theorem are weakened: the basic well-formed expressions (wfes) can contain primitive constants. Then we consider a theory T based on SL_α^ν, a definition system D, and strong (weak) extensions of T in connection with a semantics for which the senses of the wfes are (are not) preserved by the principles of λ-conversion. The designation rules for quasi-senses are given in a complete form, also for strong theories. In fact, by means of the notion of a T-correspondent of a wfe, every defined constant has a quasi-sense. Synonymy relations are extended to strong and weak extensions of T. Finally, the previous version of the adequacy theorem is further generalized by making the wfes contain primitive and defined constants, and making the valuations be noninjective on their free variables. By means of this result it is possible to construct quasi-senses for any choice of a synonymy notion.

1 Introduction   Many papers have been devoted to sense logic, starting with Church [15] and Carnap [13] and [14]. In [13] Carnap deals with some special modal languages and, at the end, he makes some substantial hints about synonymy and a sense language capable of treating simple (noniterated) belief sentences. Various attempts to construct a rather general and systematic theory of belief sentences were proposed later, e.g. by means of λ-categorial or quotational languages. Among the published papers on this subject we should mention Lewis [19], Cresswell [17] and [18], and Bigelow [2]. In particular, in the aforementioned papers of Cresswell, where the literature and the actual situation connected with the problem are described, several deficiences and limitations of past approaches are clearly presented.

Recently, the results of Church's paper [15] have been generalized (see, e.g.,