Non-Orthodox and Orthodox Strategies
in Tableau Metatheory for Relating Logic

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A semantics for a language is a *relating semantics* iff at least for one connective c_i the valuation of all complex propositions of the form $c_i(A_1, \ldots, A_j)$, where j is the arity of c_i, in a world w requires not only valuations of pairs $(A_1, w), \ldots, (A_j, w)$, but also a valuation of j-tuples $((A_1, \ldots, A_j), w)$. A valuation of j-tuples $((A_1, \ldots, A_j), w)$ can in a formal semantics represent various logical or non-logical relationships between $A_1, \ldots, A_j$ in a world w, for example: content relationships, (like: relatedness relation), analytical relationships, causalities, temporal orderings, preference orderings, logical consequences of some logic, etc.

During the 1st Workshop of Relating Logic, the following problem was posed:

Problem α: axiomatization of logics defined by relating semantics. [1]

Here we try to answer to the problem how to give adequate tableau systems for relating logics. However, we concentrate only on fragments of mono-relating language with at least one relating connective (so, the logic is two-valued, its language is formed with a functionally complete set of classical connectives and one relation in a model is employed). We consider so called positive as well as negative relating properties of relations in models.

In the presentation we discuss two tableau frameworks: non-orthodox and orthodox. In the first framework the semantic notions can be incorporated in the tableau machinery, while in the orthodox tableau framework the proofs are conducted in a pure set of formulas. Finally, we make an attempt to outline some tableau metatheory within both strategies.

References

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