

A multifaceted Approach to algebraic logic  
*What happened since ‘Algebraic logic, where  
does it stand today?’*

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**Abstract**

In the article ‘Algebraic logic, where does it stand today?’ published in the Bulletin of Symbolic logic in 2005 logic, I gave a fairly comprehensive review of Tarskian algebraic logic reaching the boundaries of current research back then. In this talk I take it from there, giving the audience more than a glimpse of some recent exciting developments till the present day. In the process, I take a magical tour in algebraic logic, starting from classical results on neat embeddings due to Henkin, Monk and Tarski, all the way to recent results in algebraic logic using so-called rainbow constructions and Erdos probabilistic graphs. On the way, I shed some light on the connections with modal logic, model theory, set theory, graph theory, game theory, and finite combinatorics. Two new hitherto unpublished results are given; one showing algebraically that Gödel’s incompleteness theorem and undecidability do not necessarily go hand in hand for guarded logics and another on the interaction of Vaught’s conjecture (VC) which lies at the very heart of both model theory and set theory with algebraic logic. I present two instances where VC holds. The first instance involves widening the notion of isomorphism (replacing it by ‘indistinguishable models’ to be defined below) and the in the second the notion of model is modified dealing with so-called weak models that arise naturally from weak cylindric set algebras.