

# INTERCONNECTIONS BETWEEN UNIVERSAL ALGEBRA AND MODERN LOGIC: SOME HIGHLIGHTS

HANAMANTAGOUDA P. SANKAPPANAVAR

ABSTRACT. In this lecture I shall present some of the highlights of the incredibly fascinating story of:

- How the numerical algebra of the first half of the 19th century influenced Boole to the discovery of his algebra of classes, which was later improved by Jevons, De Morgan, Peirce and Schröder
- How the algebra of classes, in turn, was partly responsible to the very creation of universal algebra
- How the discoveries of Frege led to the development of modern mathematical logic

I shall, then, try to illustrate how systems of propositional logic (classical, many-valued, intuitionistic, etc.) provide stimulus to universal algebra by providing a rich variety of examples of algebras and thereby inspiring new ideas and results in universal algebra, and how universal algebra, for its part, provides powerful methods for the investigation of algebras arising from the propositional logics, thus contributing to further understanding of those logics.

My presentation will be, for the most part, non-technical and will include, time permitting, the historical timeline of major breakthroughs in both universal algebra and propositional logic.

DEPARTMENT OF MATHEMATICS, STATE UNIVERSITY OF NEW YORK, NEW PALTZ, NY  
12561, U.S.A.