

Book review

C. Anthony Anderson and Michael Zelény (eds), *Logic, Meaning, and Computation. Essays in memory of Alonzo Church*, Synthèse Library vol. 305, Dordrecht, Boston, and London: Kluwer Academic Publishers, 2001, xiv-627pp., ISBN 1-4020-0141-X, 230.00 EUR, 210 USD, 145 GBP.

Reviewed by

G. Aldo Antonelli, Department of Logic & Philosophy of Science, 3151 Social Science Plaza, University of California, Irvine, California 92697-5100, USA.

Alonzo Church was undoubtedly one of the intellectual giants of the 20th century, along with such figures as Alan Turing and Kurt Gödel. His contributions spanned the gamut from the λ -calculus to relevant implication, and from intensional logics to set theories with a universal set. His analysis of the notion of computability led him to what is now known as Church's Thesis thesis as well as to his 1936 theorem on the unsolvability of the *Entscheidungsproblem* (both also due independently and simultaneously to Alan Turing). Church was also founding editor of the *Journal of Symbolic Logic*, and was known for the meticulous care with which he managed the *Journal's* reviews.

The volume edited by Anderson and Zelény is a well-deserved tribute to Church's achievements, with many interesting contributions by leading scholars. Following roughly the subdivision of the different areas in which Church's own work can be categorized, the book is organized in three parts:

1. "Logic" (with contributions by P. Apostoli, J. Corcoran, J.M. Dunn, T. Forster, R. Gandy, E. Keenan, S. Mac Lane, J. Massey, S. Shapiro, and R. Smullyan);
2. "Computation" (with contributions of H. Barendregt, K. Grue, D. Leivant, R. Loader, P. Martin-Löf, C. McLarty, and J. Shepherdson);
3. "Philosophy, Meaning, and Intensional Logic" (with contributions by C.A. Anderson, J. Burgess, M. Detlefsen, R. Holmes, G. Mar, E. Martino, T. Parsons, M. Richard, N. Salmon).

Beside the Editors' Preface and a 30-page index, the book contains also personal recollections of Alonzo Church by two of his students, D. Kaplan and T. Burge. The book exhibits the usual high-quality which has become the publisher's standard, especially in the *Synthèse Library* series. Many of the papers in the book were expressly written (in the early to mid-1990's) to be included in the collection, but others are either adaptations of previously published work or bring for the first time in print material that had been informally circulated for a while. Only a couple of editorial blemishes remain: the reviewer was able, on a rather cursory survey, to spot a dozen or so typos (some annoying, like the two on p. xi), which might have been avoided with a bit more care; and one also wishes that the volume contained profiles (or at least provided affiliations) for the various contributors.

When reviewing a collection of papers, especially one of this size, it is impossible to give anything resembling a full account of all the contributions. Here we shall limit ourselves to the broadest strokes.

A theme recurring in the Part I, "Logic," is that of second- or higher-order formalisms, possibly enriched with abstraction principles. Here we go from Church's own set theory with a universal set (Forster), to an account of logicity based on permutation invariance (Keenan), to more algebraic approaches (Massey, Smullyan). Also, we have an account of what is perhaps Church's least acknowledged achievement, the discovery of relevant implication (Meyer).

Part II, "Computation," is naturally largely occupied by contributions on the λ -calculus (Barendregt, Grue, Leivant, Loader), but also other topics are touched upon, e.g., logic programming (Shepherdson).

Finally, Part III, "Philosophy, Meaning, and Intensional Logic" (the most philosophical of the three), ranges from the logic of sense and denotation (Anderson, Parsons) and the question of ontological commitment (Burgess), to the definability of truth in NFU (Holmes) and Russell's paradox of propositions (Martino).

Altogether, this is an extremely rich volume, in which mathematicians, philosophers and computer scientists alike will find material of interest.