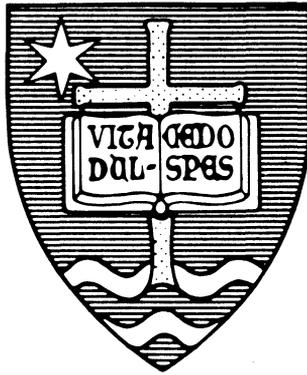


# *Notre Dame*

## JOURNAL OF FORMAL LOGIC



VOLUME 23, NUMBER 4  
OCTOBER 1982

PUBLISHED QUARTERLY BY THE  
UNIVERSITY OF NOTRE DAME, NOTRE DAME, INDIANA

# NOTRE DAME JOURNAL OF FORMAL LOGIC

*Editors:*  
Ernest LePore  
Penelope Maddy  
Mark E. Nadel

*Consulting Editors:*  
Phillip Bricker  
Elliott Mendelson  
V. Frederick Rickey  
Paul Young

*Business Manager:*  
Michele Daugherty

VOLUME 23, NUMBER 4, OCTOBER 1982

## CONTENTS

A relational representation of quasi-Boolean algebras. By <i>J. Michael Dunn</i> . . . . .	353
Indenumerability and substitutional quantification. By <i>Philip Hugly</i> and <i>Charles Sayward</i> . . . . .	358
Axioms for tense logic I. "Since" and "Until". By <i>John P. Burgess</i> . . . . .	367
Axioms for tense logic II. Time periods. By <i>John P. Burgess</i> . . . . .	375
Nonstandard propositional logics and their application to complexity theory. By <i>Michael Evangelist</i> . . . . .	384
A note on initial segment constructions in recursively saturated models of arithmetic. By <i>C. Smoryński</i> . . . . .	393
The expected complexity of analytic tableaux analyses in propositional calculus. By <i>J. M. Plotkin</i> and <i>John W. Rosenthal</i> . . . . .	409
Automorphisms of $\omega$ -octahedral graphs. By <i>J. C. E. Dekker</i> . . . . .	427
Material equivalence and tautological entailment. By <i>A. J. Dale</i> . . . . .	435
Cummutativity and self-reference. By <i>C. Smoryński</i> . . . . .	443
Syllogisms with reduplication in Aristotle. By <i>Allan Bäck</i> . . . . .	453
Expressibility in two-dimensional languages for presupposition. By <i>Merrie Bergmann</i> . . . . .	459
A note on the principle of predication. By <i>Giangiaco Gerla</i> . . . . .	471

---

*Notre Dame Journal of Formal Logic* is published quarterly by the University of Notre Dame in January, April, July and October of each year. The Journal is composed by Beljan, Dexter, Michigan and printed by Cushing-Malloy, Inc., Ann Arbor, Michigan. Second-class postabe paid at Notre Dame, Indiana 46556.

Subscriptions are \$35.00 per year for institutions and \$20.00 for individuals. Back volumes are \$20.00 each for Volumes 1-10 and \$35.00 for Volumes 11-22. Orders for subscriptions and back volumes (accompanied by payment), and changes of address should be sent to the *Business Manager*, P.O. Box 5, Notre Dame, Indiana 46556, U.S.A.

Copyright © 1982 by the University of Notre Dame. All rights reserved.

Coden: NDJFAM.

*Notre Dame Journal of Formal Logic* . . . . . (ISSN 0029-4527)