

THE REVIEW OF SYMBOLIC LOGIC

Edited by

Salvatore Florio, *Coordinating Editor*

Rohan French

Silvio Ghilardi

Hans Halvorson

Simon Huttegger

Juliette Kennedy

Graham E. Leigh

Jon Litland

Marko Malink

Gil Sagi

VOLUME 16 • NUMBER 4 • DECEMBER 2023 • ISSN 1755-0203

Copyright © 2023 by the Association for Symbolic Logic. All rights reserved.

Reproduction by photostat, photo-print, microfilm, or like process by permission only.



PUBLISHED QUARTERLY BY THE ASSOCIATION FOR SYMBOLIC LOGIC, INC.
WITH SUPPORT FROM INSTITUTIONAL MEMBERS.

THE REVIEW OF SYMBOLIC LOGIC

Coordinating Editor

Salvatore Florio

Department of Philosophy, Classics, History of Art and Ideas, University of Oslo

Editors

Rohan French

*Department of Philosophy
University of California, Davis*

Silvio Ghilardi

*Department of Mathematics
Università degli Studi di Milano*

Hans Halvorson

*Department of Philosophy
Princeton University*

Simon Huttegger

*Department of Logic and Philosophy of Science,
University of California, Irvine*

Juliette Kennedy

*Department of Mathematics and Statistics
University of Helsinki*

Graham E. Leigh

*Department of Philosophy, Linguistics, Theory of Science
University of Gothenburg*

Jon Litland

*Department of Philosophy
University of Texas at Austin*

Marko Malink

*Department of Philosophy
New York University*

Gil Sagi

*Department of Philosophy
University of Haifa*

TABLE OF CONTENTS

Independence Proofs in Non-Classical Set Theories SOURAV TARAFDER AND GIORGIO VENTURI	979
The Zhou Ordinal of Labelled Markov Processes Over Separable Spaces MARTÍN SANTIAGO MORONI AND PEDRO SÁNCHEZ TERRAF	1011
Fractional-Valued Modal Logic MARIO PIAZZA, GABRIELE PULCINI AND MATTEO TESI	1033
Towards the Inevitability of Non-Classical Probability GIACOMO MOLINARI	1053
Interpretation, Logic and Philosophy: Jean Nicod's <i>Geometry in the Sensible World</i> SÉBASTIEN GANDON.....	1080
On Zardini's Rules for Multiplicative Quantification As the Source of Contra(di)ctions UWE PETERSEN	1110
Collection Frames for Distributive Substructural Logics GREG RESTALL AND SHAWN STANDEFER.....	1120
Hume's Principle, Bad Company, and the Axiom of Choice SAM ROBERTS AND STEWART SHAPIRO	1158
A Substructural Gentzen Calculus for Orthomodular Quantum Logic DAVIDE FAZIO, ANTONIO LEDDA, FRANCESCO PAOLI AND GAVIN ST. JOHN.....	1177
Two-Sorted Frege Arithmetic is Not Conservative STEPHEN MACKERETH AND JEREMY AVIGAD	1199
Set Theory and a Model of the Mind in Psychology ASGER TÖRNQUIST AND JENS MAMMEN	1233
Proof Systems for Exact Entailment JOHANNES KORBMACHER.....	1260
A Simple Sequent System for Minimally Inconsistent LP REA GOLAN	1296

Subscription Information: *Review of Symbolic Logic* (ISSN 1755-0203) is published quarterly by Cambridge University Press & Assessment for the Association for Symbolic Logic. Annual subscription rates for Volume 16 (2023): Institutional subscription rates, print and online: US \$1386.00 in the USA, Canada, and Mexico; UK £871.00 + VAT elsewhere. Institutional subscription rates, online only: US \$1135.00 in the USA, Canada, and Mexico; UK £735.00 + VAT elsewhere. Individual subscription rates, print only: US \$1376.00 in the USA, Canada, and Mexico; UK £857.00 + VAT elsewhere. Individual subscription rates, online only: US \$273.00 in the USA, Canada, and Mexico; UK £171.00 + VAT elsewhere. Individual subscription rates, print only: US \$339.00 in the USA, Canada, and Mexico; UK £189.00 + VAT elsewhere. Institutional subscription correspondence should be sent to: Cambridge University Press & Assessment, One Liberty Plaza, New York, NY 10006, USA, for customers in the USA, Canada, or Mexico. Customers elsewhere should contact: Cambridge University Press & Assessment, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU, UK. POSTMASTER: Send address changes to: **Association for Symbolic Logic, c/o Journals Customer Services Department, Cambridge University Press & Assessment, One Liberty Plaza, New York, NY 10006, USA**, USmemberservices@cambridge.org.

Association for Symbolic Logic. Individual Members of the Association for Symbolic Logic may receive a print subscription to *The Review of Symbolic Logic* as a benefit of membership. Requests for information, applications for membership, orders for back volumes, business correspondence, and notices and announcements for publication in the *The Bulletin of Symbolic Logic* should be sent to the Secretary-Treasurer of the Association: **ASL, Department of Mathematics, University of Connecticut, 341 Mansfield Road, U-1009, Storrs, CT 06269-1009, USA**. The email address of the Association's business office is asl@uconn.edu. The ASL website is located at <http://www.aslonline.org>. Links from that site provide further information on the *Review* and on submitting papers for publication.

Individual membership in the Association is open to anyone interested in its work. Annual dues for members are US\$108, £82 sterling or €96 (\$54, £43 sterling or €50 for student, emeritus and unemployed members; see <http://aslonline.org/membership/individual-membership/> for more information, including conditions and privileges). Dues include subscriptions to the current volumes of the JOURNAL, the BULLETIN, and the REVIEW.

Institutional membership in the Association is available to any academic institution or department. Annual institutional membership dues for 2023 are US\$1200 (full) or \$790 (basic); privileges include choices of current subscriptions, back volumes, and student memberships. Requests for information, renewals of institutional membership, business correspondence, and notices or announcements for publication in the BULLETIN should be sent to **ASL, Department of Mathematics, University of Connecticut, 341 Mansfield Road, U-1009, Storrs, CT 06269-1009, USA**. The electronic mail address of the Association's business office asl@uconn.edu. Requests for back issues should be sent to Cambridge University Press & Assessment, address above.

Coordinating Editor: Salvatore Florio, *Department of Philosophy, Classics, History of Art and Ideas, University of Oslo, Oslo N-0315, Norway*. Email: salvatore.florio@ifikk.uio.no

Copyright: All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopy, or otherwise, without permission in writing from Cambridge University Press & Assessment. Photocopying information for users in the U.S.A.: Copying for internal or personal use beyond that permitted by Sec. 107 or 108 of the U.S. Copyright Law is authorized for users duly registered with the Copyright Clearance Center (CCC) Transaction Reporting Service, provided that the appropriate remittance per article is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA. Specific written permission must be obtained for all other copying. General enquiries from the USA, Mexico, and Canada should be addressed to the New York office of Cambridge University Press & Assessment <http://www.cambridge.org/us/information/rights/contacts/newyork.htm>; general enquiries from elsewhere should be addressed to the Cambridge office <http://www.cambridge.org/uk/information/rights/contacts/cambridge.htm>; permission enquiries from Australia and New Zealand should be addressed to the Melbourne office http://www.cambridge.org/aus/information/contacts_melbourne.htm; enquiries regarding Spanish-language translation rights (only) should be addressed to the Madrid office <http://www.cambridge.org/uk/information/rights/contacts/madrid.htm>

Copyright © The Association for Symbolic Logic, 2023