

# THE REVIEW OF SYMBOLIC LOGIC

## **Edited by**

Sean Walsh, *Coordinating Editor*

Walter Dean

Fernando Ferreira

Salvatore Florio

Silvio Ghilardi

Hans Halvorson

Simon Huttegger

Juliette Kennedy

Wilfried Sieg

Jamie Tappenden

**VOLUME 14 • NUMBER 3 • SEPTEMBER 2021 • ISSN 1755-0203**

Copyright © 2021 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**

Sean Walsh

*Department of Philosophy, University of California, Los Angeles*

## **Editors**

Walter Dean

*Department of Philosophy  
University of Warwick*

Fernando Ferreira

*Department of Mathematics  
University of Lisbon*

Salvatore Florio

*Department of Philosophy  
University of Birmingham*

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*

Wilfried Sieg

*Department of Philosophy  
Carnegie Mellon University*

Jamie Tappenden

*Department of Philosophy  
University of Michigan*

## **Advisory Board**

Maria Aloni

*Department of Philosophy and Institute  
for Logic, Language and Computation  
University of Amsterdam*

Roy Cook

*Department of Philosophy and Minnesota  
Center for Philosophy of Science  
University of Minnesota*

J. Michael Dunn

*Departments of Computer Science  
and Philosophy  
Indiana University*

Richard Kimberly Heck

*Department of Philosophy Brown University*

Geoffrey Hellman

*Department of Philosophy University of  
Minnesota*

Elaine Landry

*Department of Philosophy University of  
California, Davis*

Bernard Linsky

*Department of Philosophy University of  
Alberta*

Penelope Maddy

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

Edwin Mares

*School of History, Philosophy, Political  
Science & International Relations  
Victoria University of Wellington*

Rohit Parikh

*Department of Computer  
and Information Science Brooklyn College,  
City University of New York*

Greg Restall

*Department of Philosophy  
University of Melbourne*

Stewart Shapiro

*Department of Philosophy  
Ohio State University*

Gila Sher

*Department of Philosophy  
University of California, San Diego*

Achille C. Varzi

*Department of Philosophy  
Columbia University*

Rineke Verbrugge

*Institute of Artificial Intelligence  
University of Groningen*

# TABLE OF CONTENTS

Compositionality, Computability, and Complexity PETER PAGIN .....	551
Deductive Cardinality Results and Nuisance-Like Principles SEAN C. EBELS-DUGGAN .....	592
Hierarchical Incompleteness Results for Arithmetically Definable Extensions of Fragments of Arithmetic RASMUS BLANCK .....	624
Cut Elimination and Normalization for Generalized Single and Multi-Conclusion Sequent and Natural Deduction Calculi RICHARD ZACH.....	645
Knowledge, Justification, and Adequate Reasons PAUL ÉGRÉ, PAUL MARTY, AND BRYAN RENNE .....	687
Exploring the Landscape of Relational Syllogistic Logics ALEX KRUCKMAN AND LAWRENCE S. MOSS .....	728
Dynamic Hyperintensional Belief Revision AYBÜKE ÖZGÜN AND FRANCESCO BERTO .....	766

**Subscription Information:** *Review of Symbolic Logic* (ISSN 1755-0203) is published quarterly by Cambridge University Press for the Association for Symbolic Logic. Annual subscription rates for Volume 14 (2021): Institutional subscription rates, print and online: US \$1258.00 in the USA, Canada, and Mexico; UK £791.00 + VAT elsewhere. Institutional subscription rates, online only: US \$1079.00 in the USA, Canada, and Mexico; UK £679.00 + VAT elsewhere. Institutional subscription rates, print only: US \$1224.00 in the USA, Canada, and Mexico; UK £762.00 + VAT elsewhere. Individual subscription rates, online only: US \$260.00 in the USA, Canada, and Mexico; UK £163.00 + VAT elsewhere. Individual subscription rates, print only: US \$293.00 in the USA, Canada, and Mexico; UK £163.00 + VAT elsewhere. Institutional subscription correspondence should be sent to: Cambridge University Press, One Liberty Plaza, New York, NY 10006, USA, for customers in the USA, Canada, or Mexico. Customers elsewhere should contact: Cambridge University Press, 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, One Liberty Plaza, New York, NY 10006, USA**, [USmemberservices@cambridge.org](mailto:USmemberservices@cambridge.org).

**Association for Symbolic Logic.** Individual Members of the Association for Symbolic Logic 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](mailto: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.

**Coordinating Editor:** Sean Walsh, Department of Philosophy, University of California, Los Angeles, 398 Dodd Hall, Los Angeles, CA 90095-1451, USA. Email: [walsh@ucla.edu](mailto:walsh@ucla.edu).

**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. 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 <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](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 © Association for Symbolic Logic, 2021