

Logic, Argumentation & Reasoning

Interdisciplinary Perspectives from the Humanities
and Social Sciences

Volume 8

Series editor
Shahid Rahman

Logic, Argumentation & Reasoning explores the links between Humanities and the Social Sciences, with theories including, decision and action theory as well as cognitive sciences, economy, sociology, law, logic, and philosophy of sciences. It's two main ambitions are to develop a theoretical framework that will encourage and enable interaction between disciplines as well as to federate the Humanities and Social Sciences around their main contributions to public life: using informed debate, lucid decision-making and action based on reflection.

The series welcomes research from the analytic and continental traditions, putting emphasis on four main focus areas:

- Argumentation models and studies
- Communication, language and techniques of argumentation
- Reception of arguments, persuasion and the impact of power
- Diachronic transformations of argumentative practices

The Series is developed in partnership with the Maison Européenne des Sciences de l'Homme et de la Société (MESHS) at Nord - Pas de Calais and the UMR-STL: 8163 (CNRS).

Proposals should include:

- A short synopsis of the work or the introduction chapter
- The proposed Table of Contents
- The CV of the lead author(s)
- If available: one sample chapter

We aim to make a first decision within 1 month of submission. In case of a positive first decision the work will be provisionally contracted: the final decision about publication will depend upon the result of the anonymous peer review of the complete manuscript. We aim to have the complete work peer-reviewed within 3 months of submission.

The series discourages the submission of manuscripts that contain reprints of previous published material and/or manuscripts that are below 150 pages / 85,000 words.

For inquiries and submission of proposals authors can contact the editor-in-chief Shahid Rahman via: shahid.rahman@univ-lille3.fr or managing editor, Laurent Keiff at laurent.keiff@gmail.com.

More information about this series at <http://www.springer.com/series/11547>

Can Başkent
Editor

Perspectives on Interrogative Models of Inquiry

Developments in Inquiry and Questions

 Springer

Editor
Can Başkent
Department of Computer Science
University of Bath
Bath, UK

ISSN 2214-9120 ISSN 2214-9139 (electronic)
Logic, Argumentation & Reasoning
ISBN 978-3-319-20761-2 ISBN 978-3-319-20762-9 (eBook)
DOI 10.1007/978-3-319-20762-9

Library of Congress Control Number: 2015948148

Springer Cham Heidelberg New York Dordrecht London
© Springer International Publishing Switzerland 2016

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Printed on acid-free paper

Springer International Publishing AG Switzerland is part of Springer Science+Business Media (www.springer.com)

Preface

Hintikka's theory of interrogative models of inquiry is the starting point of this volume. Interrogative models of inquiry (IMI, for short) present an interesting take on various epistemic issues including Socratic *elenchus*, learning theory, abductive reasoning, social choice theory, and nonclassical and modal logics. This relates IMI very closely to a variety of different fields, and this relation is perfectly well displayed by the articles in this volume.

It is important to note that Hintikka's contribution to logic and formal epistemology is usually clouded by his work on other fields, such as epistemic logic and game semantics. Perhaps for this reason, IMI does not seem to be very popular among researchers. One of the goals of producing this volume is to change this tendency by showing that IMI has influence on many different subfields in logic and formal philosophy.

This volume also demonstrates it very clearly that IMI in itself is a very rich theory. Helping in understanding its (current) depth and breadth, the volume includes both technical and logical articles as well as conceptual and analytical work.

In short, there are three main goals behind producing this volume: (i) showing that IMI heavily relates to a wide variety of fields in logic and philosophy, (ii) underlying the centrality of IMI in Hintikkan thought, and (iii) showing the breadth and depth of the field. I leave it to the reader to judge how much we managed to achieve our goals.

*

The volume opens with Hakli's article on inquiry and justification. Hakli's account argues as to how Hintikkan interrogative theory can unite inquiry and justification. The second paper, by Genot and Gulz, carries the debate over to learning theory. At first glance, the connection between the learning theory and IMI is clear, yet Genot and Gulz develop the connection further by resorting to various game theoretical elements. Then Angere, Olsson, and Genot take an interesting step and introduce formal epistemological and social choice theoretical issues to the discussion. They focus on jury sizes and use Bayesian methods to present

an analytical solution. In my own article, I suggest that Hintikkan inquiry and Lakatosian method of proofs and refutations share some common themes, which interestingly include both of them being inconsistency-friendly. This paper relates IMI to nonclassical logic. Van Bendegem's article considers mathematical practice and its connection to problem solving which can be seen as a Hintikkan inquiry. Antonelli presents a formal application of defeasible logic to IMI and suggests two different approaches. Urbański and Wiśniewski's article reminds us of the Socratic roots of Hintikkan epistemology and in particular of IMI and presents an elaborated formal structure. Hamami's article relates IMI to a quite broad field of dynamic epistemic logic and presents an axiomatic system for dynamic logic of interrogative inquiry. Naibo, Petrolo, and Seiller discuss an important epicenter of Hintikkan epistemology and introduce a novel philosophical perspective from a computational angle.

*

The volume originated within the framework of a research project which was funded by the French National Research Agency (ANR, *Agence Nationale de la Recherche*). The project was conducted at IHPST (*Institut d'histoire et de philosophie des sciences et des techniques*) which is a research institute affiliated with CNRS and the University of Paris 1 Panthéon – Sorbonne. During its two-year lifespan, I was employed at the project for one year in 2012–2013. The project produced two international workshops and conferences, numerous monthly seminars, research visits, conference participations, and a variety of research articles. Once the project came to an end, there already has been established an international network of researchers who were heavily influenced by Hintikka's philosophy and willing to share their expertise. This volume can be considered as an output of this network.

For this project and the volume, I am grateful to many people. Gabriel Sandu, who first developed the idea behind this project, was helpful in every stage of the project; hosted me and Yacin in Helsinki, and even organized a lunch for us with Hintikka himself. My colleagues Francesca Poggiolesi, Yacin Hamami, and Henri Galinon were always there when I needed some help and assistance. I am also more than thankful to our anonymous reviewers who helped us immensely with their feedback and guidance.

My deepest special gratitude is for Marco Panza, the director of the project, who encouraged me immensely for producing this volume. The idea of making this book belongs to him. Without him, this volume would not have existed.

*

Finally, I hope that this volume will serve as a bridge between Hintikkan theory of interrogative inquiry and the researchers working on similar fields and show that there is still a lot left to be worked on.

Contents

Inquiry and Justification	1
Raul Hakli	
The Interrogative Model of Inquiry and Inquiry Learning	15
Emmanuel J. Genot and Agneta Gulz	
Inquiry and Deliberation in Judicial Systems: The Problem of Jury Size	35
Staffan Angere, Erik J. Olsson, and Emmanuel J. Genot	
Inquiry, Refutations and the Inconsistent	57
Can Başkent	
The Heterogeneity of Mathematical Research	73
Jean Paul Van Bendegem	
Interrogative Inquiry as Defeasible Reasoning	95
G. Aldo Antonelli	
On Search for Law-Like Statements as Abductive Hypotheses by Socratic Transformations	111
Mariusz Urbański and Andrzej Wiśniewski	
A Dynamic Logic of Interrogative Inquiry	129
Yacin Hamami	
Verificationism and Classical Realizability	163
Alberto Naibo, Mattia Petrolo, and Thomas Seiller	