KUHN'S EVOLUTIONARY SOCIAL EPISTEMOLOGY

Kuhn's *Structure of Scientific Revolutions* (1962) has been enduringly influential in philosophy of science, challenging many common presuppositions about the nature of science and the growth of scientific knowledge. However, philosophers have misunderstood Kuhn's view, treating him as a relativist or social constructionist. In this book, Brad Wray argues that Kuhn provides a useful framework for developing an epistemology of science that takes account of the constructive role that social factors play in scientific inquiry. He examines the core concepts of *Structure* and explains the main characteristics of both Kuhn's evolutionary epistemology and his social epistemology, relating *Structure* to Kuhn's developed view presented in his later writings. The discussion includes analyses of the Copernican revolution in astronomy and the plate tectonics revolution in geology. The book will be useful for scholars working in science studies, sociologists, and historians of science, as well as philosophers of science.

K. BRAD WRAY is an associate professor of philosophy at the State University of New York, Oswego. He has published extensively on the epistemology of science, Kuhn's philosophy of science, and the anti-realism/realism debate. He was the guest editor of a special issue of the journal *Episteme*, on the theme of Collective Knowledge and Science, and he is also the editor of an epistemology textbook, *Knowledge and Inquiry* (2002).

KUHN'S EVOLUTIONARY SOCIAL EPISTEMOLOGY

K. BRAD WRAY

State University of New York, Oswego

CAMBRIDGE UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Tokyo, Mexico City

Cambridge University Press
The Edinburgh Building, Cambridge CB2 8RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9781107012233

First published 2011

Printed in the United Kingdom at the University Press, Cambridge

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing in Publication data
Wray, K. Brad, 1963–
Kuhn's evolutionary social epistemology / K. Brad Wray.
p. cm.
Includes bibliographical references and index.
ISBN 978-1-107-01223-3 (hardback)
1. Science–Philosophy. 2. Knowledge, Theory of. 3. Kuhn, Thomas S.
4. Social epistemology. I. Title.
Q175.W78 2011
501–dc23
2011026075

ISBN 978-1-107-01223-3 Hardback

For Lori

Contents

Figures and table

Figures

Table

Acknowledgements

I began working on Kuhn's epistemology in 2001. After a series of publications, and with a sabbatical leave approaching, I began to think about writing a book on Kuhn's epistemology of science, one that would take account of his later work, much of it published in *The Road since Structure*. I believed that this work was largely and unfortunately neglected by philosophers, and that a fuller picture of his view was available to those who attended to it. I also believed that there were still many important insights that philosophers of science could gain from his work as we seek to develop an epistemology of science.

My interest in Kuhn's work, though, extends back further to my time as a graduate student at the University of Western Ontario. I was fortunate enough to study Kuhn in a directed reading with my thesis supervisor, John Nicholas. And my understanding of Kuhn's views has been enriched from teaching Kuhn's work. In my efforts to present Kuhn's views to my students over the years I have been able to discover common sources of resistance to and misunderstandings of his work.

The secondary literature on Kuhn is vast, and necessarily I have had to be selective in whose work I discuss. In writing the book, though, I have benefited from a number of Kuhn scholars. I have found the most useful to be the following: Ernan McMullin, Ian Hacking, Larry Laudan, Paul Hoyningen-Huene, Hanne Andersen, and Alexander Bird. These scholars have offered both valuable insights into understanding Kuhn's views and interesting interpretations and criticisms that warrant serious consideration. Though I disagree with each of them on some point or other, their research has helped me clarify my own thoughts on Kuhn's view.

Once I set about writing the book, I relied on the generosity of many people, who, in one way or another, helped me complete the project.

I presented various papers on Kuhn at a variety of conferences, including the following: the Canadian Society for History and Philosophy of

Science, the Society for the Social Studies of Science, the Philosophy of Science Conference in Dubrovnik, the American Philosophical Association, the International Congress of Logic, Methodology, and Philosophy of Science, the Science Studies Research Group at Cornell University, and a workshop on Relativism, Philosophy of Science, and Social Studies of Science at the Helsinki School of Economics. These were very useful sources of feedback as I worked on my research on Kuhn. In addition, I have also presented numerous papers on Kuhn at department colloquia to my supportive colleagues at the State University of New York at Oswego. Financial support from the Office of International Education at SUNY-Oswego, the Dean of the College of Liberal Arts and Sciences at SUNY-Oswego, and United University Professions, my union, helped me to cover the travel costs to the various conferences at which I presented my work on Kuhn.

A crucial turning point in this project was my sabbatical in the 2008/09 academic year. The fall semester of my sabbatical leave was spent as a Visiting Scholar in the Department of Science and Technology Studies at Cornell University. This department is a collection of scholars whose training is mostly in sociology and history of science. This was a formative experience as I worked on the book. More than ever before, I saw the differences between the ways sociologists and historians approach the study of science and the ways philosophers do. Discussions and exchanges with Peter Dear and Trevor Pinch were especially helpful in this regard. I saw the need to make clear to historians and sociologists how it is that philosophers see science. In the book, I attempt to make clear where the key disagreements are between philosophers and sociologists of science in an effort to move beyond the current rift between scholars in the two fields. I thank Michael Lynch for hosting me during my visit at Cornell by agreeing to be my sponsor. Michael has been a source of encouragement for a number of years. Most importantly, as editor of *Social Studies of Science*, he published my research on Kuhn. I also thank Peter Dear for allowing me to attend his class on the history of science and participate in his seminar on the historiography of science.

In the spring term of my sabbatical leave I worked mainly from home, but spent a wonderful week in Finland, participating in a workshop on relativism, philosophy of science, and science studies organized by Kristina Rolin, at Aalto University, which was then called the Helsinki School of Economics. Critical feedback and encouragement from both Kristina and Martin Kusch was very helpful.

A number of people read either the whole manuscript or large segments of it as I worked on it, including Kristina Rolin, Leigh Bacher, Hanne Andersen, an anonymous referee, David Hull, and my partner, Lori Nash.

I have been sharing my work with Kristina Rolin since I met her in 1999, at the Logic, Methodology, and Philosophy of Science Conference in Krakow, Poland. I have benefited greatly from our overlapping interest in the social epistemology of science, and she has provided constructive feedback on most of the chapters of the manuscript.

Leigh Bacher, my colleague in Psychology at SUNY-Oswego, read portions of the book. Her feedback was also very useful. I have also been collaborating with Leigh on a project examining how college students learn scientific reasoning skills, a project that has provided us with numerous opportunities to share insights about how scientific research is done.

Hanne Andersen read the complete manuscript as a referee for Cambridge University Press, providing valuable recommendations for improving it for publication. Similarly, the second, anonymous reader for the Press also provided numerous valuable suggestions that have substantially improved the book.

David Hull read the complete manuscript. It is unfortunate that he passed away before the book made it into print. David has been a mentor for me, guiding me in my pursuit of a career in the philosophy of science. His work in the epistemology of science has profoundly shaped my own work, which is evident throughout the book. I also thank Marc Ereshefsky, at the University of Calgary, for introducing me to David and his work in the late 1990s.

My partner, Lori Nash, read and reread the manuscript, once completing it in a two-day sitting. She has been a wonderful support throughout my career, encouraging me to clarify my arguments and to pursue my dreams. She has made my life exciting and fun-filled. I thank her for the continuous encouragement and the wonderful times together.

I thank the publishers and editors of the following journals for permission to include portions of previously published papers that have been included in the book:

Wray, K. B. (forthcoming: 2011). "Kuhn and the Discovery of Paradigms," *Philosophy of the Social Sciences*, published by Sage;

2010. "Kuhn's Constructionism," *Perspectives on Science: Historical, Philosophical, Social*, 18:3, 311–27, published by MIT Press;

2007. "Kuhnian Revolutions Revisited," *Synthese: An International Journal for Epistemology, Methodology, and Philosophy of Science*, 158:1, 61–73, published by Springer;

2005. "Rethinking Scientific Specialization," *Social Studies of Science: An International Review of Research in the Social Dimensions of Science and Technology*, 35:1, 151–64, published by Sage;

2005. "Does Science Have a Moving Target?," *American Philosophical Quarterly*, 42:1, 47–58, published by University of Illinois Press;

2003. "Is Science Really a Young Man's Game?," *Social Studies of Science: An International Review of Research in the Social Dimensions of Science and Technology*, 33:1, 137–149, published by Sage.

Finally, I thank Hilary Gaskin, Senior Commissioning Editor, Philosophy, and Anna Lowe, Assistant Editor, Humanities, at Cambridge University Press for overseeing the project. Their encouragement and assistance have been greatly appreciated. In addition, I thank Thomas O'Reilly, Dr. Matthew Davies and Christopher Feeney for their assistance in preparing the book for publication.