David W. Wood

“Mathesis of the Mind”

A Study of Fichte’s *Wissenschaftslehre* and Geometry

FICHTE STUDIEN

Supplementa

“Mathesis of the Mind”

A Study of Fichte’s *Wissenschaftslehre* and Geometry

Fichte-Studien-Supplementa

Band 29

im Auftrage der
Internationalen Johann-Gottlieb-Fichte-Gesellschaft

in Zusammenarbeit mit dem Istituto Italiano
per gli Studi Filosofici

herausgegeben von

Helmut Girndt (Duisburg)
Wolfgang Janke (Wuppertal)
Wolfgang H. Schrader (†) (Siegen)
Hartmut Traub (Mülheim a. d. Ruhr)

David W. Wood

"Mathesis of the Mind"

A Study of Fichte's *Wissenschaftslehre* and Geometry

Rodopi

Amsterdam - New York, NY 2012

Fichte-Studien-Supplementa

Die Supplementa zu den *Fichte-Studien* präsentieren Forschungen zur Geschichte und Systematik der Transzendentalphilosophie. Es werden in diesem Rahmen umfangreichere Untersuchungen veröffentlicht, z.B. Monographien, Dissertationen und Habilitationsschriften, die dem Verständnis der Transzendentalphilosophie dienen oder ihre Erneuerung und Weiterentwicklung voranbringen können.

Typographie und Satz: Christoph Asmuth (Berlin)

The paper on which this book is printed meets the requirements of "ISO 9706:1994, Information and documentation - Paper for documents - Requirements for permanence".

ISBN: 978-90-420-3491-4
E-Book ISBN: 978-94-012-0768-3
©Editions Rodopi B.V., Amsterdam-New York, NY 2012
Printed in The Netherlands

Contents

Acknowledgements 1

Introduction: Fichte as the Euclid of Philosophy? 3
a. Fichte and Mathematics 3
b. Theses and Methodology 9
c. Contemporary Reception and Influences on Fichte 16
d. Current State of Research 26

Chapter One: Fichte's Philosophy of Mathematics 33
1. A Philosophy of Mathematics *in nuce*: Fichte's *Erlanger Logik* 33
a. The Nature of the Erlangen Text 33
b. What is a Philosophy of Mathematics? 37
c. Situating the *Erlanger Logik* among Fichte's other Texts on Mathematics 42
2. The Contents of a Fichtean Philosophy of Mathematics 52
a. Nine Elements of a Philosophy of Mathematics in the *Erlanger Logik 1805* 52
i. Geometry 54
ii. Arithmetic 56
iii. Algebra 59
iv. Theory of Infinity 64
v. Archetypal Elements 69
vi. Transcendentalism 72
vii. The Parallel Problem 73
viii. Dimensions of Space 74
ix. Language of Mathematics 77

Chapter Two: Fichte's Theory of »Original« Geometry 79
1. »Ordinary« and »Original« Geometry 79
a. Synthetic and Analytic in Geometry 79
b. Kant's Conception of Geometry 83
c. Fichte's Theory of »Original« Geometry 88
d. Where to Place Fichte's Theory in the History of Geometry? 100
2. Fichte's Mathematical Platonism 107
a. Formalism, Logicism and Intuitionism 107
b. Fichte's Mathematical Platonism 110

c. Platonism, Neo-Platonism and the *Wissenschaftslehre* 115

Chapter Three: Axioms, Intuition and Construction 121
1. Is Fichte's *Grundsatz* equivalent to a Geometric Postulate? 121
a. Definitions, Axioms and Postulates: The First Principles of Geometry … 122
b. Fichte's *Grundsatz* and the Postulates of Geometry 134
c. *Wissenschaftslehre more geometrico?* 149
2. Sensible, Mathematical and Intellectual Intuition 160
a. From Kant's Sensible Intuition to Fichte's Intellectual Intuition 161
b. What is Geometrical Intuition? 170
c. Fichte on the Intelligible Intuitions of Mathematics 176
3. Geometrical Construction in the *Wissenschaftslehre* 182
a. Fichte's Understanding of Construction 183
b. Geometrical Construction in Fichte's *Sonnenklarer Bericht* (1801) and *Einleitung in die Wissenschaftslehre* (1813) 190

Chapter Four: The Fichtean Conception of Space 199
1. Philosophical Images: Fichte on Fundamental Elements of Geometry 199
a. The Euclidean and Fichtean Definitions of the Point 199
b. The Point and *das Bild des Ich* 206
c. The Euclidean and Fichtean Definitions of the Geometric Line 210
d. The Drawing of the Line and *das Bild des Lebens* – Fichte's Transformation of Euclid's First Postulate 219
2. Fichte's Conception of Space 227
a. Kant's Theory of Space 228
b. Differences Between the Fichtean and Kantian Theories of Space 230
c. Fichte on Time and Original Space 234
d. Geometry as the Science of Space 240

Chapter Five: The Relationship between Geometry and the »Wissenschaftslehre« 243
1. Geometry as a Propedeutic for the *Wissenschaftslehre* 243
a. Pestalozzi's Influence and the Teaching of Mathematics 244
b. The Path from Geometry to the Fichtean System of Philosophy 250
2. Further Similarities and Differences between *Wissenschaftslehre* and Geometry 254
a. Similarities: *Evidenz*, Determinacy and Irrefutability 255
b. Differences: Formal Languages and *Freiheit* 261

Conclusion: The »Wissenschaftslehre« as »Mathesis of the Mind« 267
a. Fichte's New Philosophical Mathesis 267

Appendix: Johann Gottlieb Fichte: »Original Geometry« – Translated excerpt from: *Erlanger Logik* (1805) 275

Bibliography 291
a. Works of Johann Gottlieb Fichte 291
b. Classical and Contemporary Sources 292
c. Other Authors 294

List of Abbreviations 303

Acknowledgements

The following study is a revised version of my PhD dissertation. It examines Johann Gottlieb Fichte's conception of geometry, theory of mathematics and the role of geometry in the *Wissenschaftslehre*. Carried out under the joint supervision of Professor Dr. Jean-François Courtine of the Sorbonne (Université Paris IV) and Professor Dr. Günter Zöller of the Ludwig-Maximilians-Universität (Munich), the dissertation was defended in Munich in July 2009.

I would like to thank the following people for their support during the writing of this dissertation. Firstly, to Professor Jean-François Courtine at the Sorbonne for accepting me into his doctoral programme and for his philosophical encouragement and expert help. To Professor Günter Zöller, for facilitating the co-tutelle transfer to Munich, and for his valuable advice and suggestions concerning the transcendental philosophies of Kant and Fichte. And to the other members of my doctoral committee, Professor Emmanuel Cattin (Université Blaise Pascal, Clermont-Ferrand II) and PD Dr. Ives Radrizzani (LMU/Schelling Kommission) – their close readings and constructive feedback have greatly improved my text.

My warmest thanks also go to Dr. Erich Fuchs, the editor-in-chief of the *Johann Gottlieb Fichte Gesamtausgabe*, for kindly providing me with hitherto unpublished manuscripts, elucidating the nuances of Fichte's German, and for hosting me at the Fichte Kommission for a 12-month post-doctoral fellowship during the period of the revision of this dissertation, a fellowship generously funded by the Fritz Thyssen Stiftung.

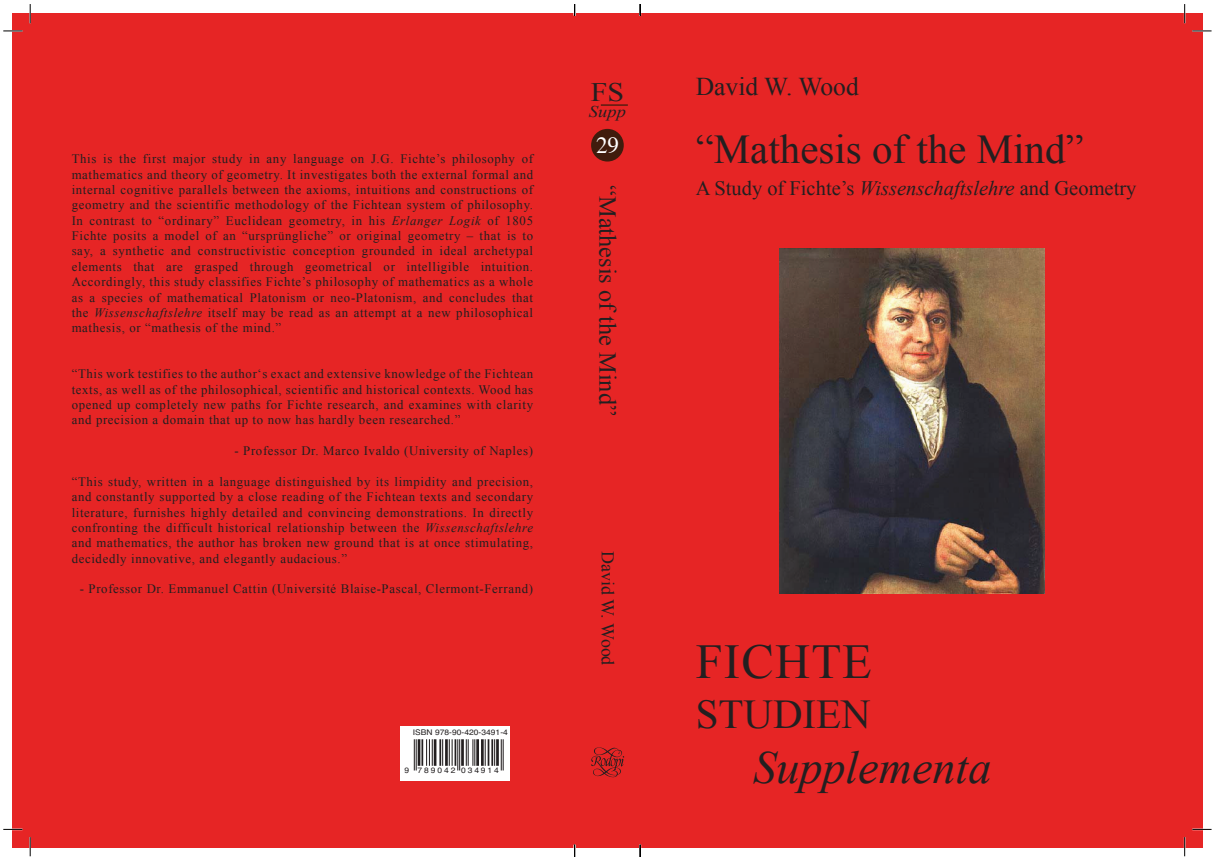
I would also like to thank the following people for their scholarly encouragement and philosophical comments: Professor Daniel Breazeale, Professor Marco Ivaldo, Dr. Rodrigue Nzameyo, Dr. Norman Sieroka, PD Dr. Andreas Schmidt, Dr. Peter K. Schneider, Professor Michael G. Vater, Paul S.-J. Wood, and Dr. Renatus Ziegler.

A special mention is due to Mrs. Fabienne Mailé (doctoral office Sorbonne, Paris), Dr. Cathleen Muehleck and Mrs. Doris Jacobson (Promo-

tionsausschuß LMU), for their excellent administrative assistance regarding the co-tutelle doctoral process between Paris and Munich.

I am also grateful to my dear family and friends in Australia – to Loraine, Nick, Andrew, Aidan, Katrina and the rest of the Wood and Psarros families, as well as the Maurel and Cahen families in France and America. And to the memory of my dear departed parents – anything of value in this text is due to them.

Finally, my greatest debt and thanks are to Laure Cahen-Maurel. *L'amour ne rend pas aveugle aux faiblesses d'une bien-aimée; au contraire, il ouvre l'œil précisément à ses qualités les plus profondes.* This book is dedicated to her.



David W. Wood, "*Mathesis of the Mind*": *A Study of Fichte's Wissenschaftslehre and Geometry* (New York/Amsterdam: Rodopi (Brill), 2012), Fichte-Studien-Supplementa 29, 304 pages.

"The author of this book has accomplished something that no one before him has even attempted. He has demonstrated that Fichte does indeed possess a coherent and original 'philosophy of mathematics' and even propounds a 'new model of geometry,' one that deserves closer attention than it has received. He also has shown that the connections between geometry and the *Wissenschaftslehre* are deep and significant, especially significant for an understanding of the method of Fichte's system."

– Daniel Breazeale, in: *Notre Dame Philosophical Reviews*, August 2012