Universiteit
Leiden
The Netherlands

Nature and history : towards a hermeneutic philosophy of historiography of science

Bouterse, Jeroen

Citation
Bouterse, J. (2016, February 25). *Nature and history : towards a hermeneutic philosophy of historiography of science*. Retrieved from https://hdl.handle.net/1887/38041

Version:	Corrected Publisher's Version
License:	Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden
Downloaded from:	https://hdl.handle.net/1887/38041

Note: To cite this publication please use the final published version (if applicable).

Cover Page

Universiteit Leiden

The handle http://hdl.handle.net/1887/38041 holds various files of this Leiden University dissertation

Author: Bouterse, Jeroen
Title: Nature and history : towards a hermeneutic philosophy of historiography of science
Issue Date: 2016-02-25

Nature and History

Towards a Hermeneutic Philosophy of Historiography of Science

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op donderdag 25 februari 2016
klokke 11.15 uur

door
Jeroen Bouterse
geboren te Rotterdam
in 1988

Promotor: Prof. Em. Dr. E.P. Bos
Co-promotor: dr. J.W. McAllister

Promotiecommissie:
Prof. dr. H.W. van den Doel, decaan
Professor Dimitri Ginev, University of Sofia "St. Kliment Ohridski"
Prof. dr. H.G.M. Jorink
Professor Vasso Kindi, National and Kapodistrian University of Athens
Prof. dr. B.G. Sundholm

This work is part of the research programme "Philosophical Foundations of the Historiography of Science" (project 360-20-220) which is financed by the Netherlands Organisation for Scientific Research.

NWO
Nederlandse Organisatie voor Wetenschappelijk Onderzoek

Contents

Contents 1
Acknowledgments 5
Chapter 1: Introduction 7
1.1 The World in History of Science 7
1.2 History of Science and the Sciences 7
1.3 A Bridge between Two Cultures? 10
1.4 Science and Its Past 12
1.5 Outline of this Thesis 14
Chapter 2: Contingentism and Inevitabilism in History of Science 17
2.1 The Question 17
2.2 Contingency and Indeterminacy 18
2.3 Contingency as Path-Dependent Historical Possibility 20
2.4 Contingency, Historical Explanation, and the World 23
2.4 The Special Position of History of Science 25
2.6 Conclusions 28
Chapter 3: Whig History and Anachronism in History of Science 29
3.1 Whose Nature? 29
3.2 Whig History According to Butterfield 30
3.3 Causal and Conceptual Anachronism 31
3.4 Progress and Scientific Exceptionalism 36
3.5 Selection and Presentism 38
3.6 Avoiding Anachronism in a Changing Present 41
3.7 Conclusions 42
Chapter 4: Roads to the Inevitable? Nature, Thought, and Society 43
4.1 Candidates for the Great Explainer 43
4.2 Nature-Based Inevitabilism 44
4.2.1 Irresistible Nature: Steven Weinberg and the Teaching Machine 44

4.2.2 Nature and Rationality I: Max Weber and the Hermeneutic Function of Rationality 47
4.2.3 Nature and Rationality II: Robert Merton and the Normative Structure of Science 51
4.3 The Logic of Ideas 53
4.3.1 The Early Decades of the Journal of the History of Ideas 53
4.3.2 Alexandre Koyré's Intellectualist Inevitabilism 58
4.4 The Final Stage of Society 64
4.4.1 Some Preliminary Considerations on Marxism 64
4.4.2 Boris Hessen and the Inevitability of Newtonianism 66
4.4.2 John Desmond Bernal and Objective Science-Not-From-the-Skies 69
4.5 Conclusions 71
Chapter 5: Leaving Nature Out 73
5.1 The 'No Nature'-principle 73
5.2 David Bloor's Realism 74
5.2.1 Introduction 74
5.2.2 The First Argument: Underdetermination 75
5.2.3 The Second Argument: Nature Dropping Out 77
5.2.4 The Third Argument: The Social Determination of Classification 79
5.2.5 The Third Argument Continued: Meaning Finitism and Social Pattern Matching 81
5.2.6 Bloor on the Hermeneutic Circle 84
5.3 Harry Collins' Relativism 86
5.3.1 Introduction 86
5.3.2 The Fourth Argument, Step 1: Methodological Relativism 86
5.3.3 Is Nature 'Quite Another Matter'? Ernest Gellner on Social and Biological Kinship 89
5.3.4 The Fourth Argument, Step 2: The Circularity Argument 91
5.4 Karin Knorr-Cetina's Constructivism 94
5.4.1 The Fifth Argument: Science Constituting Natural Facts 94
5.4.2 Fabrication and Adaptation 96

5.5 Conclusions 97
Chapter 6: Bruno Latour and the Co-Fabrication of Nature and Society 99
6.1 Another Kind of Constructivism 99
6.2 Kayaking over Bridging 99
6.2.1 Two Banks, One River 99
6.2.2 Behind the Two Cultures 101
6.2.3 Initial Problems 102
6.3 The Construction of Real Things 104
6.3.1 Collapsing Nature and Its Representation 104
6.3.2 Science and Technology 106
6.3.3 Adding Actors 107
6.4 The Inexplicable Development of Networks 108
6.4.1 Which Napoleon? 108
6.4.2 Tracing Networks 110
6.5 When Are Electrons and Microbes Anachronisms? 112
6.5.1 Conceptual Anachronisms as Causal Anachronisms 112
6.5.2 Relativizing Relativized Existence 114
6.6 Nature, Politics, and Critical Science Studies 117
6.7 Science and the World 121
6.8 Conclusion 124
Chapter 7: The Invisible Hand of Science 125
7.1 A Naturalistic Perspective 125
7.2 Invisible Hand Accounts 126
7.2.1 The Promise of Invisible Hands 126
7.2.2 An Economic Account: Alvin Goldman 128
7.2.3 Accuracy and the Resistance of the World: Bernard Williams 131
7.2.4 The Limits of Normative Invisible Hands Accounts 132
7.3 David Hull's Evolutionary Invisible Hand Account 134
7.3.1 Science as a Process 134
7.3.2 Selection Pressures and the World 136

7.3.3 Scientists as Agents 141
7.4 Adaptation, Realism, and the Necessity of Understanding 144
7.5 Conclusions 147
Chapter 8: An Exposition of Hermeneutic Philosophy of History of Science 149
8.1 The Problem of Understanding 149
8.2 Science and Tradition 149
8.2.1 Tradition and Transcendence 149
8.2.2 A Gadamerian Account of Tradition 153
8.3 Language and Lifeworld 155
8.4 Traditionality, Contingency, and Nature 158
8.4.1 Circling and Dialogue 158
8.4.2 Contingency and the History of Science 162
8.5 The Hermeneutical Position of History of Science 163
8.5.1 General Thesis 163
8.5.2 The Limits of Historicity 165
8.5.3 An Illustrative Example 167
8.6 Four Possible Objections 169
8.6.1 Introduction 169
8.6.2 Playing the Stranger 171
8.6.3 Following a Tradition 172
8.6.4 Neo-Whiggism 175
8.6.5 Criticism and Relevance: Some Historiographical Examples 177
Conclusion: Nature in History 183
References 188
Samenvatting in het Nederlands 209
Curriculum Vitae 217

Acknowledgments

First and foremost, I want to thank my supervisor, James McAllister, for his patient advice, constructive and extremely perceptive criticism, and for the enormously helpful (and exciting) discussions I was allowed to have with him on this thesis. I also thank my promotor, Bert Bos, and my colleagues and fellow PhD students at the Institute for Philosophy at Leiden University, for all the stimulating conversations we have had over the years. I cannot name everyone, but I want to thank Victor Gijsbers, Jouni Kuukkanen, and Bart Karstens especially, for providing me with food for thought in the process of writing this thesis.

A few others have commented on parts of this thesis or on the arguments expounded in it. I want to thank Irene van de Beld for continuing to challenge my interpretation of Weber, Herman Paul for liberally making time for several inspiring conversations, Floris Cohen for his ever too generous feedback and support, and Giel Visser for his Socratic ability to allow others to make sense of what they think.

An inextricable part of the intellectual and social environment that made it possible for me to keep working on this thesis, are those (PhD) students and scholars connected to the Descartes Centre in Utrecht and to the Huizinga Institute, all of whom are not just examples of brilliant scholarship, but also happen to be wonderfully nice people. The same is true of the (sometimes overlapping) circles of participants I have met at the Woudschoten conferences on history of science, at the *Making of the Humanities ('III')* conference in Rome, at the 2015 Philosophy of Science conference in Dubrovnik, and at the Huizinga 'promovendicongressen' in Rolduc. I would like to name especially Rens Bod, Frans van Lunteren, Floris Solleveld, and my 'Shells and Pebbles' partners.

Finally, the people whose close presence in my life kept me and this project going: my friends and family, my mother, father, and brother – I can't thank you enough. And Tabitha, meeting you was one of the luckiest contingencies of my life; thank you for being part of it.

I dedicate this thesis to my grandparents, who were still alive when I started it, making me sorely aware of the irreversibility of historical time.