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0521827124 - William Stanley Jevons and the Making of Modern Economics

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WILLIAM STANLEY JEVONS AND THE MAKING OF MODERN ECONOMICS

The Victorian polymath William Stanley Jevons (1835–1882) is generally and rightly venerated as one of the great innovators of economic theory and method in what came to be known as the “marginalist revolution”. This book is an investigation into the cultural and intellectual resources that Jevons drew upon to revolutionise research methods in economics. Jevons’s uniform approach to the sciences was based on a firm belief in the mechanical constitution of the universe and a firm conviction that all scientific knowledge was limited and, therefore, hypothetical in character. Jevons’s mechanical beliefs found their way into his early meteorological studies, his formal logic, and his economic pursuits. By using mechanical analogies as instruments of discovery, Jevons was able to bridge the divide between theory and statistics that had become institutionalised in mid-nineteenth-century Britain. For better or worse, Jevons, thus, transformed political economy into social physics and irrevocably changed the domain of discourse of economics.

Harro Maas is Lecturer in History and Methodology of Economics at the University of Amsterdam. He is an associate researcher of the Centre for Philosophy of the Natural and Social Sciences at the London School of Economics. Dr. Maas’s research has been published in the *History of Political Economy*, *Studies in History and Philosophy of Science*, and the *Revue d’Histoire des Sciences Humaines*.

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To Geerte, Timo, and Jonne

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ABBREVIATIONS

ARCHIVAL MATERIALS

- JA* = Jevons Archives, John Rylands Library, Manchester.
TCC = Trinity College Cambridge Archives, Trinity College, Cambridge.
ULL = University Library London at Senate House.

WORKS FREQUENTLY CITED

- Babbage* = 1989. *The Works of Charles Babbage*. Edited by M. Campbell-Kelly and P. M. Roget. London: William Pickering.
- Inoue* = 2002. *W. Stanley Jevons: Collected Reviews and Obituaries*. 2 Vols. Edited by Takutoshi Inoue. Bristol: Thoemmes.
- LJ* = 1886. *Letters and Journal of William Stanley Jevons*, edited by Harriet A. Jevons. London: Macmillan.
- Mill* = 1963–1991. *Collected Works of John Stuart Mill*. 33 Vols. Edited by J. M. Robson. Toronto: University of Toronto Press.
- MSR* = 1883. *Methods of Social Reform*, by William Stanley Jevons. London: Macmillan.
- PC* = 1972–1981. *Papers and Correspondence of William Stanley Jevons*, Vols. 1–7. Edited by R. D. C. Black and R. Könekamp. London: Macmillan.
- PL* = [1890] 1971. *Pure Logic and Other Minor Works*, by William Stanley Jevons. New York: Burt Franklin.
- PS* = [1874] 1958. *The Principles of Science: A Treatise on Logic and Scientific Method*, by William Stanley Jevons. Introduced by Ernst Nagel. New York: Dover.
- Ruskin* = 1903–1912. *The Works of John Ruskin*. 39 Vols. London: Allen.
- Stewart* = 1994. *The Collected Works of Dugald Stewart*. 11 Vols. Edited by W. Hamilton and K. Haakonssen. Bristol: Thoemmes.

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TMS = [1759] 1976. *The Theory of Moral Sentiments*, by Adam Smith. Oxford: Oxford University Press.

TPE1 = 1871. *The Theory of Political Economy*, by William Stanley Jevons. London: Macmillan.

TPE2 = [1879] 1970. *The Theory of Political Economy*, 2nd edition, by William Stanley Jevons. Edited and introduced by R. D. C. Black. Harmondsworth: Penguin.

Whewell = 2001. *Collected Works of William Whewell*. Edited by R. Yeo. Bristol: Thoemmes.

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PREFACE

This book dates back to one of the many pleasant evenings I enjoyed with two of my friends, Peter van der Veer and Janneke Plantenga, some twenty years ago. They will not remember and, perhaps, I would not have either, if it were not for some lucky turns of fate that put me in the position to gradually unfold the consequences of an idea I then only vaguely conceived of. That evening, we discussed the image of man as depicted in what is commonly referred to as neoclassical or marginalist economic theory.

To many non-economists, the image of man depicted in neoclassical economics is considered so meagre that it hardly needs to be taken seriously. Yet, this image has proved persuasive to economists – its parsimony is even considered by economists, such as Nobel laureate Robert Lucas, as its prime virtue. It is not just the focus on self-interest that bothers non-economists. When turning to Scottish Enlightenment philosophers such as Hume and Smith, the very notion of self-interest was analysed as a multifaceted and complex concept. That evening, my hunch was that the marginalist revolution radically changed the way man's mind was analysed. This change did not so much result from the adoption of utility theory per se, but more importantly from the change in the methods of research that went with it. Pressed for details, I did not have much to add.

At that time, I only had scattered knowledge of the history of economics (like many trained economists) and had no specific economist in mind to substantiate my thoughts. This book now explicates these thoughts, calling on one of the founders of the marginalist revolution, William Stanley Jevons. Bluntly stated, my message is that this Victorian polymath introduced a specific style of reasoning into economics. This British style of reasoning heavily relied on mechanical analogies to uncover the laws governing nature.

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Trained in the natural sciences, Jevons naturally took this style of reasoning with him when he turned his attention to political economy. Jevons leveled down the categorical distinction between matter and mind – between the natural and the moral sciences – that had haunted Victorian intellectual discourse. In so doing, Jevons transformed the tools and instruments used by economists to unravel the complex regularities of the social realm and, of consequence, the universe of the economic discipline's discourse.

The fortunate circumstance that gave me the opportunity to explore these ideas was a telephone call in the early 1990s from my present colleague Geert Reuten to the secondary school in Amsterdam where I then taught economics. His question was whether I would be willing to teach a class in the philosophy of science to undergraduates. This opportunity introduced me to an extremely versatile and inspiring group of researchers who, one way or another, investigated economic methodology in a history of science-type of approach – something that was not regularly done at other places in the world at that time.

This book, a thoroughly rewritten version of my thesis, examines the intellectual and scientific resources Jevons drew upon. Though Jevons's mechanical image of the human mind was central to his new endeavours, his investigations proved, as we will see, of far broader scope – a fact that undoubtedly added to its persuasiveness for later generations of economists. The emerging discourse of reflex theory in (psycho-)physiology and the emergence of formal logic were, beyond doubt, two of Jevons's most important resources in rethinking the theory and methods of political economy. Formal logic, with its easy link to notions of rationality, carried the day in economics in the twentieth century. Interestingly, with the challenges set to the notion of rationality in economics, this other resource of Jevons – psychophysiology – recently gained increasingly in importance, and has led to renewed boundary crossings between physiology and economics. My story about Jevons may well be seen as a prehistory to these recent developments.

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The help of many friends, colleagues, and institutions was of immense value in writing this book. At a very early stage, Margaret Schabas encouraged me to pursue my research interests in Jevons, as did Sandra Peart at a later stage. Neil De Marchi's persistent and constructive encouragements deserve a separate mention as well. Mike White's incredibly detailed knowledge of Jevons's work, of his social environment, and of the intellectual resources he drew on proved indispensable in helping me to sort out holes in my argument and to add historical detail. Also, Bert Mosselmans gave helpful advice and encouragements. I encountered the same academic spirit with many others who helped me over time. William Ashworth, Philippe Bazard, Anne Beaulieu, Mark Blaug, Nancy Cartwright, Nicolas Chaigneau, Annie Cot, John Davis, Trudy Dehue, Philippe Fontaine, Philippe Le Gall, Henk de Gans, Ivor Grattan-Guinness, Craufurd Goodwin, James Henderson, Kevin Hoover, Ian Inkster, Albert Jolink, Judy Klein, Robert Leonard, Uskali Mäki, Karel Markus, Sybilla Nikolow, Bernike Pasveer, Marcia Pointon, Ted Porter, Julian Reiss, Adrian Rice, Ida Stamhuis, and Jo Wachelder all commented on my writing, provided me with additional information, or gave me the opportunity to clarify my thoughts. Special thanks go to Fabrice Thierry, who, at a very late stage, read all of the manuscript.

I would like to thank my colleagues Hsiang-Ke Chao, Edith Kuiper, Geert Reuten, Peter Rodenburg, and Jack Vromen for their constructive comments. The joint meetings on measurement in economics and physics that our Amsterdam group enjoyed with colleagues at the Centre for Philosophy of Natural and Social Sciences at the London School of Economics were particularly productive in speeding up my research. I would like to thank Hasok Chang and Sang Yi for their comments and encouragement.

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Of my colleagues, Adrienne van den Bogaard and Marcel Boumans have been indispensable in teaching me how to do research. Marcel's comments on large parts of the manuscript were always welcome and always to the point. Most notably, however, my thanks go to my former thesis supervisor Mary Morgan, who encouraged me to turn my thesis into a book and who was willing, yet again, to comment on many parts of the manuscript. It was a great pleasure to have had the opportunity to engage in conversation with such an extraordinary historian, economist, and philosopher.

In rewriting my thesis into a book, I greatly benefited from a stay at Clare Hall, Cambridge, for additional research in the Whewell and Sidgwick papers at the Wren Library, Trinity College. My thanks go to the staff of Clare Hall for the perfect research environment they provided for me and to the Netherlands Organisation for Scientific Research (NWO) for financially supporting my visit. I would like to thank Jonathan Smith, librarian at the Wren, for his help and support. In addition, my home faculty at the University of Amsterdam should be thanked for enabling me to spend the Autumn of 2002 at Cambridge. I would like to thank Charles Baden-Fuller for his hospitality on all occasions I was in London visiting yet another library or archive.

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The cooperation of many libraries and archives was indispensable in the making of this book. I would like to thank Peter Nockles, Peter McNiven, and John Hodgson of the John Rylands Library in Manchester, where the Jevons Archive is located, for their invaluable help. Stephen Johnston of the Oxford Science Museum answered many of my queries on Jevons's Logical Machine and provided me with information I would not have been able to obtain otherwise. Tom Freshwater gave me the opportunity to visit the Science Museum at Oxford and to inspect the Logical Machine in its possession. I would also like to thank Doron Swade and the staff of the British Science Museum for giving me a demonstration of the working of Babbage's *Difference Engine II*. This demonstration and discussions with Doron on Babbage's work were extremely helpful in framing my argument

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in Chapters 5 and 6. Keith Austin, then affiliated with the special collections at Senate House, University of London Library, kindly guided me through the De Morgan papers. Adrian Byrne of the Royal Society Archive helped me resolve my queries on the Herschel-Jevons correspondence located there. I would like to thank Ngadi Kponou of the Beinecke Library, Yale University, for providing additional information on the Lewes-Jevons correspondence in their possession. Many thanks go to the staff of the Central Library, the Library of Science Dynamics, and the Pierson Library – all at the University of Amsterdam – and especially, to Jacob Tiesinga.

Acknowledgements for permission to use archival materials and images go to the following institutes. My first thanks go to the Director and University Librarian of the John Rylands University Library of Manchester for permitting me to quote extensively from the Jevons Archives. Thanks go to University Library, London, at Senate House, for permission to quote from the De Morgan papers. I thank the Master and Fellows of Trinity College, Cambridge, for their permission to quote from the Whewell and Sidgwick papers in their possession. The Beinecke Library, Yale University, is acknowledged for its permission to quote from the Lewis-Jevons correspondence; the archives of the Royal Statistical Society, London; the University Libraries at Amsterdam, Groningen, Leiden; and the Teylers Museum, Haarlem, for permission to reproduce images in their possession. Thanks also go to Palgrave/Macmillan for permission to reproduce images from Jevons's original publications; to *Nature* to reproduce an image relevant to Jevons's early labour experiments; and to Rowman & Littlefield to reproduce a table from James Henderson's 1996 book on Whewell. I would like to thank the *Manchester Guardian* and its photographer for giving me permission to reproduce the image of the Jevons exhibition that was held in 1952 at Christie Library, Manchester.

Several chapters have appeared earlier in a somewhat different form as separate articles. I would like to thank the editors for permission to use these materials in this book. Chapters 5 and 6 expand on an article that appeared in volume 30A of *Studies in History and Philosophy of Science*, 1999. Chapter 8 appeared in *Economic Engagements with Art* (annual supplement to volume 31 of *History of Political Economy*, Duke: Duke University Press), edited by Neil De Marchi and Craufurd Goodwin. Chapter 9 appeared as a joint article with Mary Morgan in *Revue d'Histoire des Sciences Humaines*, 2002, and Chapter 10 in *The Age of Economic Measurement* (annual supplement to

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volume 33 of *History of Political Economy*), edited by Judy Klein and Mary Morgan.

There remains the category of those who predominantly suffered – my friends, my family, and my beloved. And, if they did not suffer, I suffered sometimes from the lack of their company, which one inevitably seems to deny oneself when writing a book. Most notably, my childhood friend Matthijs Engelberts and his wife Julia Koopmans should be thanked for their stubborn attempts to keep me in touch with the world. In my opinion, friends like them form an indispensable part of the laws of human enjoyment. It is commonly known that those who suffer most are often those one loves the most. Unfortunately, this is true in this case as well. I thank my wife Geerte Wachter and my children Timo and Jonne for the stoic way in which they endured the gestation of this book. I hope they accept this book in return.