

# New Essays on Pareto's Economic Theory

*Edited by*  
**Luigino Bruni and  
Aldo Montesano**



Routledge Studies in the History of Economics

# New Essays on Pareto's Economic Theory

Pareto's groundbreaking *Manuale di Economia Politica* (*Manual of Political Economy*), first published in 1906, introduced the analytical approach which has characterised a significant part of twentieth century economic theory. In particular, the *Manual* examined the ordinal representation of the individual choice, the issue of the general economic equilibrium and the Pareto optimality criterion for evaluating economic efficiency. The *Manual* also contained analyses of production, non-linear prices, non-competitive markets and the competition process, which have not yet been fully developed in modern mainstream economics.

Based on the *Manual*, this edited collection brings together a selection of essays from some of the most authoritative scholars of Pareto, who discuss the relevance of Pareto's economics in the context of the present theoretical debate.

This book is particularly relevant to postgraduate and advanced research students in the history of economics, economic theory and welfare and public economics, and to scholars of Pareto and modern economic theory.

**Luigino Bruni** is an Associate Professor of Economics at the University of Milano-Bicocca, Italy.

**Aldo Montesano** is a Professor of Political Economy at the Bocconi University of Milano, Italy.

## Routledge Studies in the History of Economics

- 1 Economics as Literature**  
*Willie Henderson*
- 2 Socialism and Marginalism in Economics 1870–1930**  
*Edited by Ian Steedman*
- 3 Hayek's Political Economy**  
The Socio-Economics of Order  
*Steve Fleetwood*
- 4 On the Origins of Classical Economics**  
Distribution and Value from William Petty to Adam Smith  
*Tony Aspromourgos*
- 5 The Economics of Joan Robinson**  
*Edited by Maria Cristina Marcuzzo, Luigi Pasinetti and Alesandro Roncaglia*
- 6 The Evolutionist Economics of Léon Walras**  
*Albert Jolink*
- 7 Keynes and the 'Classics'**  
A Study in Language, Epistemology and Mistaken Identities  
*Michel Verdon*
- 8 The History of Game Theory, Vol 1**  
From the Beginnings to 1945  
*Robert W. Dimand and Mary Ann Dimand*
- 9 The Economics of W. S. Jevons**  
*Sandra Peart*
- 10 Gandhi's Economic Thought**  
*Ajit K. Dasgupta*
- 11 Equilibrium and Economic Theory**  
*Edited by Giovanni Caravale*
- 12 Austrian Economics in Debate**  
*Edited by Willem Keizer, Bert Tieben and Rudy van Zijp*
- 13 Ancient Economic Thought**  
*Edited by B. B. Price*
- 14 The Political Economy of Social Credit and Guild Socialism**  
*Frances Hutchinson and Brian Burkitt*
- 15 Economic Careers**  
Economics and Economists in Britain 1930–1970  
*Keith Tribe*
- 16 Understanding 'Classical' Economics**  
Studies in the Long-Period Theory  
*Heinz Kurz and Neri Salvadori*
- 17 History of Environmental Economic Thought**  
*E. Kula*
- 18 Economic Thought in Communist and Post-Communist Europe**  
*Edited by Hans-Jürgen Wagener*
- 19 Studies in the History of French Political Economy**  
From Bodin to Walras  
*Edited by Gilbert Faccarello*
- 20 The Economics of John Rae**  
*Edited by O. F. Hamouda, C. Lee and D. Mair*

- 21 Keynes and the Neoclassical Synthesis**  
Einsteinian versus Newtonian  
Macroeconomics  
*Teodoro Dario Togati*
- 22 Historical Perspectives on  
Macroeconomics**  
Sixty Years after the ‘General  
Theory’  
*Edited by Philippe Fontaine and  
Albert Jolink*
- 23 The Founding of Institutional  
Economics**  
The Leisure Class and Sovereignty  
*Edited by Warren J. Samuels*
- 24 Evolution of Austrian Economics**  
From Menger to Lachmann  
*Sandye Gloria*
- 25 Marx’s Concept of Money**  
The God of Commodities  
*Anitra Nelson*
- 26 The Economics of James Stuart**  
*Edited by Ramón Tortajada*
- 27 The Development of Economics in  
Europe Since 1945**  
*Edited by A. W. Bob Coats*
- 28 The Canon in the History of  
Economics**  
Critical Essays  
*Edited by Michalis Psalidopoulos*
- 29 Money and Growth**  
Selected Papers of  
Allyn Abbott Young  
*Edited by Perry G. Mehrling and  
Roger J. Sandilands*
- 30 The Social Economics of  
Jean-Baptiste Say**  
Markets and Virtue  
*Evelyn L. Forget*
- 31 The Foundations of Laissez-Faire**  
The Economics of  
Pierre de Boisguilbert  
*Gilbert Faccarello*
- 32 John Ruskin’s Political Economy**  
*Willie Henderson*
- 33 Contributions to the History of  
Economic Thought**  
Essays in honour of R. D. C. Black  
*Edited by Antoin E. Murphy and  
Renee Prendergast*
- 34 Towards an Unknown Marx**  
A Commentary on the Manuscripts  
of 1861–63  
*Enrique Dussel*
- 35 Economics and Interdisciplinary  
Exchange**  
*Edited by Guido Erreygers*
- 36 Economics as the Art of Thought**  
Essays in memory of G. L. S. Shackle  
*Edited by Stephen F. Frowen and  
Peter Earl*
- 37 The Decline of Ricardian Economics**  
Politics and Economics in  
Post-Ricardian theory  
*Susan Pashkoff*
- 38 Piero Sraffa**  
His Life, Thought and Cultural  
Heritage  
*Alessandro Roncaglia*
- 39 Equilibrium and Disequilibrium in  
Economic Theory**  
The Marshall–Walras divide  
*Michel de Vroey*
- 40 The German Historical School**  
The Historical and Ethical Approach  
to Economics  
*Edited by Yuichi Shionoya*
- 41 Reflections on the Classical Canon in  
Economics**  
Essays in honour of  
Samuel Hollander  
*Edited by Sandra Peart and  
Evelyn Forget*
- 42 Piero Sraffa’s Political Economy**  
A Centenary Estimate  
*Edited by Terenzio Cozzi and  
Roberto Marchionatti*

- 43 The Contribution of Joseph Schumpeter to Economics**  
Economic Development and Institutional Change  
*Richard Arena and Cecile Dangel*
- 44 On the Development of Long-run Neo-Classical Theory**  
*Tom Kompas*
- 45 F. A. Hayek as a Political Economist**  
Economic Analysis and Values  
*Edited by Jack Birner, Pierre Garrouste and Thierry Aimar*
- 46 Pareto, Economics and Society**  
The Mechanical Analogy  
*Michael McLure*
- 47 The Cambridge Controversies in Capital Theory**  
A Study in the Logic of Theory Development  
*Jack Birner*
- 48 Economics Broadly Considered**  
Essays in Honour of Warren J. Samuels  
*Edited by Steven G. Medema, Jeff Biddle and John B. Davis*
- 49 Physicians and Political Economy**  
Six Studies of the Work of Doctor-Economists  
*Edited by Peter Groenewegen*
- 50 The Spread of Political Economy and the Professionalisation of Economists**  
Economic Societies in Europe, America and Japan in the Nineteenth Century  
*Massimo Augello and Marco Guidi*
- 51 Historians of Economics and Economic Thought**  
The Construction of Disciplinary Memory  
*Steven G. Medema and Warren J. Samuels*
- 52 Competing Economic Theories**  
Essays in memory of Giovanni Caravale  
*Sergio Nisticò and Domenico Tosato*
- 53 Economic Thought and Policy in Less Developed Europe**  
The Nineteenth Century  
*Edited by Michalis Psalidopoulos and Maria-Eugenia Almedia Mata*
- 54 Family Fictions and Family Facts**  
Harriet Martineau, Adolphe Quetelet and the Population Question in England 1798–1859  
*Brian Cooper*
- 55 Eighteenth-Century Economics**  
*Peter Groenewegen*
- 56 The Rise of Political Economy in the Scottish Enlightenment**  
*Edited by Tatsuya Sakamoto and Hideo Tanaka*
- 57 Classics and Moderns in Economics, Volume I**  
Essays on Nineteenth and Twentieth Century Economic Thought  
*Peter Groenewegen*
- 58 Classics and Moderns in Economics, Volume II**  
Essays on Nineteenth and Twentieth Century Economic Thought  
*Peter Groenewegen*
- 59 Marshall's Evolutionary Economics**  
*Tiziano Raffaelli*
- 60 Money, Time and Rationality in Max Weber**  
Austrian connections  
*Stephen D. Parsons*
- 61 Classical Macroeconomics**  
Some Modern Variations and Distortions  
*James C. W. Ahikpor*
- 62 The Historical School of Economics in England and Japan**  
*Tamotsu Nishizawa*
- 63 Classical Economics and Modern Theory**  
Studies in Long-Period Analysis  
*Heinz D. Kurz and Neri Salvadori*

- 64 A Bibliography of Female Economic Thought to 1940**  
*Kirsten K. Madden, Janet A. Sietz and Michele Pujol*
- 65 Economics, Economists and Expectations**  
From Microfoundations to Macroeconomics  
*Warren Young, Robert Leeson and William Darity Jr.*
- 66 The Political Economy of Public Finance in Britain, 1767–1873**  
*Takuo Dome*
- 67 Essays in the History of Economics**  
*Warren J. Samuels, Willie Henderson, Kirk D. Johnson and Marianne Johnson*
- 68 History and Political Economy**  
Essays in honour of P. D. Groenewegen  
*Edited by Tony Aspromourgos and John Lodewijks*
- 69 The Tradition of Free Trade**  
*Lars Magnusson*
- 70 Evolution of the Market Process**  
Austrian and Swedish Economics  
*Edited by Michel Bellet, Sandye Gloria-Palermo and Abdallah Zouache*
- 71 Consumption as an Investment**  
The fear of goods from Hesiod to Adam Smith  
*Cosimo Perrotta*
- 72 Jean-Baptiste Say and the Classical Canon in Economics**  
The British Connection in French Classicism  
*Samuel Hollander*
- 73 Knut Wicksell on Poverty**  
No Place is Too Exalted  
*Knut Wicksell*
- 74 Economists in Cambridge**  
A Study Through Their Correspondence 1907–1946  
*Edited by M. C. Marcuzzo and A. Rosselli*
- 75 The Experiment in the History of Economics**  
*Edited by Philippe Fontaine and Robert Leonard*
- 76 At the Origins of Mathematical Economics**  
The Economics of A. N. Isnard (1748–1803)  
*Richard van den Berg*
- 77 Money and Exchange**  
Folktales and Reality  
*Sasan Fayazmanesh*
- 78 Economic Development and Social Change**  
Historical Roots and Modern Perspectives  
*George Stathakis and Gianni Vaggi*
- 79 Ethical Codes and Income Distribution**  
A Study of John Bates Clark and Thorstein Veblen  
*Guglielmo Forges Davanzati*
- 80 Evaluating Adam Smith**  
Creating the Wealth of Nations  
*Willie Henderson*
- 81 Civil Happiness**  
Economics and Human Flourishing in Historical Perspective  
*Luigino Bruni*
- 82 New Voices on Adam Smith**  
*Edited by Leonidas Montes and Eric Schliesser*
- 83 Making Chicago Price Theory**  
Milton Friedman–George Stigler Correspondence, 1945–1957  
*Edited by J. Daniel Hammond and Claire H. Hammond*
- 84 William Stanley Jevons and the Cutting Edge of Economics**  
*Bert Mosselmans*

- 85 A History of Econometrics in France**  
From Nature to Models  
*Philippe Le Gall*
- 86 Money and Markets**  
A Doctrinal Approach  
*Edited by Alberto Giacomini and Maria Cristina Marcuzzo*
- 87 Considerations on the Fundamental Principles of Pure Political Economy**  
*Vilfredo Pareto (Edited by Roberto Marchionatti and Fiorenzo Mornati)*
- 88 The Years of High Econometrics**  
A Short History of the Generation that Reinvented Economics  
*Francisco Louçã*
- 89 David Hume's Political Economy**  
*Edited by Carl Wennerlind and Margaret Schabas*
- 90 Interpreting Classical Economics**  
Studies in Long-Period Analysis  
*Heinz D. Kurz and Neri Salvadori*
- 91 Keynes's Vision**  
Why the Great Depression Did Not Return  
*John Philip Jones*
- 92 Monetary Theory in Retrospect**  
The Selected essays of Filippo Cesarano  
*Filippo Cesarano*
- 93 Keynes's Theoretical Development**  
From the Tract to the General Theory  
*Toshiaki Hirai*
- 94 Leading Contemporary Economists**  
Economics at the Cutting Edge  
*Edited by Steven Pressman*
- 95 The Science of Wealth**  
Adam Smith and the Framing of Political Economy  
*Tony Aspromourgos*
- 96 Capital, Time and Transitional Dynamics**  
*Edited by Harald Hagemann and Roberto Scazzieri*
- 97 New Essays on Pareto's Economic Theory**  
*Edited by Luigino Bruni and Aldo Montesano*

# **New Essays on Pareto's Economic Theory**

**Edited by Luigino Bruni and  
Aldo Montesano**

First published in 2009

by Routledge

2 Park Square, Milton Park, Abingdon, Oxon, OX14 4RN

Simultaneously published in the USA and Canada

by Routledge

270 Madison Avenue, New York, NY 10016

*Routledge is an imprint of the Taylor & Francis Group,  
an informa business*

This edition published in the Taylor & Francis e-Library, 2009.

To purchase your own copy of this or any of Taylor & Francis or Routledge's collection of thousands of eBooks please go to [www.eBookstore.tandf.co.uk](http://www.eBookstore.tandf.co.uk).

© 2009 selection and editorial matter; Luigino Bruni and Aldo Montesano, individual chapters; the contributors

All rights reserved. No part of this book may be reprinted or reproduced or utilised in any form or by any electronic, mechanical, or other means, now known or hereafter invented, including photocopying and recording, or in any information storage or retrieval system, without permission in writing from the publishers.

*British Library Cataloguing in Publication Data*

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

*Library of Congress Cataloging-in-Publication Data*

New essays on Pareto's economic theory / edited by Luigino Bruni and Aldo Montesano.

p. cm.

“Simultaneously published in the USA and Canada by Routledge.”

Includes bibliographical references and index.

1. Pareto, Vilfredo, 1848–1923. 2. Economics—Italy—History—19th century. 3. Equilibrium (Economics). 4. Income distribution.

5. Neoclassical school of economics. I. Bruni, Luigino, 1966–

II. Montesano, Aldo.

HB109.P3N49 2009

330.15'7—dc22

ISBN 0-203-88298-9 Master e-book ISBN

ISBN 13: 978-0-415-46975-3 (hbk)

ISBN 13: 978-0-203-88298-6 (ebk)

ISBN 10: 0-415-46975-9 (hbk)

ISBN 10: 0-203-88298-9 (ebk)

# Contents

<i>List of illustrations</i>	xi
<i>List of contributors</i>	xii
<b>Introduction</b>	1
LUIGINO BRUNI AND ALDO MONTESANO	
<b>1 Pareto's methodological project</b>	5
LUIGINO BRUNI	
<b>2 Pareto and contemporary economic theory</b>	30
JOHN S. CHIPMAN	
<b>3 Choice, preference and rationalizability in Pareto's theory of economic behaviour</b>	53
MARCO DARDI	
<b>4 Walras and Pareto on the meaning of the solution concept in general equilibrium theory</b>	67
FRANCO DONZELLI	
<b>5 Equilibrium without prices: a central issue in Pareto's <i>Manuale</i></b>	103
ANTONIO GAY	
<b>6 Pareto's influence on modern economics</b>	110
ROBERTO MARCHIONATTI	
<b>7 Vilfredo Pareto and contemporary economics: social equilibrium, fiscal decentralisation and economic growth</b>	130
MICHAEL McLURE	

x *Contents*

<b>8</b>	<b>An analytical–epistemological reconstruction of the genesis of Pareto’s <i>Manuale di Economia Politica</i></b>	147
	FIorenzo MORNATI	
<b>9</b>	<b>Pareto on Ricardo and Bastable’s comparative costs</b>	158
	ALBERTO ZANNI	
<b>10</b>	<b>The Paretian theory of ophelimity in closed and open cycles</b>	175
	ALDO MONTESANO	
<b>11</b>	<b>Order of consumption and measurability of utility</b>	201
	PAOLO SCAPPARONE	
	<i>Index</i>	226

# List of illustrations

## Figures

2.1	Kannai–Mantel preferences for two trading individuals	34
2.2	Pareto set for Kannai–Manelt preferences	35
2.3	Jevons and Wicksteed on “Gregory King’s Law”	38
9.1	The production possibility curve	163
9.2	From domestic competition to international monopolies	167
9.3	ARB world transformation curve	171
11.1	The Paretian definition of marginal duties	214
11.2	Convergence of a sequence of piecewise linear consumption paths to a given path	216
11.3	An alternative definition of the marginal rate of substitution	219

## Tables

9.1a	Closed market production (Bastable’s case)	161
9.1b	Open market production (Bastable’s case)	161
9.2a	Closed markets: Productions and distributions (the mutilated Ricardo case)	162
9.2b	Open markets (the mutilated Ricardo case)	162
9.3a	Closed markets: Productions and distributions (Bastable’s case 2.1)	164
9.3b	Open markets (Bastable’s case 2.1)	165
9.4a	Closed markets: Productions and distributions (Bastable’s case 2.2)	165
9.4b	Open markets (Bastable’s case 2.2)	166
9.5	Complete specialization, actual epilogue and self-sufficiency	172

# List of contributors

**Luigino Bruni** is Associate Professor of Economics at the University of Milano-Bicocca.

**John S. Chipman** is Emeritus Professor of Economics at the University of Minnesota.

**Marco Dardi** is Professor of Economics at the University of Florence.

**Franco Donzelli** is Professor of Economics at the University of Milan.

**Antonio Gay** is Professor of Economics at the University of Florence.

**Roberto Marchionatti** is Professor of Economics at the University of Turin.

**Michael McLure** is Senior Lecturer at the University of Western Australia.

**Aldo Montesano** is Professor of Economics at the Bocconi University of Milan.

**Fiorenzo Mornati** is Assistant Professor at the University of Turin, and Adjunct Professor at the Centre Walras-Pareto, University of Lausanne.

**Paolo Scapparone** is Professor of Economics at the University of Pisa.

**Alberto Zanni** is former Associate Professor of Economics at the University of Florence.

# Introduction<sup>1</sup>

*Luigino Bruni and Aldo Montesano*

Principiai a fare dell'economia pratica, come la facevano e seguitavano a farla tutti gli economisti . . . Ma collo studiare s'impara. Ed io imparai una cosa che gli economisti mostrano ancora di ignorare, cioè che vi è una *scienza* economica, una sociologia *scientifica*, e che questa scienze, come tutte le scienze non hanno, non possono avere partito, e non hanno da dare precetti, ma semplicemente ricercano le uniformità dei fatti.

(V. Pareto, letter to F. Enriques, 1906)

- 1 Pareto is one of the most influential economists ever, and unlike the classic authors of economic science that today are present only in courses on the history of thought, most of the analytical content of a current microeconomics book derives directly from Pareto's innovations in economics, in particular from his *Manuale di Economia Politica* (*Manual*), published at the end of 1906 in Milan. The *Manual* is, in fact, a groundbreaking work as it introduces the analytical approach which has characterised a great part of the economic theory of the twentieth century, in particular, the ordinal representation of individual choice, the issue of general economic equilibrium and the Pareto optimality criterion for evaluating economic efficiency. Pareto's *Manual* has inspired work by outstanding economists such as Hicks, Allen, Samuelson, Allais, Debreu, and also the theoretical contributions of contemporary scholars, including some of the authors of this book. The *Manual*, in fact, is one of those books that are 'greater' than their time, and for this reason it continues to shed light on economic issues and inspire the economics profession even after a century. As editors of this book, we are convinced that in Pareto's *Manual* there are still hints and intuitions that at the same time are unknown among theoretical economists and relevant to today's economic analysis. The *Manual* contains, in fact, many other interesting analyses, for instance, on production, non-linear prices, non-competitive markets and the competition process, which *mainstream economics* has not developed following Pareto's approach. On the other hand, the *Manual* has many obscure points.

Many argumentations, even mathematical ones, are elliptical, and in the footnotes of the critical edition some interpretations of these obscure points are provided.

- 2 The *Manual*, as is well known, is not Pareto's first economics book. Before the *Manual* he published the *Cours d'économie politique* in 1885–1896, his first systematic work of political economy. The *Cours* is in full continuity with the neoclassical economics, especially that of the Lausanne School of Walras, although it introduces important theoretical innovations, such as the concept of 'ophelimity' instead of classical utility. The *Cours* is an excellent book, but it is not a work of pure economics, because statistics, history, sociology, and political science are also discussed in depth. For this promiscuous nature, Pareto soon criticised his first book labelling it as 'metaphysical', and started to think about a more 'scientific' book. He was not satisfied with the economics of the *Cours*, and the *Manual* is the result of this dissatisfaction. What are the main differences between the *Cours* and the *Manual*? One of the most important innovations from an analytical point of view is Pareto's passage, from economic theory still grounded on a cardinal measure of the utility to one grounded in an ordinal utility, no more anchored in hedonist or utilitarian theory of value, because it is founded on the 'naked fact of the choice' that is at the basis of his indifference curves, a tool inherited from Edgeworth but used in a different (experimented and not cardinal) way. Most of the essays in the present collection show how deep and worth further exploration is the theory of choice of the *Manual*. No less important are the methodological novelties, mostly contained in the Proemio to the Italian edition of the *Manual*. In the *Cours*, Pareto is an economist not too far from the classic and neoclassical tradition. Pantaleoni's hand is present and heavy, as are the influences of Marshall, Edgeworth, and even Marx. In the *Cours*, the political passions and liberal battles of Pareto are clearly present, the pure analysis of the world is mixed with the political concern for the Italian situation. Pareto, in the *Cours*, writes not only for his fellow scholars, but also for the media, for the policy maker, maybe with the hope of converting them to the correct use of reason. In the *Manual* all of this is abandoned, with the feeling of repentance for a sin of youth. The economist, biologist-like, deals with human beings as if they were ants, mushrooms, or grass, taking the place of the engaged scientist. From the pure theory all sentiments are taken away; all metaphysics is expelled from science. Due to his passion for the scientific and empirical method, Pareto would have been a great supporter today of experiments, data, statistics, and econometrics, as long as these developments were considered by Pareto science and not metaphysics hidden under a complex formal language. Probably Pareto would have looked forward to a general theory of behavioural anomalies, still lacking in today's experimental economics.

- 3 The papers in this book examine the various aspects of Pareto's thinking, from the point of view both of the history of economics and economic theory. The *Manual* is the fulcrum of the papers, but most of them go beyond the majority of Pareto's economics works.

Luigino Bruni discusses some methodological issues presented by Pareto in his writings. He remarks the importance of Pareto in the philosophy of science and his originality in the transition phase from classical positivism to neo-positivism.

John S. Chipman examines some prominent aspects of Pareto's theory of demand and compares them with recent theoretical analyses. He also explains why and how, in the theory of demand, Pareto uses the measurability of utility although it is not necessary in the equilibrium theory.

Marco Dardi compares the sort of (ideal) experiment considered by Pareto to determine preferences from choices with the (ideal) experiment in the current theory. Pareto admits indecision but requires a unique choice; the current theory assumes decisiveness but admits the possibility of a multiple choice. Dardi examines the consequences of this difference on the axiomatic structure of the theory.

Franco Donzelli explains why Pareto has disregarded the analysis of the *tâtonnement* process introduced by Walras and highlights Pareto's approach to dynamic analysis. Moreover, he discusses the evolution of Pareto in regard to the meaning of economics.

Antonio Gay stresses how Pareto's approach to general equilibrium, contrary to Walras's, does not require the introduction of prices and price-taker agents and, therefore, of relevant hypotheses such as convexity of preferences and production sets. Particularly he examines the case of incomplete preferences.

Roberto Marchionatti discusses the influence of Pareto on economic theory and its development during the two world wars and shows how such influence was greater than is commonly thought.

McLure presents Pareto's sociological approach to the analysis of public finance introduced by Italian economists under the influence of Pareto's legacy. This is an important issue, almost ignored by contemporary literature, even if social equilibrium – especially in its fiscal aspects – is not at all extraneous to the logic of the *Political Economy* research program.

Fiorenzo Mornati examines the epistemological reasons that led Pareto to base the economic theory developed in the *Manual* on choice, instead of marginal utility.

Alberto Zanni shows how in the *Manual* Pareto contrasted Bastable's thesis according to which all traders always gain from international trade. Zanni also takes into account that in the *Cours* Pareto had generalised Ricardo's comparative costs theory by adding the traders' ophelimity, claiming the influence on this point of the Paretian theory of Marshall and Edgeworth.

#### 4 *Luigino Bruni and Aldo Montesano*

In Aldo Montesano's paper, the theory of ophelimity in closed and open cycles proposed by Pareto following Volterra's observations is examined. The paper shows that Pareto was interested in the problem of the measurement of the elementary ophelimities starting from the empirical data represented by the marginal rates of substitution and by the indifference varieties.

Paulo Scapparone continues on the same line of Montesano's paper by proposing a reformulation of the Paretian theory of the order of consumption, starting from the assumption that the consumer orders the different consumption paths by means of a regular preference relation.

An author of 'classic' works is always contemporary: this collection of essays demonstrates that Pareto is one of the classic authors in the tradition of economic science.

#### **Note**

- 1 This volume includes some of the papers presented at the International Seminar *Vilfredo Pareto's "Manuale di Economia Politica", 1906–2006* held at Bocconi University on June 5–6, 2006. The aim of the seminar was to celebrate the centenary of the first edition of the *Manual* and mark the publication of its critical edition (eds. Aldo Montesano, Alberto Zanni and Luigino Bruni. Milano: EGEA-Università Bocconi Publisher). The critical edition also includes the changes which Pareto made in the *Manual* which was both the French translation and the second edition of the *Manual*. Most of the papers of the book (all except Montesano's, Scapparone's and Zanni's) have been published in the *Risec* (2006, LIII, n.4); Montesano's and Zanni's papers have been published in *History of Economic Ideas* (HEI): we thank *Risec* and *HEI* for allowing us to republish the papers.

# 1 Pareto's methodological project

*Luigino Bruni*

*A man of realities. A man of facts and calculations. A man who proceeds upon the principle that two and two are four, and nothing over, and who is not to be talked into allowing for anything over.*

Charles Dickens, *Hard Times*, 1854

## 1 Facts

Pareto's methodology is a classical *vexata questio* of his thought. The *Manual* is also a methodological treatise, where Pareto explains his philosophy of economics and social science. The two 'strange' first chapters of the book have, in fact, no sense unless we consider the *Manual* as also a place where Pareto wanted to fix his basic methodology of science. Thus, my way of celebrating the centenary of the *Manual* is to take seriously its methodological message.

The core of Pareto's methodology is his 'experimental' philosophy: only 'facts' are a solid basis for science, economics and sociology included.

Pareto was obviously a positivist, if by this expression we mean 'the view that positive science constitutes man's sole possible significant cognitive relation to external reality' (Parsons, 1968, p. 61). That he was a *naïf* positivist is less obvious, if a scholar like Talcott Parsons (who made one of the most profound analyses of the Paretian methodology) placed Pareto among those who attempted to reform nineteenth-century positivism, an author of a 'much more modest and sceptical view of the scope of science' (Parsons, 1968, p. 181), putting him on the same level as Mach and Poincaré – perhaps too generously.<sup>1</sup>

Pareto's starting point was J. S. Mill, and therefore, we must start with the English philosopher-economist in order to analyse the 'problem of induction' in the Paretian works, a subject that became one of the focal points of criticism of the old and new positivism during the twentieth century. Pareto endorsed a taxonomy modelled on John Stuart Mill's distinction between 'hypothetical' and 'deductive' (or 'a priori', or 'concrete deductive') method.<sup>2</sup> In the inaugural lecture at the University of Lausanne in 1894, he said

[the method of economics] is the same as that used by the physical sciences, and John Stuart Mill described it very well with the name of concrete deductive method. Theories can be deduced from certain very general principles drawn from experience, which are verified when we see that they explain all the facts they enclose perfectly.

(Pareto, [1894] 1966, pp. 156–57)<sup>3</sup>

It is well known that Mill refuted induction as a way to determine the laws of social phenomena, for a simple reason. Social facts are complex phenomena, where different causes converge. Due to the lack of laboratory experiments, it was not possible to use the deductive method to distinguish between the laws that govern the different components of a fact.<sup>4</sup> Therefore, as we shall see in the following paragraph, Pareto had to resort to idealisation.

Therefore, how can we discover the laws of the various parts of a complex phenomenon, if the inductive method cannot be used? Mill provides his answer: the *deductive* method, which he divided into *direct* (used for phenomena caused almost exclusively by one cause alone that can be isolated and become the object of an autonomous discipline), and *inverse* or, as Mill calls it in some writings, ‘hypothetical method’ (the laws are obtained temporarily through experience and then related to the phenomena in order to verify them through experience).<sup>5</sup>

In his sociology, Pareto (in Chapter VI, ‘The Residues,’ of his *The Mind and Society: A Treatise on General Sociology*, henceforth *Treatise*, [1916] 1963), applied the inverse deductive method, while he had used the inductive one in the preceding chapters: ‘Here, now, we are called upon to frame it, that is to say, we must now drop the inductive from the deductive method, and see what consequences result from the principles that we have found’ (*ibid.*, §846). He also specified that ‘Had we been following the deductive method, this chapter would have been placed at the beginning of Vol. I. I may find it desirable to follow that method in treatises to come’ (*ibid.*, §842, footnote 1). In fact, the *direct* deductive method presupposes an initial *inductive* moment to establish the laws of the isolated cause (cf. also *Treatise*, §§146, 2399).

As he developed his methodology and worked to build a new foundation for sociology, the experimental approach began to predominate and gradually prompted him to use the inductive method in sociology and even in economics. At the same time, he became increasingly cautious in adopting deductive reasoning in the social sciences – which, nevertheless, he continued to use.

However, he had doubts regarding induction. In the *Treatise*, for example, after having discussed at length the importance of probabilities in the interpretation of facts (*ibid.*, §§553–558) and on the distinction between objective and subjective probability (with reference to the mathematician Bertrand), he wrote

If a fact is certain (very probable) and is described with very great exactness, a theory developed with rigorous logic form it is also certain (has

very great probability). Oftentimes the facts that sociology has to use have no high degree of probability and are, especially, not exact. Hence even though a rigorous logic be followed, a theory based on a single fact is not very probable.

(*ibid.*, §559)

In Section 97, we find another interesting observation:

we hold aloof from debates as to the necessity of the conclusion in a syllogism. The syllogism of the text-books on logic, for example, 'All men are mortal; Socrates is a man; therefore Socrates is mortal', from the experimental standpoint must be stated thus: 'All men of whom we have had any knowledge have died; what we know of Socrates induces us to classify him with such men; therefore it is very probable that Socrates is mortal'.

(*ibid.*, §97)

Instead of being written by Pareto, this last extract could very well have been written by the many philosophers of science of this century, who believed that the conclusions should be considered with caution, because while the formal logic of syllogism is impeccable, the empirical truth of deductions depends on the empirical truth of the premises.

This was the same conclusion reached by Pareto:

People reasoning on essences may sometimes substitute certitude with probability, even very great probability. But we know nothing about essences and accordingly lose our certitude.

(*ibid.*, §97)<sup>6</sup>

## 2 Experimental economics

With regard to the method used by Pareto in economics, the discussion is much more complex.

Before the *Cours*, Pareto mainly used the direct deductive method, defining pure economics as 'the group of doctrines that can be deduced by the hedonistic hypothesis'.<sup>7</sup>

Therefore, even for Pareto, the most general principles can be reached through experience; nothing new with respect to Mill and the mainstream English school (Keynes, Sidgwick, Jevons or Cairnes). There are, however, differences because of the particular meaning the term *experience* takes on for Pareto. Pareto's experience is not the *psychological introspection* of Mill and the English school (and of Pantaleoni, as we will see later on). For Pareto, experience must be objective, i.e. external (= intersubjectively testable) with respect to the subject – just as many classical empiricists believe.

Even in the *Considerazioni* ([1892–93] 1982), the exigency to found economic laws on objective data was a pivotal point in Pareto, a need that would grow almost to the point of becoming an obsession in the *Manual* and even more so in the *Treatise*.

In this, Pareto shared the common nineteenth-century belief according to which scientists, with very few exceptions, did not doubt that science was able to demonstrate certain truths with a certainty ‘as great as the one attributed to divine knowledge by the followers of rational theology. And to them “positive” implies “scientific”, “rational” and even “objective”’ (Boland, 1997, p. 117).<sup>8</sup>

This need for empiricism and objectivity grew as Pareto became more embedded in sociology, and the methodological exigency of basing his theory on facts, even in the formulation of the laws of pure economics, became more and more urgent.

For these reasons, while we must recognise a certain methodological continuity with Mill in all of Pareto’s works, it would be more correct to assert that from 1897 onward Pareto gradually shifted towards what Parsons has called ‘analytic induction’, and which Pareto defined as *pure experimental method*.

In fact, if in the *Manual* pure economics is studied starting with the hypothesis of the *homo oeconomicus* that performs logical actions,<sup>9</sup> a year later, in one of his last works on pure economics,<sup>10</sup> he wrote

In the future, the progress of political economy will greatly depend on the research of empirical laws, attained by statistics that will be compared with known theoretical laws.

(Pareto, [1907] 1982, p. 366)

Eliminating non-empirical (or empirically difficult to verify) categories such as utility, ophelimity, value and hedonism from the field of economic science, could be considered as Pareto’s main programme from 1898 on. Did this mean abandoning deduction in economics? Not at all, as can be seen from the first pages of *Economia sperimentale*: ‘abstractions can be deduced from facts, without going outside of the experimental area if one specifies clearly how they have been produced’ (Pareto, [1918] 1980, p. 726). We shall see how, together with the method of analysis and synthesis, the use of the deductive method in pure economics will be in the next chapters the key for the interpretation that will allow us to rightly understand Pareto’s theory of choice.

### 3 Interpretation

Marshall wrote in his *Memoirs*: ‘the most reckless and treacherous of all theorists is he who professes to let facts and figures speak for themselves’.<sup>11</sup> Pareto did not belong to this category of theorists since the problem of the interpretation of facts occupies a very important place in his work.

On September 1st, 1896, he wrote to Vailati: 'you have pointedly noticed the defect of many authors who confuse the experimental method with a simple list of facts, often referred to without checking and examining them critically' (Vailati, 1971, p. 89). In the *Treatise* he wrote: 'interpretations are indispensable, and anyone resolved to do absolutely without them might as well not bother with history or sociology. But it is important to decide when, how and to what extent they may, with a fair degree of probability, be trusted' (§546). What we find in §2397 is also very important:

A logical-experimental study merely relates facts with facts. If that is done directly, merely describing facts that are observable simultaneously, we get pure empiricism.

It must be noted that Pareto uses the word 'empiricism' with a negative meaning, namely the mere gathering of raw facts and associated it to the behaviour of practical (as opposed to theoretical) man, or at times, to the attitude of the Historical School. For example, he wrote in the *Treatise*: 'Where science fails, empiricism comes to the rescue' (§1776).

In Pareto, we find a sharp distinction between the *objective* and the *subjective*, and only because of the *imperfection* of the human mind and the observer's sentiments, is it impossible for science to reach objective knowledge, or rather, *true* knowledge.

This epistemological attitude emerges, even if often implicitly, in various parts of the *Treatise*, and is particularly clear in a long footnote in the 'Epilogo' of *Fatti e Teorie* ([1920] 1976). After having expounded his own position of absolutely not introducing 'sentiments', subjective elements into science, Pareto wrote

Here we are showing the author's intention, the goal he is aiming for, and which can be more or less achieved. It is true, as Papini says (*Testimonianze*, p. 12) that 'in the simplest observation, made in good faith by the observer, interference in his sentimental, utilitarian, etc. choices is possible'. This can be said about all the sciences, even mathematics, mechanics, etc. Whoever has a human body has feelings. A solely logico-experimental man does not exist. There remains only those who try, in experimental sciences, to minimise the part based on feelings, while knowing that this absolutely cannot be reduced to zero. [...] Today, rather than trying to seek the residues of sentiments, we must develop the theories and continuously compare the conclusions with experience.

(*ibid.*, pp. 859–60)

Therefore, if the observer had hypothetically freed himself of the subjective filters that distort observation (what Pareto calls 'sentiments'), he could reach an *objective* vision of reality. Therefore, in Pareto, there is no awareness that

*facts are theory-dependent*, and that – as Croce and Vailati already said to him, and as many modern philosophers of science continue to say – one cannot easily distinguish between facts and the interpretation of facts. In this respect, Pareto certainly does not belong to the post-positivist tradition and comes closer to the old positivists.

However, in Pareto we find great caution in attributing certainty to scientific laws-uniformity, and therefore a certain caution in using them to make predictions.

The issue of *prediction* in sciences was mainly debated by Croce's idealist school, positivists and pragmatists during the first decade of the twentieth century. In particular, the possibility of making predictions in human sciences was an issue closely linked to the alleged differences between physical and human facts: in other words, the issue of *methodological dualism*.

If human events show some regularity, like the natural ones, then it is possible to make predictions even in the social sciences.<sup>12</sup> Vailati and the pragmatists, against Croce and the neo-idealists, together with Pareto (at least in this battle), were substantially in favour of a 'methodological monism', believing that uniformities of coexistence and succession, not any less constant and inflexible than those manifested in the area of physical or mechanical phenomena, exist in the social realm.

Pareto's position on this point – while less sophisticated than Vailati's and different from that of the neo-idealist philosophers – is, however, no less interesting, and has, to some extent, aspects in common with some of the theses put forward by several philosophers of science during the last 50 years. The issue is mentioned especially in the *Treatise*:

Yet there are still people who imagine that the purpose of the scientific research in which we are engaged is to be able to prophesy, in unchivalrous competition with Madame de Thèbes [a famous astrologer] [. . .]. The form a logico-experimental reasoning takes with regard to virtual movements is: Given the circumstances A, B, C . . ., X will occur [. . .]. If from observation of the past it seems reasonably certain that A, B, C, . . . will recur in the future, one may guess, with the same degree of probability, that X also will occur. That is a scientific forecast, a consequence of the uniformity of associating A, B, C . . . with X, but remaining altogether distinct from that uniformity.

(Pareto, [1916] 1963, §2411)

The need to eliminate the hypotheses and theories that do not correspond to facts is at the heart of all of Pareto's work. Whether he really did this, when he started testing his own method after 1916, is another question. What can be seen in the *Treatise* is the tendency – already present in Pareto's first works – to attribute the errors of predictions (as in the case of his 'curve of income distribution'), to an inadequate consideration of other elements that sum up and 'mask' the laws (cf. *Manual*, [1909] 1971, Chapter I, §7). This is

a methodological attitude that makes it very difficult to reject theories. The impossibility of isolating the various components of a social phenomenon in a laboratory makes it impossible to *de facto* falsify theories.

In the next section we will analyse the other pillar of Paretian methodology, namely, *the method of analysis and synthesis*.

#### 4 Idealisation

In the methodological debate between Pareto and Croce, the *focus* of the methodological dissent was tied to the different concepts that the two scholars had regarding *abstraction* and *idealisation* (Bruni, 2002).

Pareto certainly was not the first to use idealisation in science. In fact, modern science began when scientists began introducing the observation of phenomena not in their natural context but under certain particular and artificial situations, called 'ideal'. A concrete phenomenon is complex. If one wants to develop the laws that govern it, the various components of the phenomenon must first be separated, *analysed* using the right instruments and then the scientist must returned to reality from abstraction by putting the pieces back together again (*synthesis*). This is the classical method of *analysis and synthesis*, which originated in Greek thought (Archimedes, Euclid) and was used throughout the Middle Ages when the two operations were called 'resolution' (analysis) and 'composition' (synthesis). The expressions 'analysis' and 'synthesis' appeared only with Galileo, and the whole of modern science has constructed its own theoretical framework based on this methodology.

However, after the neo-positivist period, many philosophers of science such as Hempel, Popper and Reichenbach, understated the scientific value of the method of analysis and synthesis, and only in the last few years has there been renewed interest in the methodological value of such an 'idealised' approach to reality.<sup>13</sup>

Nancy Cartwright, a philosopher to whom we owe a great deal for the renewed interest in idealisation in science, proposes a useful taxonomy to capture Pareto's viewpoint. She distinguishes between *ideal*, *abstract* and *fictional* models. An *ideal* or *idealised* model contains all the factors a phenomenon depends on, but some have been assigned a particular value (normally zero or infinite)<sup>14</sup> (Cartwright, 1989).

Instead, in an *abstract* model we do not know what other factors are relevant in the creation of the phenomenon, or know just some of them and we close the model with an (often implicit) 'ceteribus absentibus' clause.<sup>15</sup> Finally, we have *fictional* models (Cartwright, 1994), which use entities that do not exist in the real world, but which are introduced by scientists because of their hermeneutic value. The point in geometry or the perfect rational agent in economics are examples of fictional models.

Economists have always paid attention to the problem of idealisation and the use of the model of analysis and synthesis,<sup>16</sup> beginning with J. S. Mill –

who can be considered the father of the use of idealisation in social science<sup>17</sup> – Carl Menger, Cairnes, J. N. Keynes, Samuelson and many others. However, I feel that the central role played by Pareto's use of idealisation has not been sufficiently highlighted.<sup>18</sup>

Even on this point, we find a strong similarity between Pareto and J. S. Mill. The work in which Mill best explained ideas on idealisation and on the method in the social sciences in general is the *System of logic*:

In scientific investigations, as in all other works of human skill, the way of obtaining the end is seen as it were instinctively by superior minds in some comparatively simple case, and is then, by judicious generalisation, adapted to the variety of complex cases.

(Mill, [1843] 1862, I, p. 409)

He then adds that the sciences, throughout their development, overcame the hurdle of uncertainty and vagueness only when they followed such a method.

The analogy between the paradigm of social sciences and physical sciences, which is at the core of Pareto's thinking, can also be found in Mill. This analogy allowed him to apply the ideal method even in social sciences.

At the basis of the Millian concept of idealisation, in fact, we can find the *principle of composition of causes* (generalisation of the principle of the 'composition of forces' in mechanics), in which 'the joint effect of several causes is identical with the sum of their separate effects' (Mill, [1843] 1862, I, p. 406). This principle cannot be applied to all fields of science. In chemistry, for example, it does not work, since the result of the action of many forces gives a substantially different result from the input: 'Not a trace of the property of hydrogen or of oxygen is observable in those of their compound, water' (ibid., I, p. 406). For Mill, the principle of the composition of causes is the *general* rule, while what happens in chemistry is an *exception*. Therefore, it can also be applied to the social science, which he calls 'by a convenient barbarism' *Sociology* (ibid., II, p. 481).<sup>19</sup>

## 5 Synthesis

'When the general science of society has solved the problems which it has as yet only managed to define more or less clearly – when for positive knowledge it can offer us something better than a mixture of vague and variously applied physiological analogies, imperfectly verified historical generalisations, and unwarranted political predictions – when it has succeeded in establishing on the basis of a really scientific induction its forecasts of social evolution – its existence will be irresistibly felt throughout the range of the more special enquires into different departments of social facts'.<sup>20</sup>

At the end of the nineteenth century, Henry Sidgwick was expressing with the sentence quoted above a commonly held opinion of the English marginalist economists of the time shared also by Pareto. The response of Marshall and