Acknowledgments

HOW IT ALL BEGAN IN NELL'S OFFICE AT THE NEW SCHOOL

A little over 25 years ago a graduate student, who had previously studied mathematics, econometrics and philosophy of science in Paris and had worked at INSEE, turned up in my office. He had just finished his studies with us, with perfect grades, and he wanted to work on a doctoral thesis. He had a straightforward project in mind: to rewrite Hollis and Nell's *Rational Economic Man* (1975). It was a great book, he said, but focused on the wrong target. It was not so much *economic theory* that was distorted and undermined by the assumption of rational economic agents as it was *econometrics*. That was where the real problem lay. The arguments should be adapted and redirected before econometrics got lost any further in a morass of misspecifications and unrealistic assumptions. Quite a project! But Karim was persistent and I decided he was right. So we began work, and now *Rational Economic Man* (it was always 'man'; feminist economics has generally been free of 'rational' fundamentalism) has become *Rational Econometric Man*. It took a long time, but we hope it's worth it!

INFLUENCES AND PATHS THAT LED TO THIS BOOK

Professor Edward Nell was the principal PhD thesis advisor and long-standing mentor of Karim Errouaki, along with his two supervisors and mentors, the late Nobel Laureate Wassily Leontief and the late Professor Camilo Dagum at the New School (NY) in the late 1980s. Errouaki owes a great debt to his learned professor and humane friend Professor Nell for his constant help, critical guidance and generous encouragement; and is greatly indebted to all his mentors during the writing of his doctoral thesis and he thanks them for sharing some of their reflections on the scientific standing of econometrics. They were always open to his questions and ideas about econometric methodology, were a constant stimulus for his own thinking in economics, and gave him confidence that

he was working along the right lines, pointing out the paths to follow and guiding him along them. Errouaki's doctoral thesis extended and developed the position revealed by Hollis and Nell's *Rational Economic Man* (1975) and, inspired by a novel re-reading of Haavelmo's *Manifesto* (1944), refocused on econometrics. Errouaki's doctoral thesis concluded that what is required is a unified scientific methodology for economics in general, in which econometrics would not be separate, but would play a role coordinated with the rest. Many of the most important recent writings on econometrics do not have the right balance between the three pillars of econometrics to be explained in this book (theory or conceptual coherence, applicability or relevance, and measurement or quantification). Errouaki would like to point out that the task of co-writing this book, *Rational Econometric Man*, was made considerably easier since the publication of Nell's (1998a) magnum opus, *General Theory of Transformational Growth*. In Errouaki's view, Nell provided the blueprints for the rethinking of the foundations of macroeconomic model building and in doing so has paved the way for transforming structural econometrics.

APOLOGIES AND THANKS TO ALL

In a work that has taken as long as this to mature, giving adequate acknowledgment to all who have influenced it is bound to be a problem. Our apologies at the outset to our friends and associates: we have borrowed freely from all of you. We only hope the use we have made of your ideas is constructive.

ESPECIALLY TO OUR FAMILIES

It goes without saying that the work on such a project could not have been sustained without the love and moral support of friends and family during this long and difficult task. First, and most profound, there is our debt to our families. Without their love, support and encouragement, this book simply would never have been finished. For Edward it is to Marilyn Adams that he owes not only a debt for help and support, but gratitude for making life a joy once more. She has been patient beyond belief, and supportive beyond compare. Karim's greatest debt is to his parents, the late Abdeslam Errouaki and Fatima Soussi, his brother Mustapha Errouaki, and Jihane Slaoui Andaloussi, for their love, trust and generosity. We both, but especially Karim, owe thanks to Professor Federico Mayor Zaragoza, former Director General of UNESCO and President of the

Foundation for the Culture of Peace. In the same vein, we owe a special debt to Professor George Matthews, Chairman Emeritus of the Governing Boards of Northeastern University, for support and encouragement, particularly in bringing us together with Nobel Laureate Professor Lawrence Klein (University of Pennsylvania) and other scholars. We cannot thank our friends and family enough.

AND TO OUR COLLEAGUES AND ASSOCIATES

Our book benefited a lot from discussions and exchanges with friends and colleagues who suggested points and challenged our approach, methods and ideas. These discussions over the years helped us to develop our position. Many of them commented on earlier versions of various parts of this work.

To begin with, we would like to express special thanks and gratitude to Nobel Laureate Professor Lawrence Klein, as one of the last remaining originators of the Cowles approach, for accepting our invitation to write the Foreword to this book. His help and guidance gave us confidence that we were working along the right lines, particularly when it came to questions related to methodology. His comments and arguments over the last 50 years have forced us to think more rigorously about the foundations of structural econometrics. We hope that our book can be considered a worthy tribute to his outstanding contribution to the science of econometrics.

AMONG THEM, DECEASED COLLEAGUES AND FRIENDS

As will be clear from the title, this book reflects on and advances the ideas of Martin Hollis (University of East Anglia), as expressed in Hollis and Nell; this should be apparent in the discussions of Haavelmo. But the argument on Induction in Chapters 3, 4 and 5 builds on material originally developed by Nell for use in Hollis and Nell, but set aside then as unfinished; it has now been completed. Hollis's later work turned to other aspects of rationality and reason, including the role of trust. But we hope that we have remained true to his spirit and that he would approve.

Next, we would like to express our gratitude to two important figures who influenced both of us, and commented on the ideas underlying this work, but who are now deceased. These are Nobel Laureate Professor

Wassily Leontief (NYU Institute for Economic Analysis) and Professor Camilo Dagum (University of Ottawa and University of Bologna). Both offered helpful suggestions and criticism on earlier versions of the manuscript, particularly for Chapters 1, 2, 6, 7, 8 and 10. Both were generous in sharing with us their own reflections on the scientific standing of econometrics. Leontief first introduced us to the work of Alain Bonnafous and encouraged us to think critically about empirical methodology right up to his unexpected death in 1999. Dagum patiently went through early versions of parts of the book, and made many very useful comments on it before his death in 2005.

In addition, we gratefully recall Robert Heilbroner (New School for Social Research), who always emphasized the importance of approaching both the institutions of the economy and the theory (supposedly!) describing how the economy works from the perspective of history. Both theory and institutions develop; it's important to see whether the paths of development are congruent or not.

Finally, we regret that we cannot discuss these issues with Hyman Minsky (Washington University, St. Louis). He was a realist and he believed in empirical work but he was suspicious of sophisticated techniques. The data wasn't good enough, and the techniques often discarded information in the process. He knew that models had to be abstract, but he also knew that they had to stick close to the way things really work. He was not only a great guide to the mysteries of banking and finance, but he set an example as a practical and realistic thinker.

OUR COLLEAGUES AT THE NEW SCHOOL

We benefited from many excellent discussions with Professor Duncan Foley. Foley has recently been working on a related book with the theme why and to what extent does Statistics work and we have learned a lot from him.

Professor Willi Semmler is a master of applied work and has always been helpful in calling our attention to applied issues and explaining the pressures and problems leading to the development of new techniques. He read and commented on drafts of several chapters.

Professor Anwar Shaikh has worked extensively with the conceptual problems in translating data gathered under one set of categories, appropriate to a conventional theoretical framework, into the categories appropriate to a different theoretical approach. His careful work has set us an example.

Professor Will Milberg (together with Professor Robert Heilbroner) has

written extensively on methodology, especially regarding what they see, following Schumpeter, as a ‘Crisis in Vision’ in economics. We have tried to bring this perspective to bear on econometrics.

OTHER COLLEAGUES AND FRIENDS

Professor Aris Spanos (Virginia Tech) has been an influential and valuable critic of our work. We have learned much about the philosophy and methodology of econometrics from him, and if we still differ on some issues we nevertheless consider his work beyond compare with most done today.

Professor George Davis (Virginia Tech) has been an astute critic who helped clarify our arguments at many points.

Nobel Laureate Professor Robert Mundell (Columbia University) has a very deep sense of realism about how the economy works and he has won many bets with econometricians! He has always been open to discussion about how best to understand the way the macroeconomy works.

Professor Tony Lawson (Cambridge University and his Critical Realist group) has transformed the terms of discussion in regard to realism and methodology greatly for the better in our view. We have learned from his approach and agree with the importance given to questions of ontology.

Professor Deirdre McCloskey (University of Illinois at Chicago) is always a joy to engage in argument, and normally leaves one better informed but less comfortable than before. We love the challenges she throws out and have tried to meet them.

Professor Alessandro Vercelli (University of Siena) is one of the few people who truly understand Keynesian uncertainty and has attempted to come to terms with it theoretically. We have drawn on his work and have tried to carry it forward.

Professor K. Vela Velupillai (University of Trento) is one of the few scholars who attempt to show that mathematical economics is unreasonably ineffective and has proposed an economics for the future that will be freer to explore experimental methodologies underpinned by alternative mathematical structures. We have benefited from his criticism and tried to meet the challenges.

AND MANY MORE CASUAL BUT IMPORTANT DISCUSSIONS OVER THE LAST 3 DECADES

In addition to those listed above, we would like to mention colleagues and friends with whom we have had illuminating discussions, on econometrics

and on economic analysis generally, or who helped advance our project in one way or another: George Argyrous, Michel Armatte, Patrick Artus, Tom Asimakopulos, Ron Baiman, Ronald G. Bodkin, Lawrence Boland, Marcel Boyer, Robert Boyer, Camille Bronsard, Yves Carro, Jean Cartelier, Osiris Cecconi, Ramiro Cercos, James Dean, Antoine d'Autume, Oscar de Juan, Enrique Delamonica, Christian Deblock, Ghislain Deleplace, Meghnad Desai, Jean Marie Dufour, Roy Epstein, Ray Fair, Eladio Febrero, Peter Flaschel, Mathew Forstater, Teresa Ghilarducci, Jean Jacques Ghislain, Christian Gourieroux, Davide Gualerzi, Marc Guillaume, Herve Hamon, Omar Hammouda, Felix Jimenez, Elias Khalil, Peter Kennedy, Stephen Kinsella, Heinz Kurz, Maurice Lagueux, Marc Lavoie, Paul Lewis, Alain Lipietz, Jean Guy Loranger, Cornelis Los, Ray Majewski, Gary Mongiovi, Deepak Nayyar, Jacob Nell, Hasham Pesaran, Pascal Petit, Nobel Laureate Edmond Phelps, Tom Phillips, Christian Pozzo, Christian Proano, Robin Rowley, Bertram Schefold, Mario Seccareccia, Henri Sterdyniak and Ross Thomson. We also regret the passing of Nobel Laureate James Tobin, Nobel Laureate Franco Modigliani, Nobel Laureate Clive Granger, G.S. Maddala, David Gordon, Marc Blaug, Marcel Dagenais, Lise Salvas Bronsard, Maurice Bouchard and Jacques Henry, all of whom helped us with insights. We should add that we found special inspiration in the work of both James Tobin and Franco Modigliani, who based their empirical work on a realistic approach.

THE MARTIN HOLLIS CONFERENCE AT THE NEW SCHOOL

Draft chapters of the book were presented at the Martin Hollis Memorial Conference at the New School in November 2004 (Rationality, Action, and Value in the Philosophy of Social Science: A Conference in Honor of Martin Hollis). We would like to thank Luc de Clapiers, President and CEO of Natixis North America (NY) and the New School for help with funding, and extend our appreciation to all the participants; all helped us to appreciate Martin's work. Many papers and discussions concerned his later work, but a number of papers and discussants addressed wholly or in part the 'Hollis and Nell' issues. We would especially like to thank Margaret Archer, Margaret Gilbert, Russell Hardin, Shaun Hargreaves Heap, Bernard Hodgson, Brendan Hogan, Simon Hollis, A.J. Julius, Tony Lawson, Isaac Levi, Steven Lukes, Richard Miller, Timothy O'Hagan, Alex Rosenberg and Pavlina Tcherneva.

A MEMORIAL TO THE NEW SCHOOL SEMINAR ON ECONOMETRICS

Finally we would like to offer this book as a memorial to all the scholars who participated in the New School International Seminar in Econometrics in the early 1940s. The New School's pioneering role in developing the new and foundational ideas in econometric methodology has not been adequately recognized, and we take this occasion to call attention to this and to honour it. The group of scholars involved was very distinguished, among them J. Marschak, Nobel Laureate T. Haavelmo, A. Wald, and Nobel Laureate F. Modigliani. The Seminar was initiated by Marschak and later joined by Haavelmo. It attracted brilliant economists, statisticians, graduate students and instructors from the New School, Columbia, and the NBER. The ideas presented, especially by Haavelmo, and developed in subsequent discussion, came to the compelling conclusion that least squares had to be replaced by some other approach for econometric work; this led to the probability approach and to the study of simultaneous equations. However, in 1942 Alfred Cowles successfully induced Marschak to accept a joint position as professor at Chicago and as research director of the Cowles Commission for Research in Economics, starting January 1943, and the New School seminar ended.

AND THANKS TO OUR PUBLISHER, EDWARD ELGAR

Special thanks to Edward Elgar who took this project under his wing; we are grateful for his interest in the ideas of this book, and for his encouragement, and patience! It took a long time to complete the work. As usual, the people at Edward Elgar Publishing did a great job. We are grateful to all his staff for their help with turning the manuscript into a book, especially Matthew Pitman, Joanne Betteridge, Rebecca Hastie, Elizabeth Teague and Nicolas Wilson.

We also thank the anonymous referees for Edward Elgar Publishing for their suggestions on how to improve the manuscript.

We would like to thank Beatrice Macguire for her excellent editing job on an early draft of Chapter 6. Michalis Nikiforos transcribed the diagrams of Chapter 11 into a computer program and rationalized the numbering of the equations. John Coglianò reworked the equations in a section of Chapter 11, using Mathematica. Hamza Errouaki prepared the figures and Mehdi Errouaki assisted with the preparation of the Bibliography. Barbara Herbst of the New School provided invaluable help

with good cheer and remarkable efficiency. We thank her for her unconditional support and assistance whenever needed.

Finally, Edward Nell would like to thank the US Fulbright Commission for a grant in the Spring of 2009, and Stephen Kinsella for hosting him at the University of Limerick in Ireland while completing this manuscript.

All errors and shortcomings of this work are solely our own fault, and the views expressed in this book do not necessarily reflect those of any institution we were or are affiliated with.

Edward J. Nell
Karim Errouaki

New York, NY, USA

The increasing scale, complexity, and practical success of econometric modelling in recent years require a rethinking of its foundations. Econometricians have made do with a formal description of the nature and objectives of their work which relies too heavily on the example of the experimental sciences, and thereby gives *an incomplete and misleading picture.*

Sims (1982a, p. 317, italics added)

One approach which to my knowledge has been completely ignored is the integration of economic methodology and philosophy with econometrics.

Caldwell (1982, p. 216, italics added)

Philosophy of econometrics is concerned with the systematic (meta-)study of general principles, strategies and philosophical presuppositions that underlie empirical modeling with a view to evaluate their effectiveness in achieving the primary objective of 'learning from data' about economic phenomena of interest. In philosophical jargon it is a core area of the philosophy of economics, which is concerned primarily with epistemological and metaphysical issues pertaining to the empirical foundations of economics. In particular, it pertains to methodological issues having to do with the effectiveness of methods and procedures used in empirical inquiry, as well as ontological issues concerned with the worldview of the econometrician. Applied econometricians, grappling with the complexity of bridging the gap between theory and data, face numerous philosophical/methodological issues pertaining to transmuting noisy and incomplete data into reliable evidence for or against a hypothesis or a theory.

Spanos (2007, p. 2, italics added)

Before a thing becomes an object of cognition it must have been a problem, and before it becomes a problem we must have found it strange.

Ortega y Gasset (1946, quoted by Dagum, 1986b, p. 22)

In every scientific venture, the thing that comes first is vision.
Schumpeter (1954, p. 561)