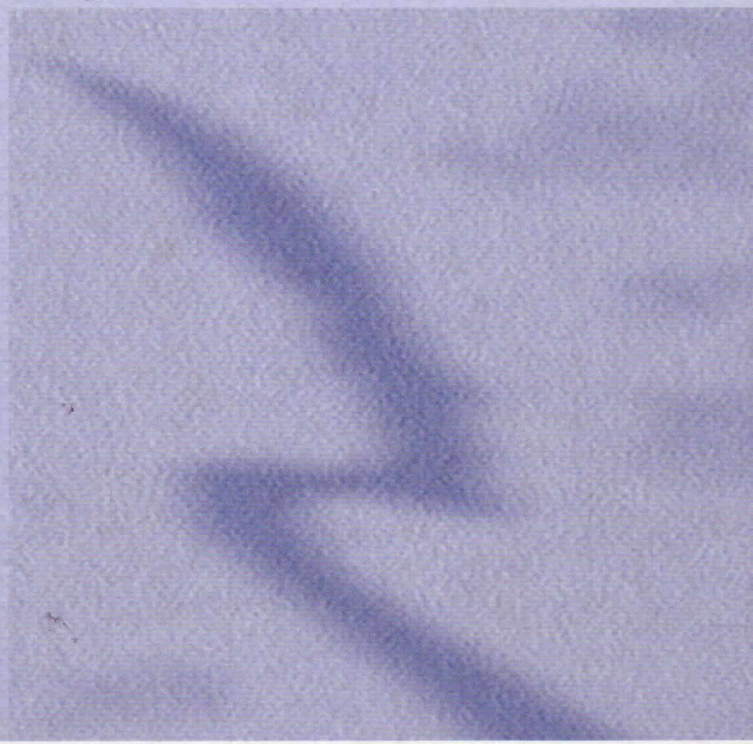
Economics and Interdisciplinary Exchange

Edited by
Guido Erreygers

Routledge Studies in the History of Economics



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Economics and Interdisciplinary Exchange

Economists have not always lived on friendly terms with scientists from other fields. More than once, economists have been accused of 'imperialism' or criticised for neglecting the insights obtained in other fields. The history of economics, however, yields manifold examples of interdisciplinary 'borrowing' where economists have adapted concepts and theories from other fields. This book deals with the exchanges (or sometimes the lack thereof) between economics and neighbouring disciplines.

The contributions examine specific cases and episodes taken from the history of economics, indicating that many important economists were paying attention to what happened beyond the borders of their own field. The themes covered include:

- the interaction of economics with literature, Christian theology, history, demography, natural sciences;
- the relationships between economics and policy, and economics and 'common sense'.

With contributions from leading specialists, this volume will prove essential reading not only for those working in economics, but also those interested in the possibilities of disciplinary cross-fertilisation in any subject.

Guido Erreygers is Professor of Economics at the Faculty of Applied Economics (UFSIA-RUCA) of the University of Antwerp. His research interests include history of economics, linear production theory, inheritance and natural resource economics. With Toon Vandevelde he has edited the book *Is Inheritance Legitimate?* (Berlin: Springer, 1997), and has published on the history of economics in various books and journals.

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Preface

From 23 to 25 April 1998 the fourth annual *European Conference on the History of Economics (ECHE 98)* was held at the UFSIA, University of Antwerp, Belgium. The theme of the conference was: 'Exchange at the boundaries: crossing borders in the history of economics'. In the *Call for Papers* the organisers wrote the following:

> *Throughout the history of economics, its boundaries have shown themselves to be multiple, unstable, and permeable. Thus, innovation and practice in economics have been shaped by images, concepts, and methods adopted from other fields of inquiry. Recent work has begun to emphasize the importance of the natural sciences, and the list can be extended to embrace mathematics, psychology, engineering, and other sciences. By the same token, images and concepts from economics have helped configure thinking and practice in a plethora of 'non-economic' fields. A case in point is the theory of natural selection, where Darwin read Malthus, but other areas also spring to mind, such as history, sociology, philosophy of science, linguistics, literary criticism, and law.*
>
> *In many cases fruitful exchanges have been made, resulting in the development of new subdisciplines in economics (e.g. 'law and economics') or in joint efforts to create entirely new disciplines (e.g. game theory). Yet the relationships have not always been friendly; more than once economists have been accused of 'imperialism', of attempts to invade the territory of neighbouring social sciences. In addition, there have been complaints that economists in general are not well aware of what is going on in other disciplines, whereas economists sometimes accuse non-economists of a lack of economic knowledge, tendencies reinforced by an ever-increasing specialization.*
>
> *The links between economics and other areas of inquiry have been drawn by real people, thinking and acting in particular historical contexts. For this conference, we invite papers which will shed historical light on the to-ing and fro-ing at the boundaries between economics and other disciplines. Preference will be given to original accounts, based on detailed archival or other research, aimed at yielding rich, sophisticated, understandings.*

With one exception, the contributions in this book are revised versions of papers originally presented at *ECHE 98*. (The exception is the paper by Francisco Louçã.) Although the link with *ECHE 98* is clear and obvious, the

book is not intended, however, as a volume of conference proceedings. It contains only a selection of the papers presented at *ECHE 98*, and some of them have been revised considerably.

I take this opportunity to express my gratitude to my colleagues in the organising committee of *ECHE 98*: José Luis Cardoso, Philippe Fontaine, Albert Jolink, Robert Leonard, and Michalis Psalidopoulos. They invited me on board the *ECHE* ship and helped to transform the organisation of the conference into a stimulating intellectual adventure. I also thank the secretarial staff of the (now no longer existing) *SESO*, Annemarie Bunneghem, Kristel Van Hilst, and Sandra Verheij, for their excellent assistance, and the UFSIA (University of Antwerp) for its generous financial support.

Guido Erreygers
Antwerp, February 2001

Introduction

Crossing boundaries: economics and its neighbours

Guido Erreygers

> [The] process of specialization has never gone on according to any rational plan – whether explicitly preconceived or only objectively present – so that science as a whole has never attained a logically consistent architecture; it is a tropical forest, not a building erected according to blueprint. ... One of the consequences of this is that the frontiers of the individual sciences or of most of them are incessantly shifting and that there is no point in trying to define them *either by subject or by method*. This applies particularly to economics, which is not a science in the sense in which acoustics is one, but rather an agglomeration of ill-co-ordinated and overlapping fields of research in the same sense as is 'medicine'.
>
> (Schumpeter 1954: 10)

Historians of economics are well aware of the difficulties involved in attempts to define the science of economics and to determine when it started – let alone to establish whether it *really* is a science. But that has not prevented economics from emerging as a separate academic discipline, and a thriving one too. It is taught at thousands of economic departments in universities all over the world and its research is published in hundreds of specialised journals. Every year in October its most outstanding members eagerly await a telephone call from Stockholm telling them that they have been awarded the *Bank of Sweden Prize in Economic Sciences in Memory of Alfred Nobel*. Moreover it seems that the domain of economics continues to grow. Some economists have actively promoted this 'expansion policy'; for instance, Gary Becker, the Nobel laureate of 1992, stresses that 'the horizons of economics need to be expanded', and calls himself an 'economic imperialist' (Becker 1993). Edward P. Lazear has a simple explanation for the success of economics:

> The power of economics lies in its rigor. Economics is scientific; it follows the scientific method of stating a formal refutable theory, testing the theory, and revising the theory based on evidence. Economics succeeds where other social sciences fail because economists are willing to abstract.
>
> (Lazear 2000: 102)

For him 'economics is the premier social science' (*ibid.*: 99), and although it does not supersede the other social sciences, it clearly dominates them:

> the strength of economic theory is that it is rigorous and analytic ... . But the weakness of economics is that to be rigorous, simplifying assumptions must be made that constrain the analysis and narrow the focus of the researcher. It is for this reason that the broader-thinking sociologists, anthropologists, and perhaps psychologists may be better at identifying issues, but worse at providing answers. Our narrowness allows us to provide concrete solutions, but sometimes prevents us from thinking about the larger features of the problem. This specialization is not a flaw; much can be learned from other social scientists who observe phenomena that we often overlook. But the parsimony of our method and ability to provide specific, well-reasoned answers gives us a major advantage in analysis.
>
> (*ibid.*: 103)

In all fairness we must say that this opinion is not universally shared amongst economists. Some would see this is as yet another bad example of economists' ***hubris***, revealing a wildly exaggerated confidence in their imperfect methods which they believe to be scientific. A closer look at what economists ***really know*** about society would teach them modesty both about what they have thus far achieved and about what they could possibly achieve in the future. Deirdre McCloskey has urged economists to take a serious look in the mirror and to stop playing games in the sandbox.[1]

It should be clear then that the boundaries between economics and other disciplines are not – perhaps some would say 'not yet' – fixed rigorously. But that can hardly be called a surprise: ever since economics managed to establish itself as a respectable discipline, there have been contacts and interactions with related disciplines. Over the years a number of new and exciting subdisciplines have evolved, in which economists and colleagues from other fields jointly explore common ground. This is clearly visible in the names (and contents) of well-respected professional journals like *Economics and Philosophy*, *Journal of Law and Economics*, *American Journal of Economics and Sociology*, not to mention the many journals covering the domain where economics, mathematics and statistics overlap. The purpose of this book is to highlight a few cases where economics and other forms of enquiry have been in contact, and to examine what kind of exchange has taken place. The collection is by no means a complete overview of multidisciplinary exchanges involving economics. Moreover the emphasis is on the past rather than on the present; the theme is explored by means of examples taken from the history of economics, not by surveys of state-of-the-art interdisciplinary research.[2] Those who have contributed to this book have tried above all to understand what has happened in the past. Although critical notes do occur in some of the papers, the volume as such is certainly not

intended as a critique of economic imperialism, or as an attempt to define the 'appropriate domain' of economics.

Bruna Ingrao's contribution stands out for two reasons. First, it was the single invited lecture at the conference. Second, it deals with a non-existent rather than with an existent exchange of ideas. Ingrao rejects the thesis that the language of scientific discourse is the only admissible language of knowledge. A wide variety of languages is available to talk about the world and to gain insight into what is happening. The 'scientist' doctrine deliberately ignores this diversity and urges all sciences to adopt the methodology of the natural sciences, emphasising the use of mathematical models and techniques. The scientist approach has dominated economics in the twentieth century, although there always have been strong pockets of resistance (Hayek is a famous example). Ingrao maintains that the reduction of the modes of expression resulting from scientist totalitarianism has inflicted considerable damage to economics. It is high time that economists opened their minds to the other languages of culture. She illustrates this by looking at novels, and more specifically at nineteenth-century realistic novels. Taking us on a journey through the work of Balzac, Zola, Melville, Dostoevsky, Dickens and others, she argues that the complexities of human behaviour so beautifully expressed in works of fiction are difficult to reconcile with the paradigm of rational choice omnipresent in economic theory. She shows that in novels the budget constraint may have a different meaning than in economic textbooks, and that novels give us a glimpse into the darker side of human behaviour which has been eliminated from economic theory.

The second contribution, by A.M.C. Waterman, takes us to the period in which economics began to take shape as a separate form of inquiry. Waterman focuses on the boundary between 'political economy' and 'Christian theology'. He advances the thesis that the publication of Malthus's first *Essay on Population* in 1798 marks the origin of political economy as a distinct inquiry, clearly demarcated from Christian theology. First, Waterman sketches a picture of economic thought in eighteenth-century Britain, pointing out that British economic thought of that period remained to some extent intertwined with Christian theology (and was certainly not hostile to religion). He then argues that things changed rapidly after the publication of Malthus's *Essay*, with its stress on misery and vice. Leading Christian theologians criticised the economists for their harsh views on humanity. In a few years' time a 'fault-line' between economic thought and Christian theology opened up. In the last part of his paper Waterman examines how the war between the two ended in a reconciliation when, in 1831, Richard Whately managed to demarcate political economy as a value-neutral study of means.

The third contribution, by Peter Rosner, deals with the relation between economics and history. It suffices to read Adam Smith's *Wealth of Nations* to realise that in the past there was a much closer connection between the two

than today. In the nineteenth century, especially, and particularly in the German-speaking countries, the usefulness of knowledge about history for economics has been the object of a heated debate. The German historical schools tried to give 'history' a prominent place in economics. In his paper Rosner examines the works of Rau, Roscher, Marx and Schmoller. He points out that these authors had different views on the relation between history and economics, and analyses and compares these views. He shows that Rau's approach is quite similar to Smith's: Rau used history as a reservoir from which supporting and illustrative examples could be drawn. Both Roscher and Marx saw economics as a means to uncover laws of historical development of human societies, but they did not use the historical insights they obtained in the same way. Schmoller, finally, had the ambition to change the object of economics completely: for him history should take over economic theory.

Flavio Comim's paper takes us to the period following the neoclassical revolution. He concentrates on the work of Philip H. Wicksteed. He compares Wicksteed's border-crossing investigations with those of William Stanley Jevons. Jevons built his economic theory taking mathematics and the natural sciences as guiding examples. In Jevons's case, therefore, economics exchanged ideas with (or at least borrowed ideas from) the mathematical and natural sciences. Wicksteed, often considered to be a disciple of Jevons, also looked at other sciences but, in contrast to Jevons, turned mainly towards ethics and philosophy. Comim examines in detail the major economic works of Wicksteed, focusing in particular on his 'common sense' approach and its methodological recommendations. Comim also reviews Wicksteed's ethical and psychological method of analysis. These allow Comim to clarify the relation between Jevons and Wicksteed. As a result, the border-crossing associated with the marginal revolution in economics should be characterised not only in terms of an exchange between mathematics (or the natural sciences in general) and economics, but also in terms of an exchange between psychology/ethics and economics.

In his paper Mauro Boianovsky also deals with two protagonists of the neoclassical school. He assesses the contributions of Vilfredo Pareto and Knut Wicksell to demography, and examines the way in which these two authors integrated demographic insights into their economic theories. Boianovsky analyses in great depth both Pareto's and Wicksell's writings on demography, and identifies how they modified their views over time. There has clearly been a genuine exchange of ideas in this domain: both were well aware of the developments in demography at the end of the nineteenth and the beginning of the twentieth century, while demographers read what Pareto and Wicksell had to say on population issues. Boianovsky first studies how Pareto and Wicksell dealt with the composition and changes of the population, and he tries to determine whether (and to what extent) their presentations were original. Next he moves to the profoundly economic question of the connection between population and efficiency. Pareto strug-

gled to establish a relation between the production of 'personal capital' (i.e. population) and maximum ophelimity, and he arrived at the conclusion that maximum ophelimity could be obtained only under conditions of perfect foresight and altruism. Wicksell, on the other hand, introduced the notion of optimum population, adopting an 'average' utilitarian position. Boianovsky also considers the wealth–fertility nexus, and clarifies how Pareto, Wicksell and others (notably Brentano) analysed it.

The next two contributions are about the influence of the natural sciences on economics in the first half of the twentieth century. Claudia Rotondi presents the work of the (almost) completely forgotten Italian economist (and poet), Emanuele Sella. She uses both Sella's published works and the unpublished notes that can be found in the Sella archives to give us a glimpse of this in many respects paradoxical figure. As a student Sella had become acquainted with the general equilibrium model elaborated by Walras and Pareto, as well as with the partial equilibrium model propagated by Marshall. The focus of these neoclassical authors was on the *static* theory of equilibrium. Sella had the ambition to go beyond the realm of statics, and to be the first to develop a truly *dynamic* theory. With this in mind, he turned first to biology to find concepts and ideas which he could use in his economic theory. Later he broadened his horizon to mechanics, physics and chemistry. This led him to introduce quite a number of neologisms in economics (or at least in his economic theories), which certainly did not enhance the clarity of his writings. He attached a lot of importance to energetic concepts, and moved a long way in the direction of 'economic energetics'. He also tried to define and to integrate new notions like 'economic temperature', and stressed the usefulness of the 'entropy law' for economics – before Georgescu-Roegen would do so (in a different way and with somewhat more success).

Francisco Louçã analyses another attempt to introduce concepts borrowed from physics into economics. The episode which he describes in his paper concerns the discussion in the 1930s in the ranks of the *Econometric Society* provoked by two papers of F. Creedy, then professor at Lehigh University in Pennsylvania. In the first paper – published in 1934 in *Econometrica* – Creedy proposed to study economic dynamics as if it were ordinary dynamics. In other words, Creedy suggested that economics should simply mimic physics, and he went a long way to show the close analogies which he believed existed between the physical concepts 'force', 'inertion', and 'laws of nature' and economic concepts. Ragnar Frisch, the editor of *Econometrica*, had accepted the paper almost immediately for publication. But after its publication, he learned that Tinbergen was very sceptical of the type of analogies explored by Creedy. This clearly influenced the fate of the second paper in the same vein that Creedy submitted somewhat later to *Econometrica*. Not only did Frisch take much more time before he announced his decision to Creedy, but also he rejected the paper on the basis of negative referee reports. Using unpublished correspondence and archive material, Louçã uses this

episode to reconstruct the quarrels that existed among the first econometricians concerning the usefulness of Newtonian mechanics for economics.

In the last contribution, Arnold Wilts explores the relation between economic science and economic policy. He examines the evolution of Dutch academic economics in the period 1930–1960, and shows how it was influenced by the emergence of the Dutch welfare state. Between 1930 and 1960 the boundaries of Dutch economics became stronger, and also more impermeable. Before the Second World War philosophically and sociologically oriented approaches were still much in vogue in Dutch academic economics. But after the war things rapidly changed: Dutch economics developed into a much more mathematically oriented discipline, with a strong macroeconomic flavour. Wilts tries to establish that this development is intimately related to important social and political changes in Dutch society. After 1945 the Dutch government considerably expanded its intervention in economic life. As a result the government bureaucracy grew significantly, creating an unprecedented demand for economists with expert knowledge on policy issues. Many academically trained economists specialised in model-building, and became more and more involved in the management of the Dutch welfare state. In his detailed analysis of the evolution in the field of economics in the Netherlands, Wilts combines information on the development of economics in academia (leading economists, institutions, professional practices, etc.) with information on developments outside academia (government bureaucracies, policy making, etc.), showing that the two were strongly correlated.

Notes

I thank John Cunliffe for his comments on a first draft of this introduction.

1 See, for instance, her book *The Vices of Economists: The Virtues of the Bourgeoisie* (1997), but also her columns 'Other Things Equal' in the *Eastern Economic Journal*.

2 The essays in Winston and Teichgraeber (1988) focus much more on present-day research.

Bibliography

Becker, G. (1993) 'Economic imperialism. Interview: Nobel laureate Gary Becker', *Religion and Liberty*, 3, 2.

Lazear, E.P. (2000) 'Economic imperialism', *Quarterly Journal of Economics*, 115, 1: 99–146.

McCloskey, D. (1997) *The Vices of Economists: The Virtues of the Bourgeoisie*, Amsterdam: University of Amsterdam Press.

Schumpeter, J.A. (1954) *History of Economic Analysis*, with a new introduction by Mark Perlman, London: Routledge, 1994.

Winston, G.C and Teichgraeber, R.F. III (eds) (1988) *The Boundaries of Economics*, Cambridge: Cambridge University Press.

1 Economic life in nineteenth-century novels

What economists might learn from literature

Bruna Ingrao

The languages of culture

Culture is a network of languages serving to express and understand human experience: it is that symbolic network without which human beings cannot live their lives.[1] The languages of culture are many. The symbolic network through which we interact both with experience and with other human beings is a complex set of languages. This colourful patchwork of languages includes the visual arts, music, dancing, poetry, theatre, philosophy, religion, scientific discourse and many other forms of expression, including the novel.

Each of these symbolic languages has its own codes and conventions in communication. Each has developed genera and species of specialised techniques of expression and rules of evaluation, evolving over the centuries or millennia. Each has a living history in present cultural life. We may speak of landscape paintings or portrait paintings, the nude in the visual arts, epic poetry or lyric poetry, tragedy, the symphony or the quartet, prayers, mystical literature, metaphysics or ethics or epistemology, and so on. In scientific literature as in all other forms of symbolic language, there are stylistic codes, rules of expression and codes of truth.

Our symbolic network is a wonderful babel of languages. It is doubtful whether the human tongues we know may be properly translated one into another without losing or distorting meaning. However, the great effort of communication involved in translation, and thus the effort to understand the original meaning, is an essential and deeply human task, rich in learning and emotions. In his book *After Babel* G. Steiner wrote: 'translation proper, the interpretation of verbal signs in one language by means of verbal signs in another, is a special, heightened case of the process of communication and reception in any act of human speech' (Steiner 1992: 436).

The languages of culture do not admit of translation from one into another. The interpretation of signs in one symbolic language by means of signs in another can only perform an auxiliary function. Translation cannot convey the essence of meaning, since it destroys the very function that the

original language performs in our symbolic world. Symbolic languages interact and communicate, sometimes combining in new expressions, but they cannot be translated into one another without the complete loss of their symbolic value.

We may enter the mystical world of the Sistine Chapel guidebook in hand, but no written word will ever convey the visual impression that the visual language transmits. We may read a book to enhance our understanding of Beethoven's symphonies, but we cannot convey the symbolic meaning of Beethoven's music by translating it into words. We have to listen, or we have to look. Even scientific discourse has an exclusive flavour that cannot be replaced by other forms of expression without losing its character.

As regards the languages of culture, we must accept radical diversity in codes and purposes of expression, in values and criteria of truth. The impossibility of translation proper does not imply a loss in communication or impossibility of dialogue. Culture is, indeed, a permanent dialogue between different symbolic languages, which migrate across nations and ethnic groups, or travel through time, relatively unconcerned about the post-Babel confusion of tongues. The post-Eden plurality of symbolic languages is a fascinating mystery – as fascinating as the post-Babel confusion of human tongues. Steiner argued in favour of the plurality of tongues, warning against the spiritual impoverishment that might result from a loss in the variety of human discourse. A similar plea may well be made in favour of the variety of symbolic languages as a source of learning and enrichment of knowledge.

Over the centuries considerable efforts have been made to domesticate symbolic languages, with repeated attempts to censor one or the other symbolic form on the grounds that it was a menace to religion or spirituality, to the cosmic or the social order. In *The Republic* Plato expressed mistrust of tragic poetry and censured many works of art, not to be admitted to his ideal state.[2] Tolstoy wrote a short essay codifying what is true art and condemning many masterpieces in Western culture (including works by Shakespeare, Wagner and Beethoven).[3] Many thinkers have tried to force the symbolic forms into well-ordered hierarchies, but symbolic languages are unruly and rebellious. They continue to spill out freely from underground sources, revolting against the order preached by the great inquisitors of human spirituality.

In contemporary Western culture this vital anarchy is admitted and recognised. The symbolic languages live side by side in a 'politically correct' world where no language is apparently discriminated against. However, a new form of totalitarianism survives as regards one fundamental aspect of our learning – namely, the language of knowledge. Should we accept a variety of languages (and thus forms of expression, codes of evaluation, criteria of truth) in knowledge? Do we really agree that knowledge lives through the variety of the symbolic network?

Many scholars still seem to dream of an ordered world where only one language of knowledge is spoken. In contemporary culture the quest forges ahead for a unified metalanguage of knowledge, a single symbolic language appropriate to the cognitive function of the mind: the language of scientific discourse.[4] The other languages of culture are, in this respect, relegated to a limbo, where they perform some function for human experience, ethical or emotional or aesthetic or whatever, but not cognitive. Cognitive activity is the exclusive domain of scientific discourse – a conception explicitly defended and extensively argued in the analytic philosophy of the first half of the twentieth century.[5] Its core paradigm is still alive in epistemology, methodology and current practice in scientific research, dominating the evolution of economics as a scholarly discipline in the twentieth century.

As from the mid-nineteenth century, despite a considerable amount of methodological debate, economic theory developed under the imprinting of scientist paradigms. In the twentieth century most economics scholars have proved fanatical defenders of the priority of scientific language as the only admissible language of knowledge, with a few notable exceptions such as Hayek and Keynes. Mathematisation was assumed as the top priority of the discipline, mathematical modelling being identified as the most specialised language, the language *par excellence* of scientific discourse.[6]

Hayek argued vigorously against the 'scientist' approach imitating the language and methodology of the natural sciences in the human sciences; but his criticism was not effective in changing the dominant scientist perspective in economics.[7] Many economists asserted their right to play a privileged role in social science, arguing that economic theory was a rigorous language, conforming to the general principles, rules and codes of scientific discourse, rich in sophisticated mathematical techniques. The approach of maximising rational behaviour – considered characteristic of the discipline – is applied to many aspects of human behaviour (including marriage and the family) beyond the pale of economic theory proper.[8] This 'imperialistic' epistemology was rarely tested in dialogue with the other languages of culture, or even in constructive dialogue with other social scientists.[9] The impoverishment it produced in terms of ideas and understanding in economics is still to be assessed.

The damage inflicted on contemporary Western culture by scientist totalitarianism is indeed widespread, whereas the real need is to recognise the variety of languages in cognitive activity, and to accept the fact that their inner vitality and manifold modes of expression stand in the way of any simple ordering in imperial hierarchies. As scholars, economists should open their minds to the other languages of culture and keep the dialogue going. The purpose of this paper is to show the richness of cognitive experience that the technique of fictional narration offers to our understanding of economic realities.

The magical mirror: reality and imagination in novels

As literary genre the novel is a vast universe. To explore it scholars have elaborated various flexible classifications underlining certain common characteristics, shared poetics or similar literary technique in groups of novels.[10] Literary criticism speaks of the historical novel, the sentimental novel, the *noir*, the thriller, the adventure novel, the picaresque novel, the realistic novel, the naturalistic novel, the fantastic novel, the psychological novel, the *Bildungsroman*, and so on and so forth. Nineteenth-century novels constitute a huge stock of books, many now long forgotten, others still very much alive in our libraries.

In this vast universe we shall focus on a few nineteenth-century novels, all belonging to the mainstream of realism in one or another of its courses. The authors' explicit aim is to paint a descriptive fresco of contemporary social life, evoking the motives, actions and inner ethical conflicts at work in social life. Their poetics and vision of life may differ, but the writers apply the same literary technique: they give their stories a realistic setting either in contemporary times or recent history, mostly in their own countries.[11]

Gogol, Stendhal, Balzac, Zola, Dickens, Melville, Tolstoy and Dostoevsky – the authors we shall be considering – took on the role of witnesses and interpreters of their times. They all devoted time to close examination of reality, basing their fictional worlds on personal memory, detailed documentation, direct observation, reports, interviews, newspapers or specialised books. Dostoevsky's fictional crimes were inspired by the minute details of real crimes reported in newspapers.[12] Balzac not only enjoyed an excellent memory, but actually went as far as studying the commercial codes when his subject called for such details.[13] Zola worked hard (and with little pleasure) to understand the stock exchange and interviewed stockbrokers in preparation of one of his novels.

Scholars looked for the sources of their plots in historical life, seeking to identify the personalities who were portrayed in the characters or the episodes which inspired the stories.[14] It is valuable, extremely interesting work, but it should not be taken literally. Plots and characters are composed with a mosaic technique, creatively mixing both real and imaginary features, and can hardly ever be traced back to real individual referents.[15] Fiction uses evidence from observation and documentary data to build imaginary new worlds. Novelists are not reporters. Their task is to create a new world. The minute detail drawn from news reports enters the novel world only as symbolic image of the mind, where perhaps it has already lived a life of its own.[16] Literary work is successfully accomplished if the world created acquires the reality of a parallel world to the reader's eyes, existing and plausible, credible even in its aspects of disorder and chaos.

A number of papers and books in the sociology of literature have argued the points of why and how the novelist expresses the ideology of some social group, or shares its interests, fears, common knowledge, prejudices or limited human perspective. Many characters in novels are stereotyped

according to biased judgement of social groups or gender. Scholars have studied Balzac's fixation on occultism or Dostoevsky's Slavophile sympathies. However, if literary discourse had nothing more to offer than the passing ideology of some social group, we might well close the old books forever after the old ideologies have been forgotten. If novelists had nothing more to offer than a transitory ideology, there would be little enough point in occupying our minds with their stories once disappointment over their obsolete ideas set in. Useful and interesting as it may be, the sociological approach will not take us very far in the appreciation of literature.

Some scholars have gone so far in asserting the autonomous life of the fictional universe as to deny any relevance to historical reality or contemporary events. As if the raw material of actuality burnt itself out after igniting the creative imagination, leaving no residue in the process of writing but totally disappearing from the finished book. Readers should wipe out from their minds any relationship between the written text and the social reality the writer was looking to at some early point in the creative process.[17] In his lectures on literature Nabokov vehemently criticised scholars who spent time over useless analyses of the relations between fiction and social life, accusing them of having never experienced the *frisson* that is the ultimate reason for reading (Nabokov 1980).

A word of caution is always timely against possible misunderstandings in reading novels as if they were chronicles of historical evidence. Nor does the interest of a novel lie in being a precise report of real events. Nabokov rightly points out that Dickens is not a reliable reporter of the social realities of his times. *Bleak House* should not be taken at face value as historical evidence about the pitfalls of the judicial system or the conditions of childhood in Victorian England. Other disciplines collect better documentary evidence on both issues. Yet Nabokov's reasoning is incomplete and misleading. If Dickens's story did not touch upon an open ethical question, a thorny point of real human relationships, the reader would not feel the *frisson* when reading the book.[18]

In his study on narration, *Temps et Récit*, the French philosopher Paul Ricoeur argued strongly in favour of the referential nature of narration, criticising the approach adopted by contemporary literary criticism which focuses only on the internal structure of the text.[19] Ricoeur defined the second stage of narrative activity (*mimesis II*) as the realm of 'as if' – the realm of fiction proper; but he stressed that the central stage (the process of composing the fictional text) cannot be understood per se, divorced from the previous intuition and understanding of action and motives (*mimesis I*) and subsequent reception by the reader (*mimesis III*). Reference to real human experience marks both the first and the last stage, and narration as a human activity includes all three stages (Ricoeur 1983, I: 105–62).

The relationship between the novel and reality concerns the future as much as the past. Great works of art shape human attitudes and feelings and thus create future history.[20] The parallel world narrated in novels may

mysteriously anticipate and disclose future events. The historical past, the news of the day, present experience, transformed by the novelist's imagination may hold predictions of future events.[21]

We should not look for a mimetic picture of social reality in novels, nor should we focus exclusively on the sociology of literature to appreciate fictional stories as languages of knowledge. In literature reference to real experience is filtered through the magical mirror of metaphor. Great novelistic metaphors powerfully illuminate the crucial questions, both private and collective, troubling present times.

Novelistic metaphors and economic parables: which dialogue?

Economists should not be surprised at the complex relationship of novelistic metaphors to reality since they themselves are accustomed to maintain that their own scientific explanations are parables, offering insights without mimicking real markets. Economic theory has never aimed at a detailed historical picture or photograph of contemporary economic realities. In current research practice, economic theorists defend a loose, free relationship between the stories they tell and the plain evidence of the facts or historical evidence of the past.[22]

Metaphors were widespread in the history of economic thought as an instrument used both for didactic purposes and to shape fundamental ideas. Smith's invisible hand, Walras's lake stirred by the wind, Pareto's material points, Marshall's trees and forests, and so on and so forth, are metaphors to convey meaning through comparisons based on imagination. On a number of occasions economists have literally built scientific explanation on parables, recounting short stories centred on fictional characters with the purpose of conveying meaning and insight. One of these is the island parable set out in Turgot's unfinished text *Valeurs et Monnaies* (Ingrao and Ranchetti 1996: ch. 1). Another famous parable is Robinson's story, told many times in quite different versions to convey meaning on economic behaviour. Robinson's parable has been used notably by Walras, Marx, Edgeworth, Wicksteed and Keynes (ibid.: 401). In the 1960s Samuelson set out to close a fundamental controversy on economic theory referring to the nature of a 'parable' which economic theory shares (Samuelson 1961). In the 1970s Lucas told a new version of the old island parable, which was adopted to convey insights into the new microfoundations of macroeconomics in the rational expectations approach. Contemporary economists continue to recount parables that share the imaginative nature of fairy tales or fiction. In general equilibrium models, rational expectations models and game theory, economists apply versions of the rational choice paradigm depicting fictional behaviour by fictional characters in imaginary worlds.

As an example of this practice, consider how the author of a recent review on evolutionary game theory, published in an authoritative journal,

presented the nature of the related games: 'For this literature to progress, we must analyse (certainly now, and perhaps forever) simple and tractable games. The games are intended as examples, experiments, and allegories' (Mailath 1998: 1356). In other paragraphs, the same author tells stories about fictional Bruce and Sheila working in a fictional firm to illustrate his core argument (ibid.: 1350), referring to his own reasoning as a parable (ibid.: 1357).

Mathematical models share the nature of parables, not so much in their logical structure as in the interpretations given to them in intuitive discourse to enlighten their heuristic function. In contemporary theorising the scope for such use of parables has opened out as a consequence of the free application of mathematical modelling in conceptual experiments regarding fictional worlds. The relationship of such conceptual experiments to the description and interpretation of real events is loose and the procedure of interpretation is left uncodified. However, the epistemological function of parables and metaphors in economic theory is far from being clarified. Be it overt or covert, it is often masked by the still dominant scientist rhetoric maintaining that scientific explanation is to be based on general principles and the reduction of individual events to the realm of general laws. Scientific languages proceed by generalisations, establishing broad relations among classes of phenomena or abstract ideas and concepts.

In his lectures on the novel, Forster distinguished between poor and rich description of characters: the richer and more complex the description, the more interesting the character. Flat characters are built around just one idea or quality. They never surprise: the reader anticipates what they will do, since they always sing the same tune. According to Forster, poor characters have specific functions in narration, but their space should be limited. The great literary characters are rich, multi-faceted personalities, surprising us with unanticipated behaviour (Forster 1927). In economic parables the characters are definitely elementary, and not for poor literary technique. Their function is to isolate and illustrate some simple rule of behaviour or some general principle of explanation. Despite the widespread use of parables and metaphors in economic theory, a whole gulf divides the techniques of narration in economic theory from those of fiction as instruments of both cognition and understanding.

Michael Bachtin, the great Russian scholar who extensively studied the novel as a form of literary art, gave a profound definition of the novel's stylistic character. Bachtin noted that as a literary genre the novel is characterised by linguistic plurality since it absorbs into the literary discourse the variety of spoken and written styles applied in different uses or by different speakers. Novels may incorporate impersonal literary narration or narration in the first person, letters, diaries, orations, travel descriptions, and so on, including, of course, the specific parlance of individual speakers characterised by their singularities, geographical, social or psychological. In Bachtin's definition, stylistically, novels are 'pluristylistic, plurilinguistic,

plurivocal'. They are characterised by 'dialogic plurilinguism' (Bachtin 1978: 87ff.). Different voices speak and interact in the story, each marked by specific shades of expression and mixtures of styles. In open controversy with the formalist school of Russian literary criticism, Bachtin referred to the content of novels as the second essential aspect to be clarified in order to understand the specific function of this symbolic form. The subject matter, which takes on form through the plurilinguistic, dialogic style characterising novels, consists of cognitive and ethical questions expressed through the individual lives of the characters acting and interacting in the story.

The author's thinking on the cognitive and ethical content is developed through the living actions that relate the characters in the plot. Cognitive and ethical questions are not analysed by abstract concepts, but through 'the acting consciousness' of the main characters.[23] While underlining the importance of richness and depth in ethical thinking or philosophical vision, Bachtin emphasised that the quality of literary work does not depend on the conceptual discourse, but rather on the ability of the novelist to express the ethical conflicts and the cognitive questions through the living ethical position, the global standing in life which characters assume by acting in relation to one another in the plot (Bachtin 1978: especially 50ff.).

Bachtin's valuable analysis brings us back to the core differences between the novel's cognitive form and scientific discourse. As a symbolic language, the novel speaks through narration. It is a narrative of intertwining personal stories of individual beings evolving in time. It tells about individual personalities, unique events, specific circumstances concatenated by a time structure. The cognitive issues, the ethical questions are posed within the time structure essential to the specific story.

Both the temporal dimension and the individuality of narrated experience have a deep cognitive significance. Life is a constant source of new opportunities. Narration is essential training in relations with other human beings, experienced in individual episodes which are new and never the same. It immensely enlarges our learning of experience (emotional, ethical, factual) without obliging us to burn out opportunities or portions of our lives in direct experience. The individual dramas played by individual characters in fiction help us to learn complexity, and to perceive the essential and the details in the evolving scenario of human relationships. Since ethical choices are always embodied in specific circumstances of time and place, and in specific relationships between individual human beings, the learning of complexity is essential training in ethical choices and responsibilities. Plots are an exploration of the infinite combining of hazard and responsibility in human events. Creatures of flesh and blood, we live in irreversible time both as individuals and as social groups: the irreversible time of each life or the irreversible time of history – our collective experience. Novels explore the directions of human experience in time, their strong nexuses and their infinite variety. They give meaning to streams of actions and events taking place in irreversible time.

One last point needs stressing: in novels plurality of meaning is the rule. Used as we are to considering the univocality of meaning a necessary aim in scientific language – concepts being criticised when open to a variety of interpretations – we are obsessed by the urge to define precisely and unmistakably the meaning of each single concept introduced in theory.[24] In novels meanings are like layers in archaeological excavations: we may discover the deepest ones under the more superficial, without discarding the value of what has already been brought to light. Like the parts of an architectural building, they may be appreciated from different viewpoints, revealing new aesthetic emotions and new invention in the whole.

The novels which we shall examine all utilise the realistic metaphor in constructing their fiction, the setting generally resembling the writer's contemporary social world. The literary technique of building fictional worlds on the 'mimesis' of real social worlds does not cancel the deepest symbolic undertones or the prophetic nature of the narrative, while providing interesting studies of social realities. We can read these novels from many viewpoints, observing both the rich details of the stories and their symbolic echoes, or examining the metaphysical reasoning beneath the colourful depiction of historical scenarios.

Indeed, the great nineteenth-century novelists never accepted the primacy of theory and conceptual theorising over narration as a source of knowledge and understanding. Balzac, Gogol, Dostoevsky and Melville all expressed the ambition to reach through the language of narration and plurivocality to a deeper understanding of human realities, ethical, social and psychological. They aimed at fusing in their stories individual destinies and historical change. Their poetics was anarchic, rejecting the codified classification of the social sciences. Whatever their degree of success or failure in such ambitious enterprise, their masterpieces cannot be confined beyond the pale protecting the safe ground of rational knowledge, in some savage territory of the mind yet to be civilised by scientific procedures.

Is it then possible to open some fruitful exchange between economics and literature? To get the issue into focus, let us consider the possible dialogue between the language of nineteenth-century fiction and the language of mainstream economic theory, based on the fundamental assumptions of rationality and maximising behaviour. The nineteenth century was a crucial period for the development of the latter, which emerged from the marginalist revolution, and it was also a century of great masterpieces in fiction.[25] Since such a vast gulf separates the assumptions and procedures of economic theorising from the practice of fiction, we may doubt whether any form of dialogue between the two languages be possible. It is clear that, if we were looking for what we cannot find in novels, namely abstract, conceptual theorising on economic phenomena, we would soon be disheartened. Whatever the difficulties, three viewpoints may open up some fruitful comparison.

To begin with, we may ask which are the characters and which the stories

narrated in the metaphors of economic life imagined by the nineteenth-century novelists. How do the characters act in fictional economic life? Which economic plots are recounted in the novels, if any? To suggest an initial answer to this question, we shall point to a few books whose plots centre around economic events and whose protagonists and antagonists play on economic scenarios. In the universe of novels, side by side with the many genres and species of novels already mentioned, we place another quite specific class: the 'economic' novel. Here economic life is at the centre of the stage, the dominant element in the plot. It creates the scenery within which the characters move and the action takes place.[26] While it was speculation and fraud that most attracted the novelists' attention, the environment and characters considered in the 'economic' novels are most varied.[27] In a second larger group of books, economic scenarios constitute interesting elements of the story, though not the main focus of the plot.

In both cases, we shall focus attention on the fictional image of economic behaviour. In economic parables, the rational choice paradigm dominates the fictional construction of behaviour. How do characters act on the economic scene in novelistic metaphors? How do these representations compare? An answer to these questions is suggested by comparing the fictional characters' perception of the budget constraint to the standard definition adopted in contemporary economic theory. Other aspects of behaviour will be mentioned to cast further light on the contrasting visions, and a richer and deeper image of economic action emerges as compared with the simpler form proposed in economic parables.

A further possibility for comparison opens when considering the deeper symbolic themes in fiction. We shall consider two of them, beginning with the function of money as a symbolic substitute in interpersonal relationships – a recurrent theme in Dostoevsky's novels. The second theme, dominating great masterpieces such as *The Idiot*, *Moby Dick* and *La Cousine Bette*, is the metaphor of destructive and self-destructive behaviour – the heritage of ancient tragedy in nineteenth-century culture. The theme is not misplaced at the close of a century whose history had been infected by bloody, savage episodes of collective destructive and self-destructive behaviour, wasting huge amounts of economic resources and destroying tens of millions of human lives (human capital in the polite jargon of economic theory).

A final word of caution is needed. The great nineteenth-century novelists participated, as novelists, in the intellectual debates of their times. As writers, they were cultivated persons, raised in the culture of their times, learning what was taught or written according to the state of the art in different branches of knowledge and open to dialogue with the other languages of culture. Fiction enters into the broad currents of ideas marking an historical epoch, and writers share with their contemporaries scientific and philosophical ideas, or prejudices or fashions. We must not relax our critical attention on entering the world of the novel.

The economic comedy

The authors *par excellence* who wrote economic novels are Balzac and Zola. Both Balzac and Zola wrote their many novels according to an ambitious plan to represent (or better, as Balzac said, 'to express') the many facets of contemporary society.[28]

Society, according to Balzac, is a drama with three to four thousand characters which may be compared with Nature since it creates a variety of social types (*espèces sociales*)[29] in the process of social life. *La Comédie Humaine*, as Balzac explains in the *Avant-propos*, is the result of an effort to recreate the imaginary history of French society as a whole by depicting the social characters and exploring the reasons and moving principles of such a complex social system.

In conceiving the plan to write the history of the Rougon-Macquart family, Zola differentiated his project from Balzac's, pointing out the scientific nature of his work, showing the influence of physiology and the study of hereditary laws in biology. *Les Rougon-Macquart: Histoire Naturelle et Sociale d'une Famille sous le Second Empire* is the full title of his work, composed by the many volumes which narrate the destinies of the various branches of the family.

Both authors fully understood the importance of economic activities in their time, with a positive appreciation of technological progress. Zola, even more than Balzac, was in this respect an enthusiastic observer, although he understood that the rapid evolution of technology and the ongoing changes in market activities left victims, sweeping away the social groups unable to follow the change, enmeshed in the older modes of business. They both set out to picture in fiction the entire system of social relationships in France. They were informed observers of current economic events and studied to improve their understanding of credit markets and the stock exchange. The preparatory work they undertook to develop the plots of their economic novels and create living, plausible characters is well documented.[30]

In *La Maison Nucingen* Balzac narrated an episode of stock exchange speculation fuelled by a spate of rumours about difficulties in the Nucingen bank. Nucingen, a respected banker, but who has already gone through two bankruptcies, secretly encourages the circulation of these rumours. He has created a stock exchange company operating abroad under the control of a financier who is his straw man. The shares pay high dividends and many wealthy persons, faced with the risk of liquidation that the Nucingen bank seems to be running, decide to sell their investment in the Nucingen bank at a heavy discount and place it in the stock of the new Claparon company. In the following years, with commercial crises raging, the market prices of these shares – initially artificially high – fall below their real value in terms of prospective dividends. Nucingen and a few of his close friends and relatives buy the devalued stock and it is not long before they are raking in handsome capital gains as the price climbs back up. The manoeuvre is planned in advance, based on asymmetric information between the banker

(and the small group of people whom he involved in the speculation or the few intelligent financiers who understood the game) on the one hand, and the less informed and more emotional investors, on the other, who lose their wealth under the pressure of selling at the wrong moment. Madame Nucingen and Rastignac make a fortune in the business. The story is rich in other details of intricate speculation built up to enhance the main theme.

Balzac did not condemn stock exchange activities as such. He portrayed the social climbing of an unscrupulous financier, conveying the atmosphere of poorly regulated stock exchange markets where fraudulent activities go side by side with sound investment, often managed by the same person. He is a keen analyst of the many aspects contributing to Nucingen's success in the financial world and Parisian high society. Intelligence, shrewdness, expertise, fraud, personal relationships, a degree of trustworthiness, the political context – all contribute to the business success of the unscrupulous financier and his partners.

In *César Birotteau* Balzac narrated the story of the commercial expansion of a small firm producing and selling perfumes, ending in bankruptcy when the proprietor is involved in misjudged land speculation. César Birotteau is a self-made man, who starts as an apprentice in an elegant perfumery in Paris, becomes the partner of the manager and proprietor, and finally buys the shop when his older partner retires. As a small businessman, he realises that by working hard he will never get rich. His small business only provides him and his wife with the resources for a decent, modest life. Success comes with a commercial inspiration: he creates two new products and markets them with ingenious advertising. Helped by a well-known chemist, he launches his products with the label 'approved by the *Académie des Sciences*' and makes hefty profits selling his creams and his refreshing perfume wholesale at a discounted price to perfumery retailers all over France. Product innovation plus innovative marketing techniques see the firm's revenues duly rising.

César Birotteau's ambition grows, but he is unable to manage the change from small- to large-scale business until, losing his capital in ill-judged land speculation, he is driven to bankruptcy. He is induced to speculate by his notary and by the unscrupulous financier Du Tillet, both taking advantage of their superior information and expertise, and their concealed mutual agreement. The notary Roguin will go bankrupt and flee. Birotteau, after losing his credit, in a liquidity crisis goes bankrupt after him. Du Tillet will in the end gain from his losses. In the novel, these events run parallel to the advancement of Birotteau's employee Popinot, who succeeds in launching on the market a new invention of his manager, namely a scented hair oil. Commercial success is based on creative advertising, the reduction of production costs by utilising hazelnuts and, again, the help of the well-known chemist to devise the best process of production.

Popinot succeeds where David Séchard fails. In *Illusions Perdues*, although Lucien de Rubempré is the main character, much of the plot is devoted to an

unsuccessful attempt to introduce an innovation into the paper industry by the intelligent young typographer, who lacks sufficient capital. Two parallel failures mark the lives of the two close friends, so different in temper, habits and choices. After long efforts David Séchard discovers the production process which substantially reduces the cost of paper manufacture, but a trade war is waged against him by a larger firm existing in the same town. For a while the larger typography adopts the strategy of leaving a residual market share for the smaller firm managed by Séchard. As soon as the proprietors understand that he is working on an innovation, the strategy changes: they try by all means to drive him to bankruptcy in the hope of buying his invention cheaply once he is caught up in financial difficulties. This is precisely how it turns out, and David Séchard is unable to take advantage of his inventive work, which will be applied by the now monopolist firm. The story is rich in interesting episodes, such as the production by David Séchard's wife of popular almanacs to be sold in the countryside at a low price in an attempt to find a specialised market niche for the small firm and overcome the family's financial difficulties.

These 'economic' novels offer very interesting stories about fundamental economic actions. They offer lively portrayals of phenomena such as technological advance, marketing and advertising, investment in land speculation, transition from wage earning to independent business, the strategies to occupy market niches or drive out a competitor. At the same time, they point up the complexity of motivation and behaviour guiding the characters and the reasons for their failure or success on the economic scene. Balzac wrote many other stories including interesting economic episodes such as *La Maison du Chat-qui-Pelote*, set in the drapery shops of Paris, and *Melmoth Réconcilié*, the story of a bank cashier venturing on speculation.

Zola wrote, among many others, three novels of particular interest to us here: *L'Assommoir*, *L'Argent*, *Au Bonheur des Dames*. An obvious addition to this list is *Le Ventre de Paris*, a vivid description of Paris' wholesale markets.

In *L'Assommoir* Zola describes the social advance of young Gervaise, a poor *blanchisseuse* who manages to open a small laundry. A touching scene depicts the moment when Gervaise finally decides to set up a business of her own, the long-cherished dream of her life, when she sees an empty shop near the corner advertised 'for rent'. She is able to make the initial business investment thanks to informal borrowing from a friend who is secretly in love with her. The sentimental colouring depicts a true and interesting phenomenon: the informal financing of small business in close-knit social groups.[31] The story runs through the success and failure of the small shop; the business finally collapses devoured by the heavy spending of Gervaise's family and friends. Gervaise herself is slowly destroyed by alcohol.

The female protagonist in *Au Bonheur des Dames* has better success than Gervaise in her tenacious efforts to escape a miserable life. She is an employee in the new department store selling drapery, clothes and others fashion goods such as umbrellas, lingerie, haberdashery, hats and the like,

eventually to become a manager and the general manager's wife. *Au Bonheur des Dames* tells the story of the successful expansion of the department store and the economic conflict arising with smaller, traditional shops, depicted as losers in the battle. Although the economic moral is somewhat simple, the novel is a most enjoyable description of the appeal of large department stores for ladies, and the commercial strategies to attract female clients to the store. The novel captures the new dimensions in the activity of buying consumption goods that emerge in a society where the variety of such goods is no longer the exclusive privilege of a small social group, shedding light on the entertaining social dimension of shopping. The department store is represented as a place to spend free time with female friends or children, sipping coffee or a drink, taking advantage of cut-price sales or simply enjoying the artfully attractive display of goods on sale. These facilities are part of the department store's strategy to squeeze out the traditional shops, which have changed neither marketing techniques nor channels of supply. They contribute to the department store's success along with the larger scale of activity thanks to which the store can supply goods at particularly low prices, sell out periodically and widen its range.

L'Argent is a controversial novel with the setting of the Paris stock exchange and more than a hint of anti-Semitism in the stereotype description of greedy Jewish bankers.[32] It is again a story of stock exchange speculation, recounting the sudden rise and subsequent fall of an unscrupulous businessman, an inventive swindler who succeeds in rebuilding his fortune, launching a new investment bank on the stock exchange. It is an ambitious project which is not backed by sound investment with reliable prospects for profits. The value of the stock mounts in a speculative bubble, encouraged by the small group of stockholders who control the bank. They pull off a number of financial tricks and frauds to inflate the bubble but the resistance offered by the other bankers and brokers eventually pricks it. The value of the bank's stock collapses on a terrible day in the Paris stock exchange, destroying the savings of many families. Although marked by the odd excess, the novel effectively portrays the impulse dominating the protagonist in his business activities: an urge to be successful, to get social attention, to be at the centre of the stage, to dominate other human lives and to redeem his previous failures in life.

Fraud and waste in economic life

In many novels economic life is an aspect of the wider scenery of social life created by the author. Among the social figures who interplay in the story, and intervene in the hero's life, some characters are sketched by the author with the main focus on their economic activities. Economic events appear in the plot at crucial moments or play an important role in some episodes of the story. In the novels built on realistic imaginings such episodes are too numerous to be extensively quoted and examined in detail: suffice it to

mention a few classic authors such as Stendhal, Austen, Dickens, Tolstoy, Flaubert, James, and obviously again Balzac and Zola, all of whom wrote novels where aspects of economic life occasionally emerge as relevant parts of the narration, at times taking on considerable importance.

Gogol's *Dead Souls* is a pointedly satirical picture of the deterioration of social life in the countryside and in the small provincial towns of Russia, depicted on the eve of the abolition of serfdom. Gogol was inspired by ideas of social reform, albeit somewhat conservative and bigoted. *Dead Souls*, a satirical fresco of provincial life in Russia against the vaster backdrop of rural life, is the story of a fraud, but of one invented and perpetrated by a decent citizen, Cìcikov, a retired public servant, plump and polite, who is travelling the country following his own personal dream of *grandeur*. He plans to buy the 'dead souls', the dead peasants who are still listed in the official census in between the dates when the census is revised. The plot is the story of his bargaining to bring off the plan, and the main characters are the landlords he discusses the business with. The plot thus revolves around transactions, but transactions in such immaterial goods. However, some transactions are made, and perfected with all the necessary formalities. Prices are discussed and agreed on. Cìcikov introduces himself into this rural society to acquire the status and credibility that alone can qualify him to be invited by and speak business with the local landlords. The lively gallery of landlord portraits is one of Gogol's great achievements in the book.

The presence of fraud in human life is clearly a major theme in the book, and one whose symbolic value goes well beyond economic life. Fraud prospers not only on the margins, but mixing in society, dressed in the convenient guise of the retired civil servant with a face of satisfied pettiness and precarious well-being, gained only by dint of forever inventing new frauds. In fact, Cìcikov's frail security rests on systematic fraud in the public service. With refined psychological intuition he has developed a subtler form of corruption at the expense of people in need of documents and copies. Fraud is pervasive and recurrent, like an underlying connective tissue in the framework of society. The theme of fraud and markets in underdeveloped societies does not seem to have lost any of its importance in the contemporary world, although it has yet to be so thoroughly explored by economists.

Other authors drew the public attention to fraud, Dickens being an outstanding example. Much analysis has been carried out on his characters and stories as examples of a literature of social criticism, associated with a critique of the Industrial Revolution. As a poet of the darker side of modern urban life, he looked fondly to the more peaceful life-style of decent, though rather poor, families in small towns or the suburbs, possibly idealising it. Two aspects of his literary art are particularly relevant to our subject. Dickens is a great painter of squalor, conveying a sense of slackness in the use of resources through detailed description of dreary urban places – lives lost in the social machinery and the busy economic world, neither happy nor productive. He is the poet of marginal people. Criminals, adventurers, the

permanently unemployed, the impoverished middle class, desperate young people with no stable position in society, a throng of marginal persons march through his novels as Dickens overturns our orderly classification of figures on the economic scene. Together with employees and employers, entrepreneurs and the working class, bankers and landlords, tenants and wage earners, there is this composite crowd also taking some part in the business, also fighting for some income, day by day seeking a social niche to survive or thrive in. Dickens draws our attention to the variety of experience and strategies of survival in economic life.

Melville may be mentioned here as a reporter on the whale industry, although his readers would never accept such a reductive view of his masterpiece. However, *Moby Dick* contains interesting and detailed descriptions of the whale industry ranging from the production process to the division of labour, the hierarchy on board, the system of payments and financing. The production system is described at length over many chapters with accurate accounts of all the stages from rigging the ship to capturing the whale, heaving it on board, cutting the flesh, boiling the oil, and so on. The main narrative is interrupted by absorbing pages on all aspects of the whale industry including detailed data on loading and the food supplies and other reserves on board. A most interesting chapter is devoted to the bargaining process to fix the wages of the mariners. The composition and geographical origin of the work force is considered, as are the hierarchies on board. These precise descriptions, animated by Melville's fanciful, metaphorical language, add to the extraordinary flavour of great epic which the book transmits. The mixture of detailed descriptions of daily work including even minute detail on the technical tools and the mystical afflatus breathing through the pages lends a distinctive strength to the narrative, making *Moby Dick* a truly memorable book.

In some novels economic life is left in the background, as if it were taking place in private rooms, far from the curious eye of the reader. Nevertheless, it is powerfully present in the antecedents to the story and conditions the destinies of the heroes. In the background of Jane Austen's stories, with discretion but with neat bookkeeping, there are always bonds or life annuities or some other kind of financial income. In her world of gentlemen and ladies, speaking politely and with some grace even in the most uncomfortable circumstances, rents are an invisible, though pervasive, presence. Austen helps us to understand Keynes. By reading her novels it is easier to understand why Keynes was preoccupied with the negative effect of inflation on the income of the British middle class in the *Tract on Monetary Reform* (1923), or why he advocated the euthanasia of the rentier in the closing chapter of *The General Theory* (1936).

Purpose, choice and action

In standard economic theory, economic behaviour is narrated evoking the parable of rational choice. The three basic components of the parable of

rational choice may be resumed as follows: the complete pre-ordering of preferences which are fully weighted by the acting agent, being simultaneously perceived and evaluated; the agent's ability to plan present and future choices in a complete and consistent way; the concurrence of selected actions with selected optimal choices and the concurrence of acting with optimal selected actions. In fact, economic theory does not take account of the distinction between planned choice and planned action, the two being considered as perfectly identical. Action is conceived as the implementation of previous conscious, optimal choice. The only threat to its fulfilment lies in external constraints, in which case revised optimal choice under constraint would be calculated. Both choices and actions are conceived as having clear, unambiguous expression in numerical values of relevant variables. Rational choice and rational action are narrated through the symbolic language of set theory and functional analysis, or other mathematical languages.

None of these assumptions is accepted in the masterpieces of fiction we are dealing with here. Purposes emerge from the indeterminate mist of passions and desires through a complex process. The emergence of a dominant purpose or set of purposes that will direct choice and action is a remarkable event in each individual experience, and the evolutionary process out of which purposes are formed, or fail to be formed, is an essential part of the development of the characters in the stories. Purposes and choices relate in intricate nexuses since the conscious evaluation of relevant choices is time-consuming, and exposed to misrepresentation and failure in identifying effective options. Evaluation may change in time, with the acquisition of new experience or new human relationships. Purposes and choices, being complex processes, often involve open conflicts among hierarchies of conscious purposes, or painful contrasts between capabilities and aims, entrenched habits and desired results. Contrasting impulses may clash with conscious choice and well-planned designs. In many situations a possible schizophrenia emerges between preferred choice and actual action. As both Bachtin and Ricoeur firmly underlined, in fiction action dominates. Personalities are defined by their actions, and stories are evolving actions. Far from being the obedient servants of choices, actions are the true and decisive events in the narration.

In fiction, the psychic links between purposes, choices and actions structure the basic pattern of fictional personality – that pattern which emerges as the dominant theme in a human life through both the temporal and the interpersonal dimension. Far from being settled as given axiomatic assumptions, they are at the core of the narration of individual experience throughout the lifetime.

It might be argued that such complexities of human behaviour, interesting as they may be on other grounds, hold little interest for economists in so far as their discipline focuses on economic behaviour. Such an interpretation suggests a fundamental schizophrenia in human behaviour: as

sentimental beings, in love or affections, in social life or family life, our soul is ultimately unfathomable; but in economic behaviour the rational pattern of choice described by economic theory prevails. The alternative interpretation, advanced by Gary Becker and various others, arguing that the paradigms of economic theory should be applied to all aspects of human behaviour (Becker 1976: 8), presents an even stronger contrast with the image of behaviour emerging in the masterpieces of fiction we are examining.

From this analysis we are led to investigate the image of human choice and behaviour emerging from novels in order to compare it with our economic paradigms. The conciliation is difficult. It is indeed hard to reconcile the metaphors of novels with the paradigm of rational choice by farsighted maximising agents which dominated economic theory for over a century. It is common place in economic theory to assume that agents are moved by private interests: an obscure view, often believed to be clarified by identifying interests with vague notions as utility, satisfaction, expected utility, or a generic objective function – all ambiguous ideas whose meaning is never made explicit. In a fine historical essay Hirschman analysed how the idea of self-interest emerged from the debate on passions and their possible destructive effects (Hirschman 1977). According to Hirschman, Smith introduced the notion of self-interest as a substitute for the richer and more troubling array of contrasting passions, so often out of control, discussed by many seventeenth- and eighteenth-century authors. All passions, so to speak, are civilised when turned into interests.

In novels human beings are never moved by interests in such a limitative sense. People are never civilised by interests. Only passions move to action: the reasons in life, the purposes, the inner feeling of identity, or those passions which possess the soul powerfully. The characters in novels are obliged to feel their interests as instruments or masks of their passions,[33] which does not necessarily ennoble their interests; they may be petty or mean all the same, but they are necessarily aspects of that global ethical standing in life which marks all great literary characters. Moreover passions never admit of absolute loneliness. They always involve relationships to other human beings. Motives, then, are not easily represented as unidirectional feelings. They take form out of contrasting impulses and coexist with conflicts and contradictions. Choice emerges as a wearing, painful process. Obsessive desires may explode against conscious will and rationally sound projects. Fiction tells us that, even in economic life, choice and action embody a rich array of contrasting impulses, feelings and reasoning.

'Call me Ishmael.' Who could fail to recognise the opening sentence of *Moby Dick*? – an enthralling confession about a precise economic choice, which the economist would call the choice between work and leisure. In the novelistic metaphor the choice derives from four combined impulses. The first mentioned remains somewhat obscure and tragic: an impulse to kill or to commit suicide, which seems to be controlled and mitigated by the

opportunity to go to sea, a substitute for pistol and ball. Only the second is more understandable by the economist: to get paid. The third is the sheer impulse to live, to abandon the lungs to wholesome exercise and pure air, breathing the winds on the forecastle. The fourth, and chief, inducement is dreaming about the great whale, 'an everlasting itch for things remote'.

How will the orthodox economist reduce these impulses to maximising (what?) under constraint? Melville's story shows a richness and complexity in motivation lacking in the parable of rati onal choice.

The most radical defiance of the maximising paradigm is one of Dostoevsky's great literary creations: Stavrogin in *The Possessed*. Stavrogin is by his own confession a personality that has no limits, and no true desires. Psychologically, he is characterised by the absence of meaningful desires and motives, combined with the free, avid satisfaction of impulses. His malaise is the absence of joy. What kind of rational maximiser could he be?

The budget constraint

The budget constraint is an idea that all economists know, one of the most reasonable and less contested in our discipline. According to Dostoevsky's suggestion, in the reality of the novel two plus two might not be four.[34] The good sense of the budget constraint cannot be assumed as given. Let us see how Mr Micawber sums up the budget constraint doctrine in *David Copperfield*.

> 'My other piece of advice, Copperfield,' said Mr Micawber, 'you know. Annual income twenty pounds, annual expenditures nineteen nineteen six, result happiness. Annual income twenty pounds, annual expenditures twenty pounds ought and six, result misery. The blossom is blighted, the leaf is withered, the God of day goes down upon the dreary scene, and – and in short you are for ever floored. As I am!'
>
> (Dickens 1850: 152)

In the fictional worlds of economic life many others like Mr Micawber are forever floored. The list includes Birotteau, Gervaise in *L'Assommoir*, Lucien de Rubempré and his lover Coralie and (although to a lesser extent) David Séchard in *Illusions Perdues*, Pip in *Great Expectations* and a full bunch of other Dickensian characters who spend many days in prison for debt, Baron Hulot's family in *La Cousine Bette*, Emma Bovary, Versilov (the hero's father in *The Adolescent*), and we might go on.

In a brilliant page of *Great Expectations* Dickens illuminates the feeling of sweet folly, of delightful intoxication which possesses the floored ones when facing their budget constraint. Herbert and Handel quietly sit down at night to look into their affairs, after eating something special for dinner and drinking some good wine to fortify their minds. They sit in front of a copious supply of ink and stationery to attend to their debts.

I would then take a sheet of paper, and write across the top of it, in a neat hand, the heading, 'Memorandum of Pip's debts'; with Barnard's Inn and the date very carefully added. Herbert would also take a sheet of paper, and write across it with similar formalities, 'Memorandum of Herbert's debts'.

Each of us would then refer to a confused heap of papers at his side, which had been thrown into drawers, worn into holes in pockets, half-burnt in lighting candles, stuck for weeks into the looking-glass, and otherwise damaged. The sound of our pens going, refreshed us exceedingly, insomuch that I sometimes found it difficult to distinguish between this edifying business proceeding and actually paying the money. In point of meritorious character, the two things seemed about equal.

(Dickens 1861: 253)

The same sweet folly, but in a burst of excited activity, takes César Birotteau planning great expenditures on the renewal of his home and the misjudged speculation which will drive him to bankruptcy. A feeling of satiated eroticism invades Gervaise, as she begins to forget her budget constraint.

La fête de Gervaise tombait le 19 juin. Les jours de fête, chez les Coupeau, on mettait les petit plats dans les grands; c'étaient des noces dont on sortait ronds comme des balles, le ventre plein pour la semaine. Il y avait un nettoyage général de la monnaie. Dès qu'on avait quatre sous, dans le ménage, on les bouffait. On inventait des saints sur l'almanach, histoire de se donner des prétextes de gueuletons. Virginie approuvait joliment Gervaise de se fourrer de bons morceaux sous le nez. Lorsqu'on a un homme qui boit tout, n'est ce pas? c'est pain bénit de ne pas laisser la maison s'en aller en liquides et de se garnir d'abord l'estomac. Puisque l'argent filait quand même, autant valait-il faire gagner au boucher qu'au marchand de vin. Et Gervaise, agourmandie, s'abandonnait à cette excuse. Tant pis! ça venait de Coupeau s'ils n'économisaient plus un rouge liard.

[Gervaise's name-day fell on 19 June. For the Coupeaus, name-days meant laying on a magnificent spread, and by the end of the blow-out they were as round as balls, bellies full for the rest of the week. They would splash out all their money on them. If there was any cash in the household, it was there to be gobbled up. They would make up saints' days to celebrate, just for the sake of gourmandising. Virginie was perfectly content to see Gervaise stuff herself up to the eyes with tasty titbits. If you've got a man who drinks like a sponge, you don't have to let the house run away in drink, do you? You have to fill your bellies first. And as the money slips through your fingers anyway, it might as

> well go to the butcher as to the wine-shop. Gervaise greedily acquiesced. And if it meant the Coupeaus could no longer save a penny, it was just too bad.]
>
> (Zola 1877: vii)

Tant pis. So much the worse. Some characters collapse with their budget line as if stupefied, falling into an alcoholic stupor, like the deep rest of dying in the snow. Some gladly step over and beyond their budget line, quite bravely. Most heroes in the novel world do not accept their budget constraint. They are captured by a fever and struggle to shake it off, fight to destroy it. They wish to go beyond the given conditions of their life. They do not simply plan reasonable present indebtedness against future income, but hope in some great social leap ahead that will open up new and totally different conditions to them. They fight and run every kind of risk to that end. Why?

The fever burning in many of our protagonists is social climbing. If classes are like buses, where some are always getting on while others get off, social groups in our novels are like buses with more than one deck and those occupying the upper deck are actively engaged in fighting off the social climbers trying to get on and find somewhere to sit. Quite often they succeed in pushing the assailants down the steps, or even right off. Social groups may mix, up to a certain point, but the perception of differences and hierarchies is never forgotten, the process of assimilation of an entrant into a new social group is always long and painful. New entrants know this hard truth, as much as the resisters who defend their social territory.

It is not the simple desire for a richer basket of goods that drives most novel heroes to exceed their budget line, but rather the wish to enter a superior social group and change their relative position in society.

> 'Biddy,' said I, after binding her to secrecy, 'I want to be a gentleman ...'.
>
> '... I never shall or can be comfortable – or anything but miserable – there, Biddy! – unless I can lead a very different sort of life from the life I lead now.'
>
> (Dickens 1861: 119)

Different destinies, different situations, but it is the same story with Julien Sorel, Lucien de Rubempré and Rastignac, Gervaise and Nana, Ivan Karamazov or the young Popinot, fighting for the success of the cephalic oil. 'une ambition fougueuse entraînat mon âme dans les pays imaginaires. ... j'étais aux innombrables combats que j'aurais à soutenir pour bâtir une fortune colossale', 'a burning ambition carried my soul away to imaginary lands. (...) I was faced with countless combats that I would have to stand up to in order to build up a vast fortune', Julien Sorel tells Madame de Rênal on one of his last days (Stendhal 1830: XLV).

Febrile ambition draws these heroes to the imaginary countries of successful lives where they have broken the bondage of their social origin and conquered the place they expect in society. Consumption baskets are largely determined by the social conventions which regulate the standards of life in different groups. They are a symbol or signal of belonging to one or the other group, and so they are understood.[35]

Social-climbing strategies are many and varied – as many as the individual characters acting out their roles in their novel world. Mimesis is a strategy much practised, for instance, by Julien Sorel; but there is rebellion, education, debt, the break with one's own origins and environment, theft, fraud, murder, criminal association, or the solitary effort of D'Arthez, the taxing apprenticeship and inventive organisation of the younger Popinot. The most alarming choice to break through the miserable limitations of the budget constraint is Raskòlnikov's. He kills to have access to history, leaving the meagre yield of his robbery untouched. A more decent strategy, though involving anguish and suffering, is followed by César Birotteau as a young man, well illuminating how the budget constraint is rejected in free flight towards imaginary countries as this rejection moves the hero to fight for new, uncertain possibilities.

> Cette année finie, l'inventaire épouvanta l'ambitieux parfumeur: tous frais prélevés, en vingt ans à peine aurait-il gagné le modeste capital de cent mille francs auquel il avait chiffré son bonheur. Il résolut alors d'arriver à la fortune plus rapidement ... . Sans se décourager, Birotteau voulut obtenir un résultat à tout prix, uniquement pour ne pas être grondé par sa femme, à laquelle il avoua plus tard qu'en ce temps de désespoir la tête lui bouillait comme une marmite, et que plusieurs fois, n'était ses sentiments religieux, il se serait jeté dans la Seine.
>
> [At the end of the year, the inventory terrified the ambitious perfumer: after the deduction of all costs, it would take him at least twenty years to earn the modest capital of one hundred thousand francs at which he had calculated his happiness. He decided then to make a fortune more rapidly (...) . Without discouraging himself, Birotteau wanted to obtain a result at all costs, for the single reason not to be rebuked by his wife, to whom he confessed later that in those desperate times his head was boiling like a pot, and that more than once, if there had not been his religious feelings, he would have thrown himself into the Seine.]
>
> (Balzac 1838: 63)

The change sought for comes from a successful innovation; but Birotteau fails his second project. Nothing guarantees success in efforts to evade the suffocating rut of the budget line, will fuelled by hopes and illusions all too often disappointed, devouring life itself. Clearly, there are here echoes of the

ancient Greek theme of *hubris*, wreaking punishment on those who transgress limitations. In more practical terms, displacement to new social groups is painful, not only because it implies a whole array of conventions and habits that have to be learnt, but because forces of social cohesion – a tacit accord between old participants – reject entrants and newcomers. Novels offer so many examples in this respect that we can refrain from further analysis. A perceptive Italian scholar, Moretti, has analysed the successes and failure of heroes in social ascent by studying the maps of their movements in countries and cities signalling their changing social position (Moretti 1997).

There are some characters, however, that do not join the fray to surpass the budget constraint. Some are of modest or humble origin, quietly accepting their position in society. They identify with the destiny offered their lives by the social conditions prevailing where they are born and raised, like Dickens' Biddy, Joe and Stephen Blackpool, to name but a few, while Tolstoy depicts thus one of his most famous characters, Platon. In Balzac's *La Comédie Humaine* a profoundly unhappy Eugénie Grandet suffers the strictures of her budget constraint, while her avaricious father keeps count of the number of spoonfuls of sugar. There are other duller or decidedly gloomy characters who fail to form hopes, constrained in the petty bookkeeping of both resources and feelings. Lisbeth, *la cousine Bette* of the homonymous novel by Balzac, is one of these, not to mention the many avaricious personalities like father Grandet, or landlord Pljus'kin in *Dead Souls*: characters burnt by the fever to accumulate, destroying the lives of their dearest relatives or even their own wealth.

In the world of novels the budget constraint is never a given datum; on the contrary, it is a choice. The characters choose to bend under its burden, or to fight for the imaginary world beyond their present living conditions; they accept to be kept to the quiet pace of a familiar standard of life, or fight to leap to the uncertain hopes of expected future wealth; they work patiently for the future with the hope for some small improvement, or they work on their imagination to seize what might be the opportunity for the dreamed of change in their social condition to become reality. Or they just forget the intertemporal budget constraint, opting for transitory experience as their life style. They forget it captured by the fleeting moment, burning their income and wealth in the present, without a thought for tomorrow. Others, in contrast, are trapped in the slavery of the budget constraint, a budget line so binding to their souls as to destroy wealth and happiness in sterile avarice. It is impossible to deal exhaustively with the all human characters as they are depicted in this respect, or the vast range of behaviour they show in the context of the novel.

Novelists do not ignore the budget constraint. In many novels we find accurate descriptions of the income accounts of the main characters: incomes and rents paid for the houses, expenditures for food or clothes, wages or business revenues, and so on. But the personal attitude to the budget constraint is an existential choice – a choice involving what Bachtin called

the ethical position of the character: the full stature of each character before life.

The dark side of the moon

Many of Dostoevsky's stories begin with money matters. They are not stories about banks, industries, the stock exchange, poor miners or the like, but they often open on some crude problem of money. In *The Brothers Karamazov* the antecedent is a contested bequest and the crude core of the plot is a crime, apparently committed to inherit wealth. In *Crime and Punishment* the antecedent is a sad story of misery which seems to impose a disastrous marriage on Raskòlnikov's sister, and the core of the plot is a murder for theft. In *The Adolescent* the young hero is dominated by the fixation to become a Rothschild. In *The Idiot*, a crucial event of the story is the terrible scene where Nastasia tests her lovers' feelings by throwing a large amount of money into the fire. All the main characters have to test themselves against the power of money, or suffer and endure the strictures of moneyless life.

Money, then, is a powerful presence in Dostoevsky's plots, but it plays a very peculiar role. In Dostoevsky's novels money, just like words, conveys crucial messages about personal human relationships. It is even more effective than words in saying what words could not say, or are not able to say. Money is a powerful symbol in Dostoevsky's literary work. An extreme position (although somewhat childish, as befits the character involved) is expressed by Arkadij, the young protagonist of *The Adolescent*. His dominant idea is 'to become a Rothschild'. Why so? Not for the pleasures and riches that money can provide; indeed, he considers that he does not care for material goods, and might well go on dressed in an old coat, eating bread and ham. It is because of the levelling power of money. Money is power. Money levels out social disparities.

'Wealth, as Mr. Hobbes says, is power', states Adam Smith in *The Wealth of Nations* (Smith 1776: I.v.3, 48). Smith makes a point of expressing his partial dissent with Hobbes: a great fortune directly brings to the possessor only 'the power of purchasing', or the power to command other men's labour or the produce of other men's labour. Novelists, and Dostoevsky in particular, seem to hold faith with the older, Hobbesian idea. Money is the power to 'command' other people's attention and respect; it is the power of purchasing the entrance ticket to a new sphere of social life. This is one of the symbolic functions of money. Either it is a dominating passion per se, or it is the tool of another burning passion: the lust for living and being at the centre of the stage, or the lust of controlling other people's lives. Smith himself in *The Theory of Moral Sentiments* (1759) had long analysed this feeling as the most basic in human nature. Money is thus a powerful, though misplaced, symbol for the necessity to be appreciated in the sympathetic eyes of the others.

The polemical intention against ideas of social reform based on utilitarian

utopias was explicit in Dostoevsky's thought. As a novelist, he expressed the conflict through a story and a character: the underground man and his meeting with the young prostitute Lisa, giving it form with the long confession of the underground man, a complex personality whose mysterious nature has excited the curiosity and interest of many scholars. Todorov analysed this multifaceted figure thus:

> Il y a un grand débat, quasi scientifique, qui occupe presque toutes les pages des *Notes*, portant sur la conception même de l'homme, sur sa structure psychique. L'homme souterrain cherche à prouver que la conception adverse est non seulement amorale (elle l'est de manière secondaire, dérivée), mais aussi inexacte, fausse. L'homme de la nature et de la vérité, l'homme simple et immédiat, imaginé par Rousseau, n'est pas seulement inférieur à l'homme conscient et souterrain; il n'existe même pas. L'homme un, simple et indivisible, est une fiction; le plus simple est déjà double; l'être n'a pas d'existence antérieure à l'autre ou indépendant de lui; c'est bien pourquoi les rêves d''égoïsme rationnel' chéris par Tchernychevski et ses amis sont condamnés à l'échec, comme l'est toute théorie qui ne se fonde pas sur la dualité de l'être.
>
> [A great, quasi-scientific debate runs through practically every page of the *Notes*, revolving on the very conception of man – on his psychical structure. Underground man seeks to prove that the contrary conception is not only amoral (it is so, in a secondary, indirect way) but also inexact, indeed false. The man of nature and truth – simple, immediate man, as imagined by Rousseau, is not only inferior to conscious, underground man, but does not even exist. Man being one, simple and indivisible, is a figment of the imagination; the simplest is itself double; the one being has no existence prior to or independent of the other; and this indeed is why the dreams of 'rational egoism' cherished by Tchernychevski and his friends are doomed, as is all theory not based on the duality of being.]
>
> (Todorov 1971: 155–6)

Todorov observed that although Dostoevsky does not share all the views of his creature, he certainly shares the one expressed here. Todorov explains that the underground man is a masochist: he likes to be offended and humiliated, although he suffers deeply from offence and humiliation (Todorov 1971: 155).

> L'homme souterrain sera sans cesse conduit à assumer le rôle d'esclave; il en souffre cruellement; et pourtant, apparemment, il le recherche. Pourquoi? Parce que la logique même du maître et de l'esclave n'est pas une vérité dernière, elle-même est une apparence posée qui dissimule un

> présupposé essentiel, auquel il faut maintenant accéder. Ce centre, cette essence à laquelle nous parvenons nous réserve cependant une surprise: elle consiste à affirmer le caractère primordial de la relation avec autrui, à placer l'essence de l'être en l'autre, à nous dire que le simple est double, et que le dernier atome, indivis, est fait de deux. L'homme souterrain n'existe pas en dehors de la relation avec autrui, sans le regard de l'autre. Or n'être pas est un mal plus angoissant encore qu'être un rien, qu'être esclave.
>
> L'homme n'existe pas sans le regard de l'autre.
>
> [Underground man will ever be led to take on the role of slave; for this he suffers deeply, yet apparently he pursues it. Why? Because the very logic of master and slave is not an ultimate truth, but is itself an assumed appearance dissimulating an essential presupposition, to which we must now come. However, this centre – this essence we ultimately come to – holds a surprise for us, which consists in asserting the primordial nature of relations with the other, in placing the essence of being in the other and acknowledging that simple is double, and that the last unsplit atom is made of two. Underground man does not exist outside his relations with the other, outside the gaze of the other. And indeed, not being is a more painful evil than being a nothing, a slave.
>
> Man does not exist without the gaze of the other.
>
> (Todorov 1971: 152–3)

The human being does not exist without the eye of another human being. In literary fiction, characters exist only in relation to one another. The protagonists are defined in relation to the double opposing them, as antagonists or their own shadows; or more complex relationships of opposition and connection may prevail between groups of three or more characters. Motives and desires, passions and choices exist only within the network of human relationships. Actions, be they appalling or everyday in nature, take on meaning through relationships, and are signs in the communication with other persons, messages which call for emotional reactions and spring from emotional reactions.

Smith knew this truth, forgotten by later economic theory (Smith 1759). Even in game theory, where strategic interaction lies at the heart of analysis, the process of forming motivation and expressing desire is conceived as elaborated by an individual atom. The other agents' strategies are a set of external events. The distinction may seem subtle, but it is essential. There is ample room for reflection on this theme in contemporary economic language.

Are the extreme characters of Dostoevsky's novels only psychical monsters, of which no account need be taken? In literature the individual character stirs symbolic echoes that go well beyond the surface of the magical mirror. Dostoevsky brings us to the final aspect of the complex

dialogue between the novel and economics, pointing to destructive feelings and passions. Many of the masterpieces of nineteenth-century fiction have faced up to the destructive side of human personalities. Stavrogin, Ahab, Bette, Raskolnikov, Emma Bovary, Julien Sorel are among the outstanding personalities in the gallery of destructive or self-destructive behaviour. A few of them, like Stavrogin, Ahab and Bette have the stature of the great tragic protagonists. What do they gain from their destructive behaviour? And why do some of them even take pleasure in destroying others, possibly at the cost of their own destruction?

Game theory would suggest that the problem is lack of cooperation – some version of the prisoner's dilemma. But they are not prisoners. What is the payoff they receive from their extreme, uncooperative behaviour, their destructive stance? Why do they opt for the destructive solution? This is the mystery of Iago, familiar to all who have tackled interpretation of Shakespeare (Bradley 1962).

The question has no place and no answer in economic parables. In most of its great currents of ideas, economic thought endeavoured to show how human beings can live together and cooperate despite contrasting interests, or thanks to them. It attempted to show how the market can reconcile conflicts between human beings in transactions. Although this line of thought has thrown up deep and significant insights into sociality, economic thinkers have suffered from a bias: they seem to have systematically sought to eliminate the darker side of human behaviour from the explanations and interpretations offered by economic theory. Recently the theory of games has been applied to explain situations of conflict, where conflict signals a collective failure in achieving the superior payoff of cooperation; but the emphasis remains on individual rationality. Economic theory, speaking in simplistic parables, removed from our perception a basic problem in the social sciences, namely, the existence of extremely destructive individual and collective action.

Let us go back to Melville. From the very first sentences, Melville's book opens on dark feelings – the disquieting, twofold drive to slaughter and self-slaughter, which is the great theme running through the book and ending in final catastrophe.

> Human madness is oftentimes a cunning and most feline thing. When you think it fled, it may have but become transfigured into some still subtler form. Ahab's full lunacy subsided not, but deepeningly contracted; like the unabated Hudson, when that noble Northman flows narrowly, but unfathomably through the Highland gorge. But, as in his narrow-flowing monomania, not one jot of Ahab's broad madness had been left behind; so in that broad madness, not one jot of his great natural intellect had perished.
>
> (Melville 1851: 186)

Ahab is a lonely lunatic, dominated by an insane purpose, but in his madness he acts with acute intellect. In a crucial episode, narrated in Chapter XXXVI, this possessed man is able to excite the enthusiasm and passions of his crew and transmit his delirium to them in a frantic burst of collective excitement. Destructive and self-destructive behaviour may have a terrible power to infect common people and ruin their lives.

> I, Ishmael, was one of that crew; my shouts had gone up with the rest; my oath had been welded with theirs; and stronger I shouted, and more did I hammer and clinch my oath, because of the dread in my soul. A wild, mystical, sympathetic feeling was in me; Ahab's quenchless feud seemed mine. With greedy ears I learned the history of that murderous monster against whom I and all the others had taken our oaths of violence and revenge.
>
> (Melville 1851: 180)

After a century so infected by frantic collective delirium as was the twentieth century, we cannot read these chapters without a shudder stealing down the spine. Melville's metaphor sheds powerful light on our recent history. We may, as Melville suggests, see 'Ahab's larger, darker, deeper part', which remains 'unhinted' (Melville 1851: 187). 'But vain to popularize profundities, and all truth is profound' (ibid.: 187). Though it cannot be our task to explore such profundities, it might be our duty to take account of their profane consequences in economic life. We should not forget their disruptive effects on personal and collective experience. In the novel's metaphor, the *Pequod* is a commercial enterprise, sailing financed by the savings of retired captains and mariners, of common people in Nantucket who 'invest their money in whaling vessels, the same way that you do yours in approved state stocks bringing in good interest' (ibid.: 86).

The fight with Moby Dick destroys the value of this investment and turns it into a huge loss of human capital and wealth. Melville points up this conflict in various passages. 'How many barrels will thy vengeance yield thee even if thou gettest it, Captain Ahab? It will not fetch thee much in our Nantucket market' (ibid.: 167). It is Starbuck speaking, but this same reasonable Starbuck will soon after say to himself: 'My soul is more than matched; she's overmanned; and by a madman! Insufferable sting, that sanity should ground arms on such a field! But he drilled deep down, and blasted all my reason out of me!' (ibid.: 171).

The theme of destructive social experiment in history has been raised by Hayek, though in a different contest and from a different perspective. The figures on the number of deaths in destructive social experiments ending in collective disasters during the twentieth century might justify closer interest of economic theory in the effects of destructive human behaviour. In recent history social and political conflict in many countries has taken (and still takes) a tragic toll in terms of human and social capital, besides producing

heavy damages of physical capital and destruction of accumulated wealth. It still dramatically affects the possibilities for economic growth in many developing countries.

Many *Pequods* still sail in contemporary waters carrying Ishmaels with wild mystical feelings, seeing Ahab's quenchless feud as theirs, still eager to learn the history of some imaginary monster to take oaths of violence and revenge against. Many *Pequods* still flood in the fight and with them flood all their Starbucks and Stubbs, their Pips and their Qeequegs. Great masterpieces among nineteenth-century novels teach us to face the 'larger, darker, deeper part' that remains 'unhinted'; but it may explode and destroy more constructive efforts to better our condition. Since it has been cruelly present in recent history, bursting out violently in our contemporary world, we should be careful not to sweep it under the carpet of well-behaved rational behaviour.

Notes

1 The reference is to Cassirer's symbolic forms.
2 Permissible and non-permissible forms of art are of course discussed in detail in the third book of Plato's *Republic*.
3 The essay is 'What is art?' written in 1897 after a prolonged spiritual crisis which disrupted Tolstoy's life. The hostility or insensitivity to literature that often emerged in the writings of the utilitarians is discussed in Lepenies (1985). See, in the second part of this interesting book on the problematic dialogue between sociology and literature, the chapter on John Stuart Mill.
4 It is hardly necessary to underline the fact that scientific discourse uses a complex of symbolic languages whose codes and rules are varied and evolve in the course of history.
5 The attitude of Russell and Frege as regards fiction is analysed in Dolezel (1998). Dolezel observes that Russell had difficulties in including fictional entities in his crude separation of true and false sentences. He also reminds us that in a more moderate assessment Frege assigned to poetry the purpose of producing artistic joy while making a rigid distinction between cognitive and poetic language. These examples well illustrate the exclusion of the languages of art, which produce fictional entities, from the cognitive function of the mind. It is hardly necessary to recall that the purpose of building a unified science with a unified code of language was advocated by Carnap and Neurath in the Vienna Circle's manifesto.
6 The mathematisation programme is discussed in Israel (1996). The book analyses in depth the epistemological problems which the programme and practice of mathematical modelling give rise to in modern science. It is worth emphasising that in practice economic theory in many ways failed to conform to the standards commonly accepted for the natural sciences – a point explicitly recognised, for instance, by von Neumann and Morgenstern in their book *Theory of Games and Economic Behaviour*, as regards the procedures of empirical validation.
7 See Hayek (1952). Criticism of scientism was a crucial tenet of Hayek's thought in the post-war years. A recent critique of scientism is in Israel (1998).
8 G. Becker has been an enthusiastic leader in the battle to assert the primacy of the economic approach in all fields of the social sciences (Becker 1976). G. Stigler wrote a famous paper on 'Economics, the imperial science' (Stigler 1984). Both Stigler and Becker openly asserted the cognitive primacy of

economics as derived from the superior control of scientific language. On the theme of 'economic imperialism', see Radnitzsky and Bernholtz (1987).

In a recent review on the state of the art in the discipline, Kreps has observed that economists often interpret the 'imperial science' as a religious faith to be preached to pagans in other social sciences. He writes: 'Economists may scoff when unconverted scholars in the other social sciences attribute to us many of the aspects of a "religious imperious", but this has been a pretty accurate analogy' (Kreps 1997: 60).

9 'Indeed, what trade in ideas there has been between economics and the other social sciences has largely been through missions established to sociology, political science and the academic discipline of law' (Kreps 1997: 60).

10 Classifications may partially overlap, or may be questioned and reshaped depending on the problem examined. On the classification of literary genera, see the classic book by Todorov (1970).

11 G. Steiner studied the contrast of poetics and life vision between Tolstoy and Dostoevsky (Steiner 1989a). We shall make a passing reference to the difference between Balzac and Zola in poetics (Raimond 1981). In *Histoire de la Peinture en Italie* Stendhal's views were greatly inspired by *idéologie* (Stendhal 1817).

12

> Dostoevsky did not dramatize murders out of past history or legend. He drew his material, even to the point of minute detail, from contemporary crimes, from the kind of *faits divers* on which Stendhal founded *The Red and the Black*. ... The assassination of the jeweller Kalmykov by a young man named Mazurin in March 1867 provided material for Rogojin's murder of Nastasia Philipovna in *The Idiot*. Several of Dostoevsky's famous touches – the oil-cloth, the disinfectant, the fly buzzing above Nastasia's body – are paralleled exactly in the accounts of the crime in the newspapers.
>
> (Steiner 1989a: 142–3)

Steiner, however, observes the complexity of such a relationship to reality, the authentic circumstances being focussed on and selected also because they correspond to the author's mental images.

13 'Balzac appuie ses constructions imaginaires, comme l'a montré Jean-Hervé Donnard, sur une solide connaissance des réalités de son temps' ['Balzac founds his imaginary constructions upon a solid knowledge of the realities of his time, as Jean-Hervé Donnard has shown.'] (Raimond 1981: 66). See Donnard (1961).

14 Sparse references to fictional characters in their connection to real businessmen and financiers are in Kindleberger (1978).

15 'Pour éviter de toucher à la vie privée l'auteur a inventé une petite ville, *Verrières*, et, quand il a eu besoin d'un évêque, d'un jury, d'une Cour d'assise, il a placé tout cela à Besançon, ou il n'est jamais allé.' ['In order to protect privacy, the author has invented a small town, Verrières, and, when he needed a bishop, a jury, or a court, he has situated all that in Besançon, where he has never been.'] This note is attached by Stendhal on the closing page of *Le Rouge et le Noir* (Stendhal 1830: 508)

16 G. Steiner, speaking of Dostoevsky, has forcefully expressed the complexity of the relationship: 'For again, the connections between the brute matter of actuality and the work of art are complex and curiously bilateral. A buzzing fly appears in Raskolnikov's dream image of the murderer's room in *Crime and Punishment*; when Raskolnikov awakens, a large fly is, in fact, drumming against his windowpanes. In other words, the authentic circumstances of the Kalmykov

case matched Dostoevsky's previous imaginings; as in Raskolnikov's dream, the fly buzzed simultaneously in "exterior reality" and in the symbolic complex of the novel' (Steiner 1989a: 143).

17 Forster suggested that we should be able to imagine our authors sitting side by side, forgetting geography and chronology for a while just to spy over their shoulders what they are writing, to see if it still interests us (Forster 1927: Introduction).

18 We may easily conjecture that the emotional *frisson* Dickens inspired down many a spine made historians and statisticians more attentive in their task.

19 See Ricoeur (1983: I, 'La triple mimèsis'), for a fully argued defence of the referential nature of fiction against the structuralist approach to interpretation of the text.

20 In *Real Presences*, Steiner underlined the power of great works of art to shape human sensibility and thus, not to imitate, but to shape behaviour in history (Steiner 1989b).

21

> The link between *Crime and Punishment* and actual fact is paradoxical and rather terrifying. The general theme of the novel appears to have evolved in Dostoevsky's mind during the period of Siberian captivity. The first instalment was published in the *Russian Messenger* for January 1866. Immediately thereupon, on January 14, a student in Moscow murdered a usurer and his servant under circumstances undeniably similar to those which Dostoevsky had imagined. Nature rarely imitates art with such swift precision.
>
> (Steiner 1989a: 143)

22 For a study of the evolution of methodology from Friedman's positive economics to the rational expectations school, see Ingrao (1989).

23 On the primacy of action in fiction see the profound analysis by Ricoeur (1983, I: especially 109 ff).

24 Often, however, basic concepts in economic theory do not conform to the rule of univocal meaning preached in methodology. The ideas of self-interest, utility, payoff or objective function are among the concepts which economic theorists assume to be clearly defined, while in reality they are open and complex semantic wholes.

25 Not being a professional in literary criticism, but only a keen reader of novels, the author of this paper confesses to be no more than a curious, loving observer of literary language.

26 Moretti noted the peculiarity that usually novels leave economic affairs in the background, or ignore them completely. His observation is not correct, as will be clear considering the novels examined in this and the following paragraph.

27 Kindleberger, in his book *Manias, Panics and Crashes*, recalled the gallery of speculators and swindlers which populate novels such as *Little Dorrit* by Dickens, *The Way We Live Now* by Trollope, *César Birotteau* or *Melmoth Réconcilié* by Balzac, or *L'Argent* by Zola (Kindleberger 1978).

28 'La mission de l'art n'est pas de copier la nature, c'est de l'exprimer' ['The mission of art is not to copy nature, but to express it'] (quoted in Raimond 1981: 66).

29 'Mais comment rendre intéressant le drame à trois ou quatre mille personnages que présente une Société?' ['But how to make interesting the drama with three or four thousand characters offered by society?'] *La Comédie Humaine, Avant-propos*.

30 Historians of literature have conjectured what their sources were in terms of real events, and how they looked to outstanding personalities in the economic environment to portray their heroes freely in economic novels, applying the kaleidoscopic technique.
31 The phenomenon of informal financing in close social groups is common in the developing countries and has recently received attention in an extensive literature.
32 In view of Zola's position in the Dreyfus affair we may doubt that this was his intention, but a number of passages do offer the typical stereotype description of greedy Jewish traders.
33 The primacy of passion is one of Balzac's favourite themes: passion both dominates and wears down human lives.
34 Dostoevsky's ironical comment that two plus two might not be four is expressed in the underground man's confession.
35 Many of Balzac's characters are obsessed with fashion in dressing. Clothes are a powerful signal of membership of a social group because they show not only the financial situation, but also the subtler social capacity of knowing the fashion and the fashionable artisans who may produce the goods.

Bibliography

Bachtin, M. (1978) *Esthétique et Théorie du Roman*, Paris: Gallimard.
—— (1986) *Tolstoi*, Essays collected by V. Strada, Bologna: Il Mulino.
Balzac, H. (1830) *La Maison du Chat-qui-Pelote*, in *La Comédie Humaine*, I, Paris: Gallimard (Bibliothèque de la Pléiade, 1976).
—— (1833) *Eugénie Grandet*, in *La Comédie Humaine*, III, Paris: Gallimard (Bibliothèque de la Pléiade, 1976).
—— (1835) *Melmoth Réconcilié*, in *La Comédie Humaine*, X, Paris: Gallimard (Bibliothèque de la Pléiade, 1979).
—— (1837) *Histoire de la Grandeur et de la Décadence de César Birotteau*, in *La Comédie Humaine*, VI, Paris: Gallimard (Bibliothèque de la Pléiade, 1977).
—— (1837–43) *Illusions Perdues*, in *La Comédie Humaine*, V, Paris: Gallimard (Bibliothèque de la Pléiade, 1977).
—— (1838) *La Maison Nucingen*, in *La Comédie Humaine*, VI, Paris: Gallimard (Bibliothèque de la Pléiade, 1977).
—— (1846a) 'Avant-propos', in *La Comédie Humaine*, I, Paris: Gallimard (Bibliothèque de la Pléiade, 1976).
—— (1846b) *La Cousine Bette*, in *La Comédie Humaine*, VII, Paris: Gallimard (Bibliothèque de la Pléiade, 1983).
Becker, G. (1976) *The Economic Approach to Human Behaviour*, Chicago: University of Chicago Press.
Bradley, A. (1962) *Shakespearean Tragedy*, London: Macmillan.
Chiaromonte, N. (1993) *Credere e non credere*, Bologna: Il Mulino.
Cipolla, C.M. (1993) *Introduzione allo studio della storia economica*, Bologna: Il Mulino.
Cordelli, F. (1997) *La democrazia magica*, Torino: Einaudi.
Curtius, E.R. (1951) *Balzac*, Bern: A.Francke A.G. Verlag.
Dickens, C. (1850) *David Copperfield*, reprint Penguin Popular Classics, 1994, London: Penguin.
—— (1853) *Bleak House*, reprint Penguin Popular Classics, 1994, London: Penguin.
—— (1861) *Great Expectations*, reprint Penguin Popular Classics, 1994, London: Penguin.

Doležel, L. (1998) *Heterocosmica. Fiction and Possible Worlds*, Baltimore MD: Johns Hopkins University Press.

Donnard, J.H. (1961) *Balzac: les Réalités Economiques et Sociales dans 'La Comédie Humaine'*, Paris: Armand Colin.

Dostoevsky, F.M. (1864) *Zapiiski iz Podpol'ia*, English transl. *Notes from Underground*, 1993, London: Vintage.

—— (1866) *Prestuplenie i Nakazanie*, English transl. *Crime and Punishment*, 1995, Oxford: Oxford University Press.

—— (1868) *Idiot*, English transl. *The Idiot*, 1992, Oxford: Oxford University Press.

—— (1871–2) *Besy*, English transl. *Devils*, 1992, Oxford: Oxford University Press.

—— (1875) *Podrostok*, English transl. *The Adolescent*, 1981, New York: W.W. Norton.

—— (1880) *Brat'ia Karamazovy*, English transl. *The Karamazov Brothers*, 1994, Oxford: Oxford University Press.

Forster, E.M. (1927) *Aspects of the Novel*, Cambridge: Provost and Scholars of King's College; reprint, 1993, London: Hodder and Stoughton.

Gogol, N. (1842) *Mertvye dushi*, English transl. *Dead Souls*, 1996, New Haven: Yale University Press.

Hayek, F.A. (1952) *The Counter-Revolution of Science: Studies on the Abuse of Reason*, Glencoe: Free Press.

Hirschman, A.O. (1977) *The Passions and the Interests. Political Arguments for Capitalism before its Triumph*, Princeton: Princeton University Press.

Ingrao, B. (1989) 'The hidden epistemology of rational expectations and the paradoxes of rationality', *Ricerche Economiche* 43, 1–2: 100–28.

Ingrao, B. and Ranchetti, F. (1996) *Il mercato nel pensiero economico*, Milano: Hoepli.

Israel, G. (1996) *La Mathématisation du Réel*, Paris: Edition du Seuil.

—— (1998) *Il giardino dei noci: Incubi postmoderni e tirannia della tecnoscienza*, Napoli: CUEN (*Les Jardins du Noyer*. Pour un Nouveau Rationalisme, Paris: Editions du Seuil, 2000).

Keynes, J.M. (1923) *A Tract on Monetary Reform*, reprint D. Moggridge (ed.) *The Collected Writings of John Maynard Keynes*, IV, London: Macmillan.

—— (1936) *The General Theory of Employment, Interest and Money*; reprint D. Moggridge (ed.) *The Collected Writings of John Maynard Keynes*, VII, London: Macmillan.

Kindleberger, C.P. (1978) *Manias, Panics and Crashes. A History of Financial Crises*, New York: Basic Books.

Kreps, D.M. (1997) 'Economics, the current position', *Daedalus* 126, 1: 59–86.

Lepenies, W. (1985) *Die Drei Kulturen. Soziologie zwischen Literatur und Wissenschaft*, München: Carl Hanser Verlag.

Mailath, G.J. (1998) 'Do people play Nash equilibrium? Lessons from evolutionary game theory', *Journal of Economic Literature* 36, 3: 1347–74.

Melville, H. (1851) *Moby Dick*; reprint Penguin Popular Classics, 1994, London: Penguin.

Mirsky, D.S. (1999) *A History of Russian Literature: From its Beginnings to 1900*, F.J. Whitfield (ed.), New York: Northwestern University Press.

Moretti, F. (1987) *Il romanzo di formazione*, Torino: Einaudi.

—— (1997) *Atlante del romanzo europeo*, Torino: Einaudi.

Nabokov, V. (1980) *Lectures on Literature*, ed. by F. Bowers, New York: Harcourt Brace Jovanovich/Bruccoli Clark.

Neumann, J. von and Morgenstern, O. (1944) *Theory of Games and Economic Behavior*, Princeton: Princeton University Press.

Plato (1998) *Republic*, Oxford World's Classics, Oxford: Oxford University Press.

Radnitzsky, G. and Bernholz, P. (eds) (1987) *Economic Imperialism: The Economic Approach Applied Outside the Field of Economics*, New York: Paragon.

Raimond, M. (1981) *Le Roman depuis la Revolution*, Paris: Armand Colin.

Ricoeur, P. (1983) *Temps et Récit*, Paris: Editions du Seuil.

Samuelson, P.A. (1961) 'Parable and realism in the theory of capital: the surrogate production function', *Review of Economic Studies* 29, 193–206.

Smith, A. (1759) *The Theory of Moral Sentiments*, Glasgow edition of *The Works and Correspondence of Adam Smith*, vol. 1, 1976, Oxford: Clarendon Press.

—— (1776) *An Inquiry concerning the Nature and Causes of the Wealth of Nations*, Glasgow edition of *The Works and Correspondence of Adam Smith*, vol. 2, 1976, Oxford: Clarendon Press.

Steiner, G. (1989a) *Tolstoy or Dostoevsky. An Essay in Contrast*, London: Faber and Faber.

—— (1989b) *Real Presences*, Chicago: University of Chicago Press.

—— (1992) *After Babel: Aspects of Language and Translation*, Oxford: Oxford University Press.

—— (1996) *No Passion Spent: Essays 1978–1996*, London: Faber and Faber.

Stendhal (1817) *Histoire de la Peinture en Italie*, V. Del Litto (ed.), 1966, Paris: Gallimard.

—— (1830) *Le Rouge et le Noir*, reprint 1957, Paris: Editions Garnier Frères.

Stigler, G. (1984) 'Economics, the imperial science', *Scandinavian Journal of Economics* 86, 3, 301–13.

Todorov, T. (1970) *Introduction à la Littérature Fantastique*, Paris: Editions du Seuil.

—— (1971) *Poétique de la Prose*, Paris: Editions du Seuil.

Tolstoy, L. (1897) *Chto takoe iskusstvo?*, English transl. *What is art?*, Penguin Classics, 1996, New York: Penguin.

Turgot, A.R.J. (1769) *Valeurs et Monnaies*, in Gustave Schelle (ed.) *Oeuvres de Turgot et Documents le Concernant*, Paris: Félix Alcan, 1913–23, III: 79–98.

Wilson, E. (1941) *The Wound and the Bow*, London: Methuen.

Zola, E. (1873a) *La Fortune des Rougon*, in *Les Rougon-Macquart*, I, Paris: Gallimard (Bibliothèque de la Pléiade, 1976).

—— (1873b) *Le Ventre de Paris*, in *Les Rougon-Macquart*, I, Paris: Gallimard (Bibliothèque de la Pléiade, 1976).

—— (1877) *L'Assommoir*, in *Les Rougon-Macquart*, II, Paris: Gallimard (Bibliothèque de la Pléiade, 1978–83).

—— (1883) *Au Bonheur des Dames*, in *Les Rougon-Macquart*, III, Paris: Gallimard (Bibliothèque de la Pléiade, 1978–81).

—— (1891) *L'Argent*, in *Les Rougon-Macquart*, V, Paris: Gallimard (Bibliothèque de la Pléiade, 1993).

2 The beginning of 'boundaries'

The sudden separation of economics from Christian theology

A.M.C. Waterman

The history of 'economics' strictly speaking is of short duration. The most defensible *terminus a quo* is the decade beginning in 1885, which saw the foundation of the *American Economic Association*, the first numbers of the *Quarterly Journal of Economics* and the *Economic Journal*, and the publication of Marshall's *Principles* (Coats 1993). But 'economic thought' of some kind is a detectable feature of every civilised society. 'Economic thought' – like all other 'thought' – is and must be conceived and developed within the metaphysical and theological presuppositions of its time and place. In the Christian West, from the thirteenth to the eighteenth century, 'economic' thought can be regarded for the most part as a specialised branch of moral theology: in particular, of casuistry. *Mutatis mutandis*, much the same can be said of Talmudic economic doctrine during the same period (e.g. Kleiman 1987).

However, 'economic thought' in eighteenth-century Europe can also be regarded, and often is regarded, as having become a largely 'secular' inquiry, separated from theology by a well-defined epistemological boundary. The subsequent mutation of 'political economy' into 'economics' at the end of the nineteenth century left that boundary unchanged. In arguing that this view is somewhat anachronistic I shall present a strong thesis for debate:

> The origin of 'political economy' as a distinct inquiry, clearly to be demarcated from Christian theology, is the publication of Malthus's first *Essay on Population* of 1798.

First I shall describe the theological matrix of economic thought in eighteenth-century Britain; second, the crucial importance of the first *Essay* in my story; and, finally, the resulting theodicy of scarcity and the appearance of a boundary between 'political economy' and Christian theology.[1]

Economic thought in eighteenth-century Britain

The Enlightenment in Britain was regarded as an opportunity rather than as a threat to established religion. Anglophone 'economic thought' in the eighteenth century was congenial to, and to some extent intertwined with,

Christian theology. And the canonical text of eighteenth-century economic thought, *The Wealth of Nations*, may be read as congruent with the theological assumptions of Anglican orthodoxy.

Enlightenment and religion

It is still sometimes supposed that a so-called 'Enlightenment' in the eighteenth century, by raising new doubts about the Christian religion, began a 'secularisation' of European thinking which manifested itself in all branches of philosophy, science and politics (e.g. Gay 1966–9). But if the term 'secular' and its cognates be taken to refer to culture as a whole, it is evident that 'secularisation' is a consequence of a widespread industrialisation and urbanisation which did not begin until the next century. 'Enlightenment was of the few. Secularisation is of the many' (Chadwick 1975: 9).

Quite apart from this, it appears that whereas the Enlightenment of the French *philosophes* was indeed associated with infidelity or at any rate with deism, this was decidedly not the case in Britain. For though, in general, the Enlightenment may be understood as an attempt to extend the method of Newtonian science into all branches of inquiry (e.g. Cassirer 1951: 7–12; Berlin 1956: 14), that enterprise was not perceived as subversive of orthodox religion either in Scotland or in England (Gilley 1981). Why this should have been we may learn from Colin Maclaurin's *Newton*, first published in 1748 and read by Adam Smith almost immediately after (Ross 1995: 100). Maclaurin became required reading for undergraduates at universities in both countries for most of the rest of the century.

For British students at any rate, 'natural philosophy is subservient to purposes of a higher kind, and is chiefly to be valued as it lays a sure foundation for natural religion and moral philosophy'. But this may not be so in papist countries, for Maclaurin warns against the 'superstition' (eighteenth-century code word for Roman Catholicism) which 'discourages inquiries into nature, lest, by having our views enlarged, we may escape from her bonds' (Maclaurin 1775 [1748]: 3, 5). In papist France Newton may be an enemy of established religion: in Protestant Britain he is an ally. For not only does natural science demonstrate the unity, omnipotence, omniscience and goodness of God: it also 'disposes us to receive what may otherwise be revealed concerning him' and thus provide a proper introduction to the study of scripture (ibid.: 401). Moreover we are led by science to a belief in the afterlife (ibid.: 410–11). Finally, we learn from science 'to consider our present state ... as a state of preparation or probation for farther advancement' (ibid.: 411) – a central tenet of orthodox, Anglican moral theology of that time (e.g. Butler 1969 [1726]: Sermon XV).

The Scottish Enlightenment is therefore largely free of that bias against Christianity which characterised the *philosophes*; and David Hume's untypical infidelity may have been acquired in France. As for the English Enlightenment, to the extent there was any such thing at all it took the

form of an 'ideology of politeness' (Pocock 1985: 537 *passim*; see also Gascoigne 1989) which united Christian, specifically Anglican orthodoxy, both with modern science and with an unprecedented freedom of opinion, and has been described today as 'conservative, clerical and Magisterial' (Jacob 1981). Economic thought that flourished in Scotland in the writing of Hume, Steuart, and Adam Smith, and in England in that of Berkeley, Josiah Tucker, Paley and even Malthus, must be understood in this intellectual context.

Religion and economic thought

The first and (and perhaps the greatest) of these, the philosopher George Berkeley (1685–1753), Bishop of Cloyne in the Church of Ireland, sought not only to relieve but also to cure endemic poverty in his diocese. *The Querist* (Berkeley 1953 [1735–7]: 87–184) addresses the problem of economic development upon the assumptions, first, that the attitudes of the population are the most important determinant of wealth-creation; second, that it is the 'aim of every wise State ... to encourage industry in its members'. Berkeley apprehended 'some censure ... for meddling out of my profession; though to feed the hungry and clothe the naked by promoting an honest industry, will perhaps be deemed no improper employment for a clergyman who still thinks himself a member of the commonwealth' (ibid.: 105, 103). We may see in Berkeley's writing what, from the standpoint of this paper, are three of the four most important characteristics of eighteenth-century economic thought: first, that wealth is a good thing; secondly, that wealth-creation is always feasible; and, thirdly, that measures to increase the wealth of nations are consistent with, and may actually belong to, the Christian religion.

What is absent is the theme, first clearly stated by Bernard Mandeville (1924 [1714–28]), which came to dominate the economic thought of Berkeley's successors: that general prosperity occurs only when individuals vigorously pursue their own private economic ends without much, if any, consideration of the common good. Mandeville's provocative slogan, 'Private Vices, Publick Benefits', appeared to create a conflict between wealth-creation and Christian morality. Many were deceived and *The Fable of the Bees* was denounced from the pulpit, indicted by the Grand Jury of Middlesex as a public nuisance, burned by the hangman in France, and placed by the Vatican on the *Index Librorum Prohibitorum* (Kaye 1924).

It was apparent to shrewder minds, however, that Mandeville's shocking paradox depended upon an improper construal of *self-love* as 'vice'. The first, and also the most powerful, analysis of self-love in relation to 'private good' and 'public good' was supplied by Joseph Butler (1692–1752), successively Bishop of Bristol, Dean of St Paul's and Bishop of Durham. Butler's sermons at the Rolls Chapel (Butler 1969 [1726]) were preached between 1723 and 1725, in the immediate aftermath of the public outcry aroused by the 1723

edition of the *Fable* (Waterman 1997a: 240–1). Although Mandeville is never mentioned, it seems clear that his seemingly subversive doctrines were vividly in the minds of preacher and congregation, and that they supplied both the motivation and the agenda for the sermons (e.g. Butler 1969 [1726]: 166). Butler showed that the ends of private good and public good 'do indeed perfectly coincide'; that 'self-love is one chief security of our right behaviour towards society'; that under Providence much unintended social good is produced by self-regarding actions; and that 'there is seldom any inconsistency between what is called our duty and what is called interest' (ibid.: 32, 36, 37–8, 67). Sermons XI and XII, 'On the Love of our Neighbour' (ibid.: 164–202), recognise that self-love is a duty commanded by Christ himself.

It has been conjectured by F.A. Hayek (1978: 263) that Hume studied Mandeville at the time he was planning the *Treatise* (1888 [1739–40]); and it seems probable that the essay 'Of Luxury' (1752; later called 'Of Refinement in the Arts'; see Hume 1994, Essay 14) would have been regarded by its readers as one of the many responses to Mandeville that appeared from time to time for several decades after 1723. At any rate Hume acknowledged Mandeville in the Introduction to his first work – along with Locke, Shaftesbury, Hutcheson and Bishop Butler – as one of those 'who have begun to put the science of man on a new footing' (Hume 1888 [1739–40]: xxi). Though Hayek (1978: 264) has argued that Mandeville 'made Hume possible', it would seem from Hume's reference to Butler that it was the latter who made it possible for Hume so to generalise Mandeville as to produce the 'theory of spontaneous order' now seen as the characteristic contribution of the Scottish Enlightenment to social theory (e.g. Hamowy 1987). The multifarious activities of any large human society, most notably its economic activities, arise *and can only arise* in a gradual, unplanned, accidental, piecemeal fashion in response to the incentives to individual, self-regarding actions created by others' needs, wants and desires. A decade or so before Hume began to write, Butler had established that this putatively providential outcome might arise from a wholly virtuous attention by all individuals to their 'interest' as determined by the Christian duty of self-love.

Bishop Butler's chaplain, the Revd Josiah Tucker (1713–99) later Dean of Gloucester, became – through the good offices of Lord Kames – a correspondent and friend of Hume, with whom he conducted a successful dispute over comparative advantage in international trade (Shelton 1981: 126–32). Karl Marx (1954 I: 711 n. 2) later acknowledged that Tucker, though a Tory (*sic*) and a parson, was 'an honourable man and a competent political economist', and it is certainly the case that in Tucker, more than any previous author considered in this paper, we see the concepts of 'self-love' and 'interest' employed in specifically economic discourse. His *Essay on Trade* (1993 [1749]: iv) describes the study of commerce as 'this noble and *interesting* Science; on which the *Riches*, the *Strength*, the *Glory*, and I may add, the

Morals and *Freedom* of our Country, so essentially depend'. His uncompleted *Elements of Commerce and Theory of Taxes* notes that:

> as our present *secular* Happiness appears to arise from the Enjoyment of superior Wealth, Power, Honour, Pleasure, or Preferment, SELF-LOVE, the great Mover of created Beings, determines each Individual to aspire after these *social* Goods, and to use the most probable Means of obtaining them.
>
> (Tucker 1993 [1755]: 58)

And in *Instructions for Travellers* Tucker clearly sets out what was to become, two decades later, the central message of *The Wealth of Nations*:

> let the Legislature but take Care not to make *bad Laws*, and then as to *good ones*, they will make themselves: That is, the Self-Love and Self-Interest of each Individual will prompt him to seek such Ways of Gain, Trades and Occupations of Life, as by serving himself, will promote the public Welfare at the same Time.
>
> (Tucker 1993 [1757]: 48)

Tucker's own bishop (of Gloucester), the polemical William Warburton, once derided him for making 'trade his religion' (Shelton 1981: 165), and the slur was tendentiously – and inaccurately – revived by R.H. Tawney (1936 [1925]: 192). But it is clear from the whole of Tucker's life and writings that this is to misunderstand the theological climate of the day. It is correct, as Tawney (ibid.: 10) noted, that by Tucker's day economic thought had ceased to be concerned primarily with casuistry, at least in Protestant countries.[2] But contrary to Tawney's astonishingly successful propaganda, *it had not ceased to be Christian*. Tucker was a faithful disciple of his first bishop (of Bristol), patron and friend. He viewed the unintended but beneficent economic outcomes of 'interested' action in a purely Butlerian way, as examples of divine Providence and as congruent with that Newtonian, natural theology which characterised the Scottish and English Enlightenments.

The Wealth of Nations and Christian theology

Though Adam Smith seems never to have met Josiah Tucker, he acquired Tucker's economic writings for his own library (Mizuta 1996). Moreover, he would have known of Tucker and his ideas from his friends David Hume and Lord Kames, and also from the 'oeconomists' he met on his visits to France. Tucker's Butlerian view of the human condition can be discovered both in *The Theory of Moral Sentiments* (Smith 1976 [1759], hereafter *TMS*) and in *The Wealth of Nations* (Smith 1976 [1776], hereafter *WN*), though Smith may well have learned of Butler's doctrines in the first instance from his old

teacher, Francis Hutcheson (Ross 1995: 118). In *TMS* (I.iii.1), Butler is referred to as 'a late ingenious and subtile philosopher'.

From the standpoint of this paper, the two most important philosophic ideas in early eighteenth-century debate that Smith assimilated to his system were those of self-love and human ignorance.

Mandeville is dealt with, in *TMS* (VII.iv), in a way that resembles Butler's, and self-love explicated, following Aristotle and the Stoics, as both integral to human nature (II.ii1) and as at least possibly virtuous (VII.ii.3.16). Most recent commentators (e.g. Raphael and Macfie 1976: 19–20) agree that Smith – who in 1751 had subscribed to a Calvinistic Confession of Faith upon accepting the Chair in Logic at Glasgow (Ross 1995: 109) – moved away from 'orthodox Christianity' in later life towards Stoicism and natural religion. This may well have been the case (ibid.: 382). But the relevant passages in the final (1790) recension of *TMS* remain consistent with Butler's treatment of self-love, and differ chiefly in omitting any reference to Dominical command.

The last of Butler's Rolls Sermons was 'Upon the Ignorance of Man' (Butler 1969 [1726]: Sermon XV), and in this at any rate he agreed with Mandeville (1924 [1714–28] II: 104) who had written of 'the narrow Bounds of human Knowledge'. Hume followed both Mandeville and Butler in propounding a modest, not to say pessimistic, view of the possibility of human knowledge, and in particular of any prior knowledge about the social consequences of individual human acts. The polemical message of *WN* is founded upon this conviction. For the duty of 'superintending the industry of private people' assumed by 'the sovereign' is one 'for the proper performance of which no human wisdom or knowledge could ever be sufficient' (*WN* IV.ix.51). The implicit contrast with *divine* wisdom is left open.

It has lately been asserted by Peter Minowitz (1993: 139, 40) that '*The Wealth of Nations* is an atheistic and anti-Christian work' and that Smith's 'campaign against religion ... emerges – indirectly – from his wholly secular examination of "nature and causes" '. Much is made of the fact that there is no mention in *WN* of 'Jesus', or 'Christ', or 'the Son', and no direct reference to 'God' or 'Providence'. But in truth there is little difference between Smith's language of social explanation and that of Josiah Tucker.[3] Moreover, it would seem from the literature reviewed so far that Smith's conceptual apparatus in *WN* was far from novel, and that at least two of his most powerful ideas were developed fifty years before, in an explicitly Christian context, in the profoundly influential writings of Bishop Butler. Neither Butler nor Tucker appear in the index to Minowitz (1993).

In my opinion it is more plausible to regard *WN* as a work of Newtonian natural theology, based on a complex and sophisticated exploitation of the ambiguous term 'nature' (Waterman 1997b). Ian Ross (1995: 340) has correctly remarked that Smith's 'philosophy of explanation involves final explanations, couched in terms of a purposeful nature or God, and this variety of theism is an integral party [*sic*] of his approach to social

phenomena'. As a social-scientific equivalent of Newton's *Principia* it could be regarded by the Anglican Establishment of that period – but not perhaps by the rigorously Calvinist party within the Presbyterian Establishment (see Ross 1995: 59, 118) – as wholly compatible with orthodox Christianity. According to my reading, moreover, *WN* may also be thought to contain, and possibly to have been shaped by, an Augustinian account of the way God responds to human sin by using the consequences of sin both as a punishment and as a remedy.

Whether or not I am right in this interpretation, it is certainly the case as we shall see, that *WN* was never regarded at the time as 'hostile to religion': whereas the 'political economy' of Malthus and Ricardo most certainly was.

The *Essay on Population*

An important feature of the economic thought considered so far is Berkeley's tacit assumption that continual wealth-creation is always, or at any rate normally, feasible: an assumption subsequently protected by Smith's account of *increasing returns*. But Malthus's *Essay on Population* created the presumption that *diminishing returns* would dominate increasing returns, and so retard or even extinguish economic growth. And the consequent metamorphosis of 'political oeconomy' – from an 'Inquiry into the Nature and Causes of the Wealth of Nations' into the 'Dismal Science' of rational response to scarcity – raised for the first time the possibility of strong dissonance between political economy and Christian theology.

Unbounded wealth-creation

The emphasis in *WN* on increasing returns, both from division of labour and from endogenous technical progress is too well-known to require comment. It has been suggested by some (e.g. Samuelson 1978) that we may also discern in *WN* some recognition of diminishing returns, and hence that Smith's system may be subsumed under the 'canonical classical model of political economy'.[4] The best recent attempt to formalise Smith's growth theory (Eltis 1984: ch. 3) accepts the possibility of diminishing returns in *WN* but associates it solely with the agricultural sector, locates increasing returns in the manufacturing sector, shows that Smith assumes that an endogenous taste for 'luxury' increases the relative share of manufacturing; and hence that increasing returns must come to dominate diminishing returns. Other recent Smith growth models (e.g. Negishi 1993) abstract altogether from diminishing returns.

Therefore, though Smith – like every serious economic thinker, at least since Plato (1953, I: 158–9) and the author of *Ecclesiastes* (5:11), understood that 'Every species of animals naturally multiplies in proportion to the means of their subsistence, and no species can ever multiply beyond it' (*WN* I.viii.39), his optimistic vision of increasing returns caused him to regard

capital, rather than land, as the chief constraint upon growth. Since the capital constraint can be removed by 'parsimony', the way is open for more or less continuous population growth *and this is a good thing*. The 'demand for men ... necessarily regulates the production of men'; demand for labour increases with capital, the 'continual increase [of] which occasions a rise in the wages of labour', and 'the liberal reward of labour ... is the cause of increasing population'. Hence 'it is in the progressive state, while the society is advancing to further acquisition ... that the condition of the ... great body of the people, seems to be the happiest and the most comfortable'. Indeed 'The progressive state is in reality the chearful and hearty state to all the different orders of society' (*WN* I.viii.40, 18–21, 22, 42, 43). This state of affairs will come about 'naturally' – if capitalists are parsimonious – under 'the obvious and simple system of natural liberty' (*WN* IV.ix.31).

There were, of course, authors whose works suggest some modification of this rosy picture. Malynes (fl. 1586–1641) had recognised that continual population increase might be stopped by the 'positive check'; 'divested of non-essentials the "Malthusian" Principle of Population sprang fully developed from the brain of Botero in 1589'; Quesnay believed that pressure of population in France 'was actually present around 1750' (Schumpeter 1954: 251, 254, 257; see also Stangeland 1904); and Sir James Steuart (1966 [1767] I: 37) had observed that 'the generative faculty resembles a spring loaded with a weight, which always extends itself in proportion to the diminution of resistance; when food has remained some time without augmentation or diminution, generation will carry numbers as high as possible'. Moreover it was Steuart (1966 [1767] I: 130–1), so pointedly ignored by Adam Smith, who was among the first to formulate an account of diminishing returns which are necessary for this to happen. According to Schumpeter (1954: 259–60) the *locus classicus* of the law of diminishing returns is Turgot's *Observations sur le Mémoire de M. de Saint-Péravy en Faveur de l'Impôt Indirect* (1970 [1768]), which 'suffices in itself to place Turgot as a theorist high above A. Smith'.

But despite these outliers the great majority of eighteenth-century economic thinkers – including those like Cantillon (1931 [1755]: 82) who noted that 'Les Hommes se multiplient comme des Souris dans une grange, s'ils ont le moïen de subsister sans limitation' (Men multiply like Mice in a barn if they have unlimited means of subsistence) – believed that for all practical purposes there were no physical limits to capital accumulation and population growth, and that these should be objects of national policy. Berkeley and Hume were populationists (Schumpeter 1954: 257); Wallace (1761), who first formulated what was to become Malthus's anti-perfectibilist argument, believed that in practice no limit would appear 'till the whole earth had been cultivated like a garden' (Malthus 1798: 142); Tucker (1993 [1749]: 127, 128) proposed to tax bachelors and childless widowers to encourage them to add their '*proper* Increase to the *publick* Stock of Inhabitants, in which the *Riches* and *Strength* of a Nation do consist'; even

Steuart (1966 [1767] I: 116), viewing the matter from the standpoint of the nation state, believed that the possibility of importation removes any physical barrier to growth.

Perhaps the clearest and most complete account of the *un*-canonical, *pre*-classical model of political 'oeconomy' common to all the authors so far mentioned is to be found in the long chapter 'Of Population and Provision' in Paley's celebrated textbook on *Moral and Political Philosophy* (1825 [1785], ch. IV). The Revd William Paley (1743–1805), Archdeacon – later Chancellor – of Carlisle, whom Keynes (1971 [1933]: 79) thought was perhaps 'the first of the Cambridge economists', cited Berkeley and seems from context to have been familiar with the work of Mandeville, Hume, Steuart, Tucker, *TMS* and possibly *WN* (Waterman 1996: 674–6). Paley agreed with his predecessors in regarding population as a good, but rejected their quasi-mercantilist reasons. Though willing to assent to the standard of Anglican orthodoxy (Waterman 1991a), he was a utilitarian and a methodological individualist, and for him population was an index of social welfare to be maximised. He used his sophisticated two-sector model ('provisions' and 'luxuries') to analyse the determination of output and population in a world without scarcity. As with virtually all before him, aggregate effectual demand determines aggregate supply in the long period because – implicitly – population, fully employed work-force and output are all produced under constant costs (Waterman 1996).

Diminishing returns, misery and vice

The Revd T. Robert Malthus (1766–1834) was required to read Paley's textbook as a Cambridge undergraduate, and, together with *WN* and Hume's political essays, it is the prime source of his economic and political ideas (Waterman 1996: 681; Winch 1996: 370–1). In 1796 Malthus agreed with Smith, but disagreed with Paley, that it is the rate of increase in population, rather than its level, which determines the 'happiness and prosperity of a state' (cited in Keynes 1971 [1933]: 83). And in 1798 he disagreed further with Paley, who – like Wallace and (by implication) most other eighteenth-century economic thinkers – had assumed that 'the number of people have seldom, in any country' arrived at the limit set by 'all the provisions which the soil can be made to produce' (Paley 1825 [1785] IV: 480). For

> At every period during the progress of cultivation, from the present moment, to the time when the whole earth was become like a garden, the distress for want of food would be constantly pressing on all mankind, if they were equal. Though the produce of the earth might be increasing every year, population would be increasing much faster, and the redundancy must necessarily be repressed by the periodical or constant action of misery or vice.
>
> (Malthus 1798: 143–4)

It is made clear at the outset of the first *Essay* that the dismal consequences of resource scarcity are not merely an hypothetical result of the egalitarian communism that Godwin had advocated, but are actually present in all times and places. 'Necessity, that imperious all-pervading law of nature' restrains 'the germs of existence ... within the prescribed bounds'.

> The race of plants, and the race of animals shrink under this great restrictive law. And the race of man cannot, by any efforts of reason, escape from it. Among plants and animals its effects are waste of seed, sickness and premature death. Among mankind misery and vice. The former, misery, is an absolutely necessary consequence of it. Vice is a highly probable consequence, and we therefore see it abundantly prevail.
> (Malthus 1798: 15–16)

Although the institutions of private property, marriage and wage-labour – by raising *average* per capita income above subsistence – can shelter the propertied classes from the worst effects of these in 'the civilised state', the great mass of the lower orders must normally live at or near the margin of subsistence. And even their betters must often endure the misery of compulsory celibacy (or give way to the temptation to vice) as Malthus himself well knew.

The seeming necessity of 'misery' or 'vice' in all human existence is an entirely new element in economic thought. Almost immediately it created a conflict – and therefore a distinction, not previously apparent – between Christian theology and economic thought.

Malthus was, and remained for the whole of his life, a faithful clergyman of the Church of England. It was therefore obvious to him that the economic reasoning of his *Essay*, though brilliantly successful in disposing of Godwin's Jacobin attack on private property, had only succeeded at the cost of creating a serious theological problem. Why should a God who is believed to be perfectly good and wise, all-knowing and all-powerful, have created a world in which men and women must live in misery or vice? He therefore attempted to 'vindicate the ways of God to man' in the last two chapters of the *Essay*. Unfortunately Malthus's talents as a theologian were not equal to those as an economist and his theodicy was seriously defective (Waterman 1983). Paley, who was converted to Malthus's population theory by the *Essay*, sketched a more satisfactory theodicy of scarcity in his last work, *Natural Theology* (1825 [1802]). And in 1816, J.B. Sumner's definitive *Treatise on the Records of the Creation* (Sumner 1816) abstracted the 'principle of population' from the Problem of Evil by showing that it might instead be regarded, following Paley, as an example of divine wisdom and 'contrivance' (Waterman 1991b: 126–35, 160–70). In the 1817 recension of the *Essay* Malthus (1817, III: 425; see Malthus 1989, II: 250) paid tribute to Mr Sumner's 'masterly developement and completion' of his views.

Economists versus human beings

Meanwhile, two other developments were occurring which were to identify 'political economy' in the public mind as an intellectual enterprise altogether distinct from Christian theology. The 'principle of population' gave rise to explicit formulations by anglophone economists (unaware of Turgot's pioneering work) of diminishing returns, so producing the 'canonical classical model' and converting what was hitherto a study of wealth into the new science of scarcity. And almost from its birth, 'political economy' in the new, nineteenth-century sense was perceived and denounced by many as 'hostile to religion'.

Though doubting whether Malthus ever intended that his 'ratios' should be integrated to afford a diminishing-returns production function (Stigler 1952; Lloyd 1969; Waterman 1987a), Samuel Hollander (1997: 27–39) has lately lent his authority to the view that many other passages even in the first *Essay* do indeed imply diminishing returns. An explicit formulation is to be found at the very latest in Malthus's *Inquiry into the Nature and Progress of Rent* (1986 [1815]), appearing in the same year as essays by Ricardo, West and Torrens which expounded essentially the same doctrine. The classic formulation of what became known as the 'Ricardian' theory of rent – and the most complete explication of the 'canonical classical model' – was supplied two years later by David Ricardo's *Principles of Political Economy, and Taxation* (1951 [1817]). The friendship between Malthus and Ricardo dated from 1811. In 1821 they combined with James Mill, Sumner, and most other leading practitioners of the new science, to found the *Political Economy Club*.

Well before this, Malthusian theory and the 'political economy' which grew out of it had become objects of suspicion and hostility to many theological critics. The first *Essay* passed largely unnoticed and its eccentric theodicy incurred only gentle mockery (Waterman 1991b: 112). But the 1803 recension brought down a torrent of rage and execration upon its author for his unwelcome speculations, especially his brutal rejection of a traditional doctrine Paley (1825 [1785]: 159–71) had maintained: that 'the poor have a claim founded in the law of nature' upon the resources of the rich. In a notorious passage – expunged in the next (1806) edition – Malthus had written, with obvious allusion to Paley's metaphor of a 'banquet':

> A man who is born into the world already possessed ... has no claim of *right* to the smallest portion of food, and in fact has no business to be where he is. At nature's mighty feast there is no vacant cover for him. She tells him to be gone, and will quickly execute her own orders if he does not work on the compassion of some of her guests.
>
> (Malthus 1989 [1803], II: 127)

Southey's vitriolic review (*Annual Review* 1803) inaugurated what Donald Winch (1996: 402, 418) has lately called 'one of the enduring fault-lines in British cultural debate ... separating economists from the self-appointed spokesmen for human beings'. A series of pamphlets and articles appeared denouncing Malthus for heresy and hardness of heart (James 1979: 116–21; Pyle 1994); specifically for his 'impious and blasphemous assertion, *that the Almighty brings more beings into the world than he prepares nourishment for*' (Anon 1807: 123). The wound went deep. Many of the greatest luminaries of nineteenth-century Britain – Coleridge, Hazlitt, Southey, Wordsworth; Carlyle, Ruskin, Morris, Toynbee – took the 'human' side in 'the bitter argument between economists and human beings' (Toynbee, cited in Winch 1996: 6). A full century after Southey's review, a leading Christian Socialist of the day, W.E. Moll (1857–1932), decried 'the false political economy which "teaches men to say that there are those for whom God has placed no plate at the banquet of life" ' (cited in Jones 1968: 437).

It cannot be emphasised too strongly that the rift, or 'fault-line', between economic thought and Christian theology opened up very suddenly in the decade or so after 1798 and is quite without precedent. Eighteenth-century high-church men of impeccable orthodoxy such as Samuel Johnson could believe that 'there are few ways in which a man can be more innocently employed than in getting money' (Boswell 1934, II: 323). As late as the 1790s Edmund Burke, who once said that *WN* was 'probably the most important book ever written' (O'Brien 1993: 144, n. 1), could boldly declare – with possible allusion to Warburton's sneer at Josiah Tucker – that 'the laws of commerce, which are the laws of nature, [are] consequently the laws of God' (Burke 1981–97, IX: 125). But the *Essay on Population*, by deflecting both popular and scientific attention from the benign effects of wealth and wealth-creation to the seemingly malign consequences of resource scarcity and diminishing returns, created a wholly new climate of opinion. In 1832 a reputable journal could remind its readers that the writings of Malthus and Ricardo had 'tended to lead the public far away from the true path of inquiry', and to make of political economy 'a hideous chain of paradoxes at apparent war with religion and humanity' (*Eclectic Review*, January 1832: 9). More than two decades later an influential American economist and protestant cleric contrasted the 'harmony' apparent in *WN* with 'the great law of discord, promulgated by Malthus and Ricardo' (Carey 1856: iii, iv).

The boundary between political economy and Christian theology

Although by 1820 Paley, Sumner and Coplestone had worked out an accommodation of political economy that was acceptable to Christian orthodoxy, the good effect of their work was undone by an attempt of the Philosophic Radicals to hijack the new science to their avowedly atheistic programme of

reform. In responding to this new challenge Richard Whately was led to propound an epistemological *boundary* between 'scientific' and 'religious' knowledge, later popularised by Nassau Senior, which laid the foundation of methodological orthodoxy in political economy – and in what is now called 'economics'. And precisely because of Whately's demarcation between what came to be seen as distinct and non-competing inquiries, the possibility was created of fruitful *exchange at the boundaries*.

Ideological crisis in the 1820s

As a result of Sumner's *Treatise* (1816), Malthusian political economy was able to retain the anti-utopian aspect of Malthus's original polemic against Godwin whilst replacing its amateurish theology with a more acceptable theodicy. What had appeared to Malthus as a nasty case of the Problem of Evil was shown by Sumner to be an example of the Argument from Design, so successfully developed by Paley in his *Natural Theology* (1825 [1802]). This, in turn, enabled Sumner to reintroduce the orthodox, Butlerian doctrine of human life on earth as a 'state of discipline and trial' that Malthus had denied in 1798. Malthus himself had strengthened the argument for private property in 1803 by appropriating Paley's concept of 'moral restraint' – which also afforded a legitimate escape from 'misery or vice'. And 'moral restraint', which must be taught and learned, required that attention to institutional reform which all Whigs took for granted and which 'liberal Tories' were beginning to tolerate. All of these improvements were incorporated in the 1817 recension of the *Essay* (Waterman 1991b: 160–76).

Though Edward Copleston's two *Letters to Peel* (1819) were much briefer and narrower in scope than Sumner's *Treatise*, they added intellectual content to the Malthus–Sumner argument and also helped to make it more widely respectable. For Copleston, then Provost of Oriel College, was one of the first Oxford men, certainly the most influential, to take political economy seriously; and Oxford was the spiritual home of the English Establishment (Waterman 1991b: ch. 5). Through the combined efforts, therefore, of the Simeonite evangelical, Cambridge Whig Sumner (later Archbishop of Canterbury) and the pre-Tractarian high-church, Oxford Tory Copleston (later Bishop of Llandaff), political economy had been made, if not palatable, at least digestible to orthodox members of the Church of England by 1820. Only the most intransigent Romantics – the Lake Poets and their circle – persisted in their hostility.

In the early 1820s however the good work of Sumner and Copleston in reconciling English Christians to political economy was seriously endangered. Bentham, James Mill, and their allies – including Ricardo until his death in 1823 – having established the *Westminster Review* (1824) and the University of London (1826) to propagate their views, were alarmingly successful in harnessing the new science of political economy to the cause of

radical 'reform'. Bentham had lately published his widely noticed pamphlets attacking the Church of England, natural theology and St Paul (Waterman 1991b: 202), and Mill's hostility to Christianity was well known. The Philosophic Radicals made no secret of the fact that reform was to be guided only by the criterion of the greatest good of the greatest number, without reference to the traditions and structure of a Christian society; and that political economy was to be the instrument of designing reform. All the worst fears of Oxford Tories, ever ready to suppose 'the Church in danger', were reawakened. As Whately observed in 1828, many once again regarded political economy 'with a mixture of dread and contempt – as a set of arbitrary and fanciful theories, subversive of religion and morality'. It had become essential to reassure those who feared 'the pursuit of knowledge of any kind, as likely to be injurious to the cause of religion' that 'truth ... can never be at variance with truth'; and that 'the Bible ... was not intended to teach men Astronomy or Geology, or, it may be added, Political Economy, but Religion' (Whately 1828: 171, 172).

Richard Whately (1786–1863), former Fellow of Oriel, Principal of St Alban's Hall, was ideally situated for performing this task. A pupil and friend of Copleston, logician, Christian apologist and ecclesiastical statesman, he occupied a position of great power and influence in Oxford of the 1820s (Waterman 1991b: 180–6, 204–6). His first move was to engineer the election of his former pupil, Nassau Senior, as Drummond Professor of Political Economy in 1826. When Senior's term expired Whately accepted the chair himself, for it seemed to him, he wrote to a friend in 1829,

> that there is a sort of crisis for the science in this place, such, that the occupying of it by one of my profession and station may rescue it permanently from disrepute. Religious truth ... appears to me to be intimately connected, at this time especially, with the subject in question. For it seems to me that before too long, political economists, of some sort or other, must govern the world; ... now the anti-Christians are striving hard to have this science to themselves, and to interweave it with their own notions.
>
> (Whately 1866: I, 66–7)

Whately was duly elected to the chair and delivered his first and only lectures (Whately 1832) during the Easter Term of 1831. His academic career was abruptly terminated three months later by his appointment as Archbishop of Dublin.

Whately's demarcation

Though Whately had intended to treat political economy in the manner of Paley's *Natural Theology*, his first object was 'to combat the prevailing preju-

dices against the study, and especially those which represent it as unfavourable to religion' (1832: vi). I have elsewhere described Whately's argument in detail (Waterman 1994: ch. 3; see also Corsi 1987) therefore a brief summary will suffice.

Whately was much influenced in his approach by another former pupil, Samuel Hinds, whose important book on *Inspiration and the Authority of Scripture* (1831) had just appeared. Hinds argued that 'sacred knowledge' (of God) and 'secular knowledge' (of nature) are distinct. Though the former 'should have a due share of our intellect', its truths must – and can only – be 'spiritually discerned'. But the latter is autonomous, requiring only reason to comprehend. Hence the Bible can not be the source of all truth, 'but only of such truth as tends to religious edification' and in this alone is the Bible infallible (Hinds 1831: 5, 7, 150–1). Whately used these ideas to argue that it is erroneous to appeal to scripture 'on questions of physical science', for 'Scripture is not the test by which the conclusions of Science are to be tried' (Whately 1832: 29, 30, 31). Since political economy resembles physical science in that it consists of 'theory' in relation to 'observable phenomena', we may expect:

> That Political-Economy should have been complained of as hostile to Religion will probably be regarded ... with the same wonder, almost approaching to incredulity, with which we of the present day hear of men's having sincerely opposed, on religious grounds, the Copernican system.
>
> (Whately 1832: 28–9)

Moreover, not only does the Bible contain no authoritative *scientific* knowledge; even its account of '*moral* truths ... must be received with considerable modification'. For biblical doctrine of virtue and vice is such 'as seems to presuppose a natural power, or capacity for acquiring that power, to distinguish them' (ibid.: 32, my italics). A moral sense of some kind is therefore necessary for right conduct. Thus Whately opposed head on the consequentialism which Bentham (the enemy) shared with Paley (the ally).

By arguing that political economy and theology are distinct, incommensurable and non-competing fields of inquiry, Whately was able to assuage the doubts and fears of his Oxford colleagues about the new science. And by arguing that a consequentialist ethic is defective, he countered the intellectual imperialism of the Philosophic Radicals who sought to impose 'scientific' reform in the name of 'utility'. The latter were correct in regarding political economy as a valuable instrument for implementing the social values which guide public policy. But they were wrong to suppose that the hedonistic calculus can be a reliable source of (or substitute for) those values. Only a moral sense, preferably illuminated by holy scripture, can determine those ends to which political economy is only the means.

Whately's insistence that political economy is merely a value-neutral,

'positive' study of means was embedded in a philosophy of science, derived from Dugald Stewart, that emphasised the priority of theory in all scientific inquiry, and the essentially analytical nature of such theory (Corsi 1987). As developed and popularised by Senior (1852) it became the foundation of methodological orthodoxy later expounded by J.N. Keynes (1891) and Lionel Robbins (1932), recognised in present-day textbooks as 'positive economics'. The boundary between political economy and Christian theology, now so obvious and impermeable, was thus erected for the first time in 1831 by Whately – in response to an ideological crisis that was ultimately traceable to the publication thirty years before of Malthus's first *Essay on Population*. It is important to realise that this boundary, which is a corollary of Whately's rigorous specification of the scope and nature of political economy, is the *fons et origo* of all subsequent boundaries between economics and other inquiries.

Exchange at the boundary

It is only when the existence of a boundary has been generally recognised that there can be any 'exchange at the boundaries'. Whately himself was the first to undertake any such 'exchange' consciously and knowingly.

Before accepting his appointment as Drummond Professor, Whately had thought of 'making a sort of continuation of Paley's "Natural Theology", extending to the body-politic some such views as his respecting the natural' (Whately 1866, I: 66–7). Though most of the *Introductory Lectures* were taken up with methodology, Whately did include one celebrated passage, eventually incorporated into Samuelson's (1958: 37–8) famous textbook, which describes the market solution of 'the problem of supplying with daily provisions of all kinds such a city as our metropolis' by individuals 'who think each of nothing beyond his own immediate interest' (Whately 1832: 93–4, 96). The radicals' quarterly described it sarcastically as 'one of the most beautiful pieces of Sunday reading it ever fell to the lot of the Westminster Review to recommend' (*Westminster Review*, January 1832: 10).

Yet it would appear that Whately was doing nothing different in this case from what Tucker, Sumner, and possibly even Smith had done; and in a sense this is so. The first two at any rate had intended to show that the unintended result of self-love in economic life may be socially beneficent, and that this can be taken as evidence of 'contrivance' in a wise and benevolent Author of Nature – whom they identified with the Judaeo-Christian God. Were they not, then, 'exchanging' at a boundary already in existence before 1831?

It is certainly the case that the purpose of natural theology is to show from the results of a strictly positive, scientific inquiry that knowledge of God may be had without any resort to putative 'revelation' (sacred scripture, tradition and the beatific vision). It is therefore of the essence that the data brought in evidence should be, and should be recognised to be, those which

may occur in the ordinary course of nature. If 'the laws of commerce' are indeed 'the laws of God' they are so in exactly the same way as are the laws of celestial mechanics discovered by Newton. But to Paley, Malthus and Sumner, Newtonian mechanics had been taught (as it had also been taught to Hume, and presumably by Smith in his Glasgow lectures on natural theology) almost as a branch of theology, and certainly as an adjunct to theology. Hence the distinction between 'science' and 'theology' was far less clear in their minds – and in the minds of their contemporaries – than it could ever be again after the intellectual turmoil created by the *Essay on Population*. Malthus and Sumner lived through that turmoil. But Malthus, though indeed a 'Christian moral scientist' (Winch 1993) was first and foremost an 'economist' – so-called as early as 1804 (James 1979: 167) – with little taste or talent for theological niceties. Sumner was primarily a theologian, with no methodological interest in the new science. Whately was neither, but a logician with a keen appetite for conceptual refinement. To him, therefore, belongs the credit for first recognising and defining a boundary which he then deliberately crossed.

At least two kinds of 'exchange at the boundaries' were now possible between political economy – or 'economics' as it eventually became – and Christian theology. In the first place, the latter could be used, as it already had been, to supply evidence of Divine contrivance in the 'spontaneous' order – Hayek's terminology is carefully untheological[5] – which arises unintentionally out of the self-love of individuals. Second, in societies which continued to acknowledge Christianity as the public religion, economics could be combined with theology in the construction of normative social theory.

Natural theology continued to flourish in nineteenth-century Britain and America, undisturbed by Hume's posthumous *Dialogues Concerning Natural Religion*, until the appearance of *Origin of Species*. Darwin's great work (Darwin 1899 [1859]) compelled Victorians – who assumed hitherto that Hume had been adequately answered by Paley, Whately, and others – to acknowledge that nature may afford no evidence of 'design'. It was thus in the 1860s, Keynes believed, that 'Christian dogma fell away from the serious philosophical world of England, or at any rate of Cambridge' (Keynes 1971 [1933]: 168). Until that time political economy was frequently pressed into theological service, as, for example, in Frédéric Bastiat's *Harmonies* (1850), or textbooks by the American, Henry Carey (1837) – who like Bastiat preferred to contemplate the 'harmony' apparent in *WN* rather than the 'discord' introduced by Malthus and Ricardo.

The other respect in which there has been border-crossing between economics and theology is of more recent date, and is the consequence of a belated recognition by ecclesiastical authorities of Whately's claim that economics may be regarded as an ethically neutral science of means, autonomous with respect to theology. At least since the papal Encyclical *Quadragesimo Anno* (1931), but especially since a revival of interest in

economic policy by many churches in the 1970s, it has come to be thought that economic science may be employed as a means to social ends proposed by Christian theology. Many conferences between economists and theologians have taken place in the last twenty years (e.g. Block, Brennan and Elzinga 1985; Block and Hexham 1986); a flourishing *Association of Christian Economists* was founded in the USA during the 1980s; and numerous books by economists and others have appeared on various aspects of 'Christianity and Economics' (e.g. Brennan and Waterman 1994; Dean and Waterman 1998; see Waterman 1987b for bibliography).

Though Whately's demarcation has become so much a part of methodological orthodoxy in economics that few now realise how or when it came into being, it must not be supposed that it is, or has been, universally accepted. For although French economists such as J.-B. Say appear to have taken the autonomy of economics for granted, those whose sympathies lay with the *ancien régime* were still inclined to regard economics as subservient to, or as part of, Christian theology. The most considerable of these, Alban de Villeneuve-Bargemont, published his *Economie Politique Chrétienne* in 1834. At the outset of his study, Villeneuve records,

> un horizon vague et immense s'était offert à mes regards; peu à peu, *à l'aide surtout du phare lumineux du christianisme*, il me sembla que l'on pouvait distinguer nettement les causes des désordres moraux et matériels des sociétés: les faits se classèrent naturellement.
>
> [a vague and immense horizon offered itself to my view; little by little, and above all *by means of the guiding light of Christianity*, it seemed to me that one could clearly discern the causes of society's moral and material disorders: the facts classified themselves naturally.]
>
> (Villeneuve-Bargemont 1834, I: 20; my italics)

An Irish reviewer described Villeneuve's work as 'catholic in its faith, and catholic in its manner of conceiving science' (*Dublin Review* July 1837: 175). It influenced subsequent French and German catholic social theorists, and through them the famous Encyclical of Leo XIII, *Rerum Novarum* (Waterman 1991c). Among protestant economists, a similar unwillingness to recognise the autonomy of economic science has been evinced by those of the Dooyeweerdian, Neo-Calvinist tradition associated with the Free University of Amsterdam. According to this school of thought, there can and ought to be a 'Christian economics' which might in principle differ both in method and results from 'secular economics' (e.g. Vickers 1975, 1976; Tiemstra 1990).

It is evident that 'Christian economics', whether of the catholic or protestant variety, obliterates the boundary between economics and theology. In such work, therefore, there can be no 'exchanges at the boundary'.

Notes

1 The sections on 'Diminishing Returns, Misery and Vice', 'Ideological Crisis in the 1820s' and 'Whately's Demarcation' are summaries of my previous work in these areas and I must apologise for repeating them here. I have done so because they are important elements in the larger story I now wish to tell, a story which was not apparent to me when I began my research more than a decade ago.

2 However, I have lately discovered in the archives of Sidney Sussex College, Cambridge a bound set of lecture notes on 'Moral and Political Philosophy' by a former Fellow of the College, the Revd John Hey (1734–1815), later the first Norrisian Professor of Revealed Theology. From internal evidence the lectures appear to date from the early 1770s, though frequently revised until the mid-1780s. Three or four of these lectures deal with what we should now recognise as price theory, and arise in the context of Christian casuistry and the doctrine of the 'just price'.

3 'Providence' is mentioned twice in the Introduction to the *Essay on Trade*, and at one other point 'Liberty of Conscience' is explicated as 'Every Man is permitted to worship GOD in the Way he thinks the *right* and *true*' (Tucker 1993 [1749]: ii, xi, 33). Aside from these there is no other trace of theological language; less indeed than in *WN*.

4 However, I have recently argued that Smith's account of the relation between the profit rate and capital accumulation rules out any 'canonical' interpretation of *WN* that incorporates diminishing returns into its growth theory (Waterman 1999).

5 The expression 'the spontaneous order of nature' first occurs in J.S. Mill's posthumous essay 'On Nature' (Mill 1963–91, 10: 381).

Bibliography

Anon. (1807) *A Summons of Awakening, or, the Evil Tendency and Danger of Speculative Philosophy*, Hawick.

Bastiat, F. (1850) *Harmonies Economiques*, Paris: Guillaumin.

Berkeley, G. (1953 [1735–37]) *The Querist*, in A.A. Luce and T.E. Jessop (eds) *The Works of George Berkeley*, 9 vols, Vol. VI, London: Nelson.

Berlin, I. (1956) (ed.) *The Age of the Enlightenment*, New York: Mentor.

Block, W. and Hexham, I. (eds) (1986) *Religion, Economics and Social Thought: Proceedings of an International Conference*, Vancouver: Fraser Institute.

Block, W., Brennan, H.G. and Elzinga, K. (eds) (1985) *The Morality of the Market: Proceedings of an International Conference*, Vancouver: Fraser Institute.

Boswell, J. (1934) *Boswell's Life of Johnson*, G.B. Hill (ed.), revised Powell, 6 vols, Oxford: Clarendon.

Brennan, H.G. and Waterman, A.M.C. (eds) (1994) *Economics and Religion: Are They Distinct?*, Boston: Kluwer.

Burke, E. (1981–97) *The Writings and Speeches of Edmund Burke*, P.K. Langford *et al.*, (eds), 9 vols, Oxford: Oxford University Press.

Butler, J. (1969 [1726]) *Fifteen Sermons Preached at the Rolls Chapel* and *A Dissertation upon the Nature of Virtue*, W.R. Matthews (ed.), London: Bell.

Cantillon, R. (1931 [1755]) *Essai sur la Nature du Commerce en Général*, ed. and transl. H. Higgs, London: Macmillan for Royal Economic Society.

Carey, H.C. (1837) *Principles of Political Economy*, 3 vols, Philadelphia.

—— (1856) *The Harmony of Interests, Agriculture, Manufacturing and Commerce*, 2nd edn, New York.

Cassirer, E. von (1951) *The Philosophy of the Enlightenment*, transl. F.C.A. Koelln and J.P. Pettegrove, Princeton NJ: Princeton University Press.

Chadwick, W.O. (1975) *The Secularisation of the European Mind in the Nineteenth Century*, Cambridge: Cambridge University Press.

Coats, A.W.B. (1993) *The Sociology and Professionalisation of Economics: British and American Essays*, 2 vols, Vol. 2. London: Routledge.

Copleston, E. (1819) *A Letter to the Right Hon. Robert Peel, MP for the University of Oxford ...*; and *A Second Letter to the Right Hon. Robert Peel, MP for the University of Oxford ...*, Oxford: Murray.

Corsi, P. (1987) 'The heritage of Dugald Stewart: Oxford philosophy and the method of political economy', *Nuncius*, 2: 89–143.

Darwin, C. (1899 [1859]) *The Origin of Species by Means of Natural Selection, or, The Preservation of Favoured Races in the Struggle for Life*, with additions and corrections from the sixth and last English edition, New York: Appleton.

Dean, J.M. and Waterman, A.M.C. (1998) (eds) *Religion and Economics: Normative Social Theory*, Boston: Kluwer.

Eltis, W.A (1984) *The Classical Theory of Economic Growth*, London: Macmillan.

Gascoigne, J. (1989) *Cambridge in the Age of the Enlightenment*, Cambridge: Cambridge University Press.

Gay, P. (1966–9) *The Enlightenment: An Interpretation*, New York: Knopf, 2 vols.

Gilley, S. (1981) 'Christianity and enlightenment: An historical survey', *History of European Ideas*, 1, 2: 103–21.

Hamowy, R. (1987) *The Scottish Enlightenment and the Theory of Spontaneous Order*, Carbondale IL: Southern Illinois University Press.

Hayek, F.A. (1978) *New Studies in Philosophy, Politics and the History of Ideas*, Chicago: University of Chicago Press.

Hinds, S. (1831) *An Inquiry into the Proofs, Nature and Extent of Inspiration, and into the Authority of Scripture*, Oxford: Parker.

Hollander, S. (1997) *The Economics of Thomas Robert Malthus*, Toronto: University of Toronto Press.

Hume, D. (1888 [1739–40]) *A Treatise of Human Nature*, ed. L.A. Selby-Bigge, Oxford: Clarendon.

—— (1994) *Political Essays*, K. Haakonssen (ed.) *Cambridge Texts in the History of Political Thought*, Cambridge: Cambridge University Press.

Jacob, M.C. (1981) *The Radical Enlightenment: Pantheists, Freemasons and Republicans*, London: Allen and Unwin.

James, P. (1979) *Population Malthus: His Life and Times*, London: Routledge and Kegan Paul.

Jones, P.d'A. (1968) *The Christian Socialist Revival: Religion, Class and Social Conscience in Late-Victorian England*, Princeton: Princeton University Press.

Kaye, F.B. (1924) 'Introduction' in Bernard Mandeville, *The Fable of the Bees*, Oxford: Clarendon, vol. I: xvii–cxlvi; facsimile reprint by the Liberty Fund, Indianapolis: Liberty Press, 1988.

Keynes, J.M. (1971 [1933]) *Essays in Biography*, in E. Johnson and D. Moggridge (eds) *The Collected Writings of John Maynard Keynes*, 29 vols, vol. X, London: Macmillan.

Keynes, J.N. (1891) *The Scope and Method of Political Economy*, London: Macmillan.

Kleiman, E. (1987) 'The "just price" in Talmudic literature', *History of Political Economy* 19, 1: 23–44.

Lloyd, P.J. (1969) 'Elementary geometric/arithmetic series and early production theory', *Journal of Political Economy* 77: 21–34.

Maclaurin, C. (1775 [1748]) *An Account of Sir Isaac Newton's Philosophical Discoveries*, 3rd edn, London: Nourse.

Malthus, T.R. (1798) *An Essay on the Principle of Population as it Affects the Future Improvement of Society, with Remarks upon the Speculations of Mr Godwin, M. Condorcet, and Other Writers*, London: Johnson; facsimile reprint for Royal Economic Society, London: Macmillan, 1966.

—— (1989 [1803]) *An Essay on the Principle of Population* (edition published in 1803 with variora of 1806, 1807, 1817, 1826) ed. Patricia James, 2 vols, Cambridge: Cambridge University Press.

—— (1986 [1815]) *An Essay on the Nature and Progress of Rent*, in T.R. Malthus, *The Works of Thomas Robert Malthus*, 8 vols, Vol. 7, London: Pickering.

—— (1817) *An Essay on the Principle of Population, or, A View of its Past and Present Effects on Human Happiness, with an Inquiry into our Present Prospects Respecting the Future Removal or Mitigation of the Evils which it Occasions*, (considered as 5th edn) London: Hunter.

Mandeville, B. (1924 [1714–28]) *The Fable of the Bees: Or, Private Vices, Public Benefits*, ed. F.B. Kaye, 2 vols, Oxford: Clarendon; facsimile reprint by Liberty Fund, Indianapolis: Liberty Press, 1988.

Marx, K. (1954) *Capital*, transl. S. Moore, E. Aveling, F. Engels, 3 vols, Moscow: Progress.

Mill, J.S. (1963–91) 'Nature', in *Three Essays on Religion* [1874], vol. 10 of *Collected Works of John Stuart Mill*, 33 vols, Toronto: University of Toronto Press.

Minowitz, P. (1993) *Profits, Priests and Princes: Adam Smith's Emancipation of Economics from Politics and Religion*, Stanford CA: Stanford University Press.

Mizuta, H. (1996) *Adam Smith's Library: A Catalogue*, Oxford: Clarendon.

Negishi, T. (1993) 'A Smithian growth model and Malthus's optimum propensity to save', *European Journal of the History of Economic Thought* 1, 1: 115–27.

O'Brien, C.C. (1993) *The Great Melody*, London: Minerva.

Paley, W. (1825a [1785]) *The Principles of Moral and Political Philosophy*, in W. Paley, *The Works of William Paley, DD*, ed. Edmund Paley, 7 vols, Vol. IV, London: Rivington.

—— (1825b [1802]) *Natural Theology*, in W. Paley, *The Works of William Paley, DD*, ed. Edmund Paley, 7 vols, Vol. V, London: Rivington.

Plato (1953) *The Republic*, with English translation by P. Shorey, London: Heinemann.

Pocock, J.G.A. (1985) 'Clergy and commerce: the conservative enlightenment in England', in R. Ajello, M. Firpo, L. Guerci and G. Ricuperati (eds) *L'Eta dei Lumi: Studi Storici sul Settecento Europo in Onore di Franco Venturi*, 2 vols, Vol. I, Naples: Jovene.

Pyle, A. (ed.) (1994) *Population: Contemporary Responses to Thomas Malthus*, Bristol: Thoemmes Press.

Raphael, D.D. and Macfie, A.L. (1976) 'Introduction' in A. Smith, *The Theory of Moral Sentiments*, eds D.D. Raphael and A.L. Macfie, Oxford: Clarendon.

Ricardo, D. (1951 [1817]) *On the Principles of Political Economy, and Taxation*, in P. Sraffa (ed.) *The Works and Correspondence of David Ricardo*, 11 vols, Vol. I, Cambridge: Cambridge University Press.

Robbins, L. (1932) *An Essay on the Nature and Significance of Economic Science*, London: Macmillan.

Ross, I.S. (1995) *The Life of Adam Smith*, Oxford: Clarendon.

Samuelson, P.A. (1958) *Economics: An Introductory Analysis*, New York: McGraw-Hill.

—— (1978) 'The canonical classical model of political economy', *Journal of Economic Literature* 16: 1415–34.

Schumpeter, J.A. (1954) *History of Economic Analysis*, London: Allen and Unwin.

Senior, N.W. (1852) *Four Introductory Lectures on Political Economy, Delivered before the University of Oxford*, London: Longmans, Brown, Green and Longmans.

Shelton, G. (1981) *Dean Tucker and Eighteenth Century Economic and Political Thought*, London: Macmillan.

Smith, A. (1976 [1759]) *The Theory of Moral Sentiments*, eds D.D. Raphael and A.L. Macfie, Oxford: Clarendon.

—— (1976 [1776]) *An Inquiry into the Nature and Causes of the Wealth of Nations*, eds R.H. Campbell, A.S. Skinner and W.B. Todd, 2 vols, Oxford: Clarendon.

Stangeland, C.E. (1904) *Pre-Malthusian Doctrines of Population: A Study in the History of Economic Theory*, New York: Columbia University Press.

Steuart, J. (1966 [1767]) *An Inquiry into the Principles of Political Oeconomy*, ed. A.S. Skinner, 2 vols, Edinburgh: Oliver and Boyd for Scottish Economic Society.

Stigler, G.J. (1952) 'The Ricardian theory of value and distribution', *Journal of Political Economy* 60, 3: 187–207.

Sumner, J.B. (1816) *A Treatise on the Records of the Creation: with Particular Reference to Jewish History, and the Consistency of the Principle of Population with the Wisdom and Goodness of the Deity*, 2 vols, London: Hatchard.

Tawney, R.H. (1936 [1925]) *Religion and the Rise of Capitalism*, London: Murray.

Tiemstra, J. (1990) *Reforming Economics: Calvinist Studies on Method and Institutions*, Lewiston: Mellen.

Tucker, J. (1993 [1749]) *A Brief Essay on the Advantages and Disadvantages which respectively Attend France and Great Britain, with Regard to Trade. With some Proposals for Removing the Principal Disadvantages of Great Britain, in a New Method* (facsimile reprint of 3rd edn) in J. Tucker, *The Collected Works of Josiah Tucker*, with a new introduction by Jeffrey Stern, 6 vols, Vol. 1, London: Routledge/Thoemmes.

—— (1993 [1755]) *The Elements of Commerce and Theory of Taxes* (privately printed by Tucker in 1755, first published in 1931; reprinted from Schuler's 1931 edn) in J. Tucker, *The Collected Works of Josiah Tucker*, with a new introduction by Jeffrey Stern, 6 vols, Vol. 3, London: Routledge/Thoemmes.

—— (1993 [1757]) *Instructions for Travellers* (facsimile reprint of 2nd edn) in J. Tucker, *The Collected Works of Josiah Tucker*, with a new introduction by Jeffrey Stern, 6 vols, Vol. 3, London: Routledge/Thoemmes.

Turgot, A.R.J. (1970 [1768]) 'Observations sur le mémoire de M. de Saint-Péravy en faveur de l'impôt indirect', in A.R.J. Turgot, *Écrits Économiques*, ed. B. Cazes, Paris: Calman-Lévy: 204–20.

Vickers, D. (1975) *Man in the Maelstrom of Modern Thought: An Essay in Theological Perspectives*, Nutley NJ: Presbyterian and Reformed Publishing Company.

—— (1976) *Economics and Man: Prelude to a Christian Critique*, Nutley NJ: Craig.

Villeneuve-Bargemont, A. de (1834) *Economie Politique Chrétienne, ou Rechrches sur la Nature et les Causes du Paupérisme, en France et en Europe, et sur les Moyens de le Soulager et de le Prévenir*, 3 vols, Paris: Poulin.

Wallace, R. (1761) *Various Prospects of Mankind, Nature and Providence*, London: A. Millar.

Waterman, A.M.C. (1983) 'Malthus as a theologian: the "First Essay" and the relation between political economy and Christan theology', in *Malthus: Past and Present*, eds J. Dupâquier, A. Fauve-Chamoux and J. Grebenik, London: Academic Press.

—— (1987a) 'On the Malthusian theory of long swings', *Canadian Journal of Economics* 20, 2: 257–70.

—— (1987b) 'Economists on the relation between political economy and Christian theology: A preliminary survey', *International Journal of Social Economics* 14, 6: 46–68.

—— (1991a) 'A Cambridge *Via Media* in late Georgian Anglicanism', *Journal of Ecclesiastical History* 42: 419–36.

—— (1991b) *Revolution, Economics and Religion: Christian Political Economy, 1798–1833*, Cambridge: Cambridge University Press.

—— (1991c) 'The intellectual context of *Rerum Novarum*', *Review of Social Economy* 49, 4: 465–82.

—— (1994) 'Whately, Senior and the methodology of classical economics', in H.G. Brennan and A.M.C. Waterman (eds) *Economics and Religion: Are They Distinct?*, Boston: Kluwer.

—— (1996) 'Why William Paley was "The First of the Cambridge Economists" ', *Cambridge Journal of Economics* 20: 673–86.

—— (1997a) 'Recycling old ideas: Economics among the humanities', *Research in the History of Economic Thought and Methodology* 15: 237–49.

—— (1997b) ' "Pure and rational religion": A theological reading of Adam Smith's *Wealth of Nations*', unpublished paper presented to Southern Economic Association, Atlanta, Georgia, November 1997.

—— (1999) 'Hollander on the "canonical classical growth model": A comment', *Journal of the History of Economic Thought* 21, 3: 311–13.

Whately, E.J. (ed.) (1866) *Life and Correspondence of Richard Whately, D.D., late Archbishop of Dublin*, 2 vols, London: Longmans, Green.

Whately, R. (1828) 'Oxford Lectures on Political Economy', *Edinburgh Review* (September): 170–84.

—— (1832) Introductory Lectures in Political Economy, 2nd edn, London: Fellowes.

Winch, D.N. (1993) 'Robert Malthus: Christian moral scientist, arch-demoraliser or implicit secular utilitarian?', *Utilitas* 5: 239–53.

—— (1996) *Riches and Poverty: An Intellectual History of Political Economy in Britain, 1750–1834*, Cambridge: Cambridge University Press.

3 History and economic analysis in German nineteenth-century economics

Peter Rosner

Modern economic analysis has a very weak connection with history. A good training in economics hardly comprises courses in history; and historic arguments are not highly valued in the discourse amongst economists. Some complain about this neglect, and consider it to be one of the causes which contributed to the 'remoteness' of economics from real affairs. On the other hand, hardly any historian is able to follow modern economic research as it needs much technical background. Of course there are many calls for better mutual understanding and cooperation; there is, however, currently not much love lost between economics and history.

It is well known that the situation has not always been like this. Before the advance of analytic methods, economists used to have much more knowledge about history. This paper asks: What was the use of this knowledge for economics? In which way did it contribute to the development of economic theory? Of what particular interest was the use of historic knowledge by German economists during the nineteenth century, as they were explicit about the necessity to connect economics with history. Four authors are discussed: Rau, Roscher, Marx and Schmoller. Three of them were important for the economic training of Germans as they wrote the most important textbooks of their time. The fourth – Karl Marx – provided the economic arguments for the socialist movement: first, in Germany and Austria and, later, all over the world.

Five propositions are put forward:

1 Rau used history in the same way as Smith had done before him – namely, as supporting and illustrative examples for general propositions. This is not different from the way one uses stylised facts and statistical material to support general propositions nowadays.
2 Roscher and Marx were pursuing questions of history which they borrowed from philosophy of history. Economics was meant to uncover laws of the historic development of human societies. The main difference between Roscher and Marx is that in Roscher's writings the relation between economics and history remained vague and was mostly related to ethical questions, whereas Marx turned towards classical

political economy and searched for economic laws which supported his claim that societies do change in a specific way.

3 For Roscher as well as for Marx social wholes, namely nations and classes, were seen as historic and economic actors. It led both authors to a methodological ambiguity. Economics in the traditional sense proceeds by analysing actions of individuals and asks for the aggregate result. Taking nations and classes as wholes, however, demands a different approach and gives history a more prominent role.

4 Schmoller, the founder of the younger historical school, changed the object of economics completely. It should become the study of economies which are seen only as wholes. Individual persons are relevant only insofar as they are part of such a whole. Development cannot be studied in relation to economic laws, as it was done by Marx, but is understood as an abstract bettering with the then current society as a reference point for evaluation. Economic theory is supplanted by history.

5 The relation between economics and politics changed also in a specific way. For Rau, who is the closest to modern mainstream economics among the authors discussed, economics can analyse what are the results of specific institutions by looking into the incentives these institutions create for self-interested individuals. Although there is no direct political drive in Rau's writings, he clearly favours institutions which are good for the accumulation of wealth. Roscher and Marx, each of whom had a theory of social and economic development, were hostile to drawing conclusions for economic policy in the narrow sense of the word. History has to take its course. Schmoller also puts the emphasis on economic development, but he saw himself with his research programme as a participant in the civilising progress which constitutes history.

History as examples 1: Adam Smith

The Scottish Enlightenment followed two approaches to get an understanding of societies: history of contemporaneous societies and their systematic analysis. These two approaches were closely related: the history of the European societies as well as the differences between the structure of these societies and those of other continents were understood in relation to a development which could be analysed systematically. Not only the differences of governments – aristocracy, democracy, monarchy, tyranny, etc. – were taken into account, but also the social structure of societies were the subject of analysis. Differences between societies – whether at different times in the same state or at the same time in different states – were seen as consequences of different social structures and different social institutions. Moreover, the development of new technologies was seen in relation to social structures as well. Questions concerning the emergence of social ranks

(Millar 1779) and the rise and decline of social systems (Ferguson 1767; Smith 1978 [1763]) were pursued.

These theories not only provided a clue to the understanding of history, they also provided a reference point for ethical evaluation of the order of societies. More freedom in later societies was valued positively not only for itself, but also for the incentives it provided for the creation of wealth. Poverty was no longer seen as a necessity to make people industrious, but as an evil which could be overcome through labour (Furniss 1965; Rosner 1982). Differences in wealth between societies were not merely a question of chance, nor were members of richer societies morally better or governed by wiser men. They had better technologies and better social institutions. The relation between technologies and social institutions was an important topic discussed in this literature.

This historic analysis was not meant to have immediate political consequences, rather it was the result of the quest for a general understanding of the development of societies and their institutions which emerged after having abandoned the idea that there was a God given order. On the other hand, the analysis of the structure of a given society without looking into its historic origin was important for practical political reasons: a good society could be designed by philosophers and could then be implemented through political reforms. By arguing which institutions were more appropriate for a specific purpose, the scientist posed as political reformer.

Smith and Hume were among the first to separate the analysis of the structure of a given society from that of its development. Both were proficient in making historic analysis; their pure economic writings, however, were meant to be valid for all societies. This can clearly be seen, for example, in the Glasgow edition of Smith's *Lectures on Jurisprudence* (Smith 1978 [1763]): whereas the material presented in the first part is primarily historical, the material of the second part is used for a systematic theory. The economic analysis as presented in this second part of the *Lectures* and in the *Wealth of Nations* as well should not give merely an analysis of any particular society, rather a systematic treatment to evaluate policies for all societies.

Nevertheless, Smith's exposition contains a lot of historic material; and that differs from modern presentations of economic theory. It is sometimes claimed that these different presentations are due to different types of theory: namely, that Smith incorporated the knowledge of history and of institutions into his analysis. This characteristic, which modern economic analysis lacks, makes his analysis more realistic compared with modern theories, which usually start with a list of assumptions that never fully fit reality. But if one looks closer at the way Smith used historic material, one can see that this is not very different from the way modern applied theory uses data.

It is either used as empirical material to test an assertion or in a way stylised facts are mentioned in modern economic literature. The long digression on the value of silver is an example of the former (Smith 1976 [1776]: 195 ff.), as it should prove a theoretical assertion, namely, one concerning

the value of commodities.[1] An example of the latter type of use is Smith's proposition about the relation between a structure of society and the way wars are fought (ibid.: 688 ff.). In that case the examples from history should support the claim that in more developed societies – i.e. societies with a higher degree of division of labour – fighting becomes a separate profession.[2]

Today no one working scientifically would take such examples from history or from other states as proof for a proposition. But Smith could not rely on any generally accepted set of systematically collected data. Even crude empirical evaluations of propositions which one can make today by pointing at some already existing tables could not be provided then. Material from history had that important function for the presentation of the theory: in the absence of any systematic data collection and data presentation there was no other way to use empirical material for the support or the refutation of general propositions than to take recourse to facts from history. Historic research was necessary as economics was an empirical science.

History as examples 2: Karl Heinrich Rau

Karl Heinrich Rau saw himself standing in the tradition of Smith (Rau 1826: viii). This does not imply that he was adherent to any kind of labour theory of value, but that he was looking for general laws of economics for all nations, as Smith, Say and Ricardo had done before him. He was the most influential German economic author in the first half of the nineteenth century. His *Grundsätze der Volkswirtschaftslehre* (1826), his *Grundsätze der Volkswirthschaftspflege* (Rau 1828), and his *Grundsätze der Finanzwissenschaft* (Rau 1837) had been the most important textbooks in economics in Germany at his time until they were supplanted by the textbooks of Roscher. Before he wrote his textbooks he had published a book about guilds and corporations of artisans (Rau 1816), and some articles in which he pursued questions of policy and doctrinal history (Rau 1821). In all his works he made ample use of historic material.

In the book on guilds Rau used historic material to show that the question of guilds and free entry has always been a political question. The historic development, described in the first part of the book, is devoid of any systematic argumentation. However, when he investigates whether the restriction of free entry is favourable or rather a disadvantage for the society at large, he gives systematic arguments. For example, he distinguishes between free entry to the market and free entry to the profession: free entry to the market implies that everybody can supply goods and services without control of guilds, whereas free entry to the profession only implies that guilds have to accept every one who meets the necessary requirements. He rejects the former for reasons of lack of information for the customers and of the danger for the suppliers who may lose too much due to sunk costs, and

favours the latter to increase competition (Rau 1816: 70). When he analyses the effects of regulations he looks at the incentives which they create, and when considering the difference between a guild system and a free market system, he points to the greater volatility of prices in a free market system, which influences welfare negatively (ibid.: 96 ff.). The arguments he gives are typical for economic theory.[3] Namely, everybody acts for his or her private interest and there are informational constraints. A few examples from history are given to provide illustrating material.

In Rau's collection of essays on diverse economic topics, historic material is also presented; this is of particular importance when inquiring into the conditions of long-term economic development. The relation between freedom and division of labour, between the structure of the landscape and agriculture, between the size of estates and the social mode of production are investigated in this context.

The first volume of his textbook was a systematic treatment of economic theory, the second dealt with questions of policy, the third with public finance. However, policy in these books is nothing but applied theory, namely general propositions applied to specific situations. Rau accepted Smith's political as well as methodologically important conceptual basis, namely, that economic theory primarily has to analyse societies without taking the state and its government into consideration (Rau 1826: x). This approach resulted in a position concerning economic policy which is not alien to modern mainstream economics: there is a general presupposition that the self-interest of persons will further economic welfare, if proper regulations safeguard competition and easy access to markets (Rosner 1997). There may be circumstances, to be worked out by economic analysis, in which state interference can increase welfare. The burden of proof is always with those who argue for state intervention. This position can be called the implicit liberalism of economic analysis, which clearly is a fundament of modern mainstream economic theory as well.

This methodological basis gave history a similar place in Rau's theory as it had had in Smith's oeuvre. Throughout his text there are many historic examples of analytically worked out propositions. For example, in the chapter on mining (Rau 1826: 274 ff.) he states that due to the low costs of transportation of gold and silver there is fierce competition between different mines, resulting in low profits. On the other hand, minerals with high transportation costs allow high profits provided demand is strong (ibid.: 277). Such a proposition needs empirical validation. Today, econometric methods based on data from publicly available balance sheets would be used to evaluate these propositions. Rau, lacking this possibility, gave examples from history in the footnote to the following paragraph:[4]

> The information about the profits of a few mines in the Sachsian *Erzgebirge* show clearly the influence of the inflow of the cheaper American metals on the European mining industry. For instance, the

> pure profits which were distributed in Annaberg to the owners, amounted to
>
> 1496–1505: a yearly average of 60 499 *fl.*
>
> 1562–1571: a yearly average of 11 368 *fl.*
>
> 1580–1599: a yearly average of 3 233 *fl.*
>
> (Rau 1826: 278)

There are many similar examples in the volumes of Rau, and there is hardly a paragraph which does not quote literature containing empirical material – i.e. historic material – to support a proposition. Be that as it may, history itself has no part to play.

There is a further parallelism between Smith and Rau. First, economic analysis should provide the basis for the advancement of a rational policy to increase wealth and welfare of societies. Second, though societies are different, and though there is a historic development, all societies can be analysed with the same method. Whether an institution is appropriate for the advancement of wealth and welfare is to be judged independently from the society under consideration. There is no historic relativism concerning the normative evaluation of institutions of society. In this respect also, Smith and Rau can be seen as precursors of modern mainstream economics.

History as systematic development 1: Wilhelm Roscher

For Roscher, who is usually credited with having been the founder of the German Historical School, empirical material provided by history had a different function. It was not merely supportive for theoretical deliberations; rather, it provided the basis for all economic theory. However, the economic theory Roscher envisaged was very different from the earlier theories of Smith and of Rau. It should become a general theory of social and political development, similar to the earlier theories of the Scottish Enlightenment before economic analysis was separated from history, and, as will be argued below, similar to Marx's economic theory.

Already in his outline of an economic course *Grundriß zu Vorlesungen über die Staatswirthschaft: Nach geschichtlicher Methode* (Roscher 1843) he sketched his ideas of the relation between economics and history. The word *Staatswirthschaft* (economics of the state) which Roscher used in the title is programmatic. It would be misleading to identify this word with a concept of public finance, because it would presuppose a systematic separation between the economy and the state, such as it is assumed in modern economic analyses, and as it was envisaged before Roscher by Smith and by Rau. However, according to Roscher an economy cannot be understood outside its relation to the state, because the economy has to be seen as the economy of a nation in its institutional setting. Its social and political development is therefore of primary importance (see also: Knies 1930 [1863];

Dietzel 1864). This is a methodological and ontological position with important normative consequences. It led to a specific research programme.

Whereas economic theory in the tradition of Smith primarily pursued questions of economic wealth – as the title of Smith's *opus magnum* suggests – the historic method asked what were the fundamentals of the political realm (Roscher 1843: iv). Unlike the English tradition of Hobbes and Locke, where the relation between the individual and the state is discussed in terms of individual interests and external effects, Roscher asks why nations acted in this or that way politically.[5] However, as opposed to pure political history, which concentrates on the development of political institutions of a nation and the relation of a state with other political entities, Roscher envisages a theory of institutional development of nations. He presupposes the existence of an inner logic of development which can be found by systematic research.

From this follows the methodological principle that one has to look at the situation of different nations – namely, nations in different regions and nations at different times – to obtain the necessary material for discovering the underlying general structures. Existing economic structures are not merely theoretical concepts, but are seen as concretisations of existing general entities (Milford 1995). Therefore, the study of history – as well as of ethnology – is essential since it supplies the material needed to formulate the general laws; at the same time, it does not merely provide an illustration to support an argument or a source of data against which to test general propositions.

Only the historian is able to describe the real structures (*wirklichen Verhältnisse*):[6]

> Historic method: Inquiry into the political drives of mankind, which can be pursued only by a comparison of all nations. What is similar in the different development of nations [is] assembled as general law of development. The work of the historian and that of the scientist [are] alike. This historic method has objective truth, insofar as it does not proceed along a manifestly wrong track. The method is for the practitioner most instructive.
>
> (Roscher 1843: 2)

These general structures are not economic laws as they can be found in Smith or Rau, but laws of economic, social and political development. Therefore the economist should not look for laws of historically given societies, conceptualised as eternal entities, but for laws according to which these societies change.[7] In his primarily methodological book about Thukydides, Roscher writes explicitly that it is the task of the historian to discover 'the truth which for all nations and all times is absolutely valid to the same degree' (Roscher 1842: 33).

In this approach Smith's and Rau's individualism (in the sense of exam-

ining the question of the aggregate result of persons looking after their private interest) is given up. Persons are not seen by Roscher as being merely self-interested wealth or utility maximising individuals. They are culturally and socially integrated in a given society with all its institutions and its ethical valuations. Society is not a datum or an external condition as in most modern economic theories. There the specific society is an accidental extra which has to be considered for any empirical analysis; why a nation has the specific institutions it has, is, however, of no interest in current economic analysis. This question was also of minor importance for Smith as well as for Rau, since they were primarily interested in the problem whether the existing institutions of a nation are suitable for making it wealthy and to increase its welfare. This is the modern approach as well, namely when it is asked whether a specific economic institution will lead to a Pareto-optimal allocation. Roscher on the other hand sees differences between different nations as (i) different stages of a development of human culture, (ii) different endowments with natural resources, (iii) different technological knowledge and (iv) different amounts of capital accumulated. All these factors are interrelated.

To conceptualise societies as wholes, Roscher pursues the question of the psychological basis of human action (Roscher 1868 [1854]: 18). Self-interest does exist, namely the desire to get as many goods as possible. It is the human desire to better one's own economic position and can be found in every person. This self-interest is positively valued ('A mighty principle of creation, conservation and renewal!' (ibid.: 19)), but – fortunately – there is another human desire at work, namely, *Gewissen* (conscience), the basis for *Gemeinsinn* (public spirit)[8]. It is the very basis of any society (ibid.: 21), except of the very primitive ones, and allows one to speak about nations as wholes:

> In this sense the nation is undoubtedly a reality, not only the individuals which form it. Furthermore it is justified to say that every economy presupposes a will. Such a will is ascribed to individuals, also to legal persons and to the state, but not to the nation in its entirety. But the will need not be entirely conscious. ... That an economy is somehow planned can be seen most clearly in the economic laws and in the institutions of the state. But also, even without the direct interference of the state, in common and statutory law, in the community of language, customs and tastes, etc.: all things of great economic importance, upon which together the nature of the country, the origin, the history rest and which influence the state at least as much as they are influenced by the state.
>
> (Roscher 1868 [1854]: 22; see also Roscher 1843: iv)

Persons in all societies are considered to be equipped with the same natural desires – to be rich, to have family, to enjoy culture, to be free, to live in a

society, etc. Differences between societies emerge as the differences in the endowments with natural resources which give different incentives for the development of a culture – for example, the old European idea (or prejudice) that societies with an abundance of food due to a fine climate will not develop the virtues of industrious labour (Roscher 1868 [1854]: 63). Be that as it may, differences between nations are not accidental, but belong to the field of economic research. For example, the relation between self-interest and *Gemeinsinn* is not merely a datum. The analysis cannot proceed by looking at the difference between equilibria with and without altruistic preferences. The change of preferences also has to be analysed in the context of a historic development. This change is part of the change of culture which is related to the economy in the narrow sense of the word, without having a strict relation of cause and effect, as it was posited in other theories.[9] It is clear that with such an idea of social development, history has to be an essential part of economic analysis. It cannot be reduced to providing illustrative examples.

Two ideas concerning history can be found in Roscher's writings, namely that of the relation between technological and social development in the tradition of the Scottish Enlightenment, the other one that of a continuously ongoing rise and decline of nations. The latter idea belongs to the realm of the relation between history and economics as well and gets mentioned very often. It is closely connected with the concept of an organicistic theory of the economy: the laws of development not only show that there can be a progressive movement to the bettering of a society. A positive normative evaluation of progress is part of this analysis, as it is found in most of the enlightenment literature of the eighteenth century, but also that final decay is a necessary consequence.

This idea of flourishing and decay is topical all over Roscher's work. For example, increasing freedom of competition will have all the beneficial effects about which Smith had already written. They are the results of the principles of individual independence and of private property, and will therefore be found sooner or later in all societies with these two social institutions. But it is only beneficial if the appropriate virtues are prevalent.

> Free competition unleashes all the forces of the economy, the good ones as well as the bad ones. Therefore it speeds up the flourishing where the former dominate, but it accelerates the decay where the latter are prevalent. As it is the case with all liberties, so it is with the economic ones, namely that the abolition of external restraint is sustainable and useful for all only if it is replaced by a strict self-restraint.
>
> (Roscher 1868 [1854]: 186)

For the positive effect of general competition to dominate, it is of importance that there is a substantial middle class. This middle class is endangered by the very competition which gave it its importance, as the

freedom of commerce incites population growth and tends to worsen income inequality (Roscher 1899 [1881]: 875). A flourishing economy is characterised by a 'harmony between big, middle, and small amounts of wealth' (Roscher 1868 [1854]: 436). However, the distribution of wealth is not an external condition, rather the result of economic development. It is affected by accumulation of capital, by demographic development, by the extent of the division of labour, by economic institutions, etc. Each of these conditioning causes is conditioned by all other tendencies.

Another example of rise and decay is his analysis of consumption and its effects on the state of the economy. The old idea – or rather the prejudice – that too much consumption can be responsible for the decay of a nation and is a sign of moral decay, was in economic terms supported by the idea of the necessity to increase the capital stock.[10] On the other hand, since the early nineteenth century the wider public was haunted by the fear that because of technical progress there might be a tendency for an oversupply of goods. There may be not enough consumption to support all production. Say's discussion of this problem provided the answer (Sowell 1972), and this answer was considered valid by most economists. According to that idea, a high tendency for consumption is beneficial for production, even luxury can be advantageous for the increase of wealth, as it increases supply.

Roscher, for whom this problem was so important that he published an essay on the possibility of a general glut and another one on luxury (Roscher 1861), linked the problem of the appropriate amount of consumption to the flourishing and decay of a nation. In the tradition of pre-neoclassical economics Roscher used the distinction of necessary goods and goods for further and higher desires. He wrote that a nation which only satisfies its basic needs will finally experience a general glut, and that a nation which does not save will end up in penury (Roscher 1868 [1854]: 467). Whereas economic analysis usually looked for an economic law to find the right amount of consumption, Roscher put the question in moral terms. The luxury during flourishing times is beneficial. This is the luxury of the educated middle classes, and it is beneficial because it is not inimical to economising behaviour (ibid.: 479). It furthers progress and the increase of wealth and allows the lower classes to participate in higher consumption. This nice state must be supported by an income distribution which is not too unequal (ibid.: 485). But, on the other hand: 'For decaying nations luxury gets an insane and immoral character. Large costs will be made for insignificant pleasures; the high expenses of consumption even become its purpose. Perversity and effeminacy take the place of beauty and enjoyment of life' (ibid.: 488). Then he indulged in a description of excessive consumption in the Roman empire.[11]

Roscher does not provide an explicit theory of rise and decline of economies and remains rather metaphorical. He uses the image of a plant which starts its existence as a seed-corn, then grows into a flower and finally fades (Roscher 1868 [1854]: 49). He often uses the expression 'youth' and

'ageing' of a society. Other expressions he uses are those of a healthy and a sick nation.

Whereas in modern economic theory, as in the older theories of Smith and Rau, ethical valuations are kept outside the analysis, this moralistic setting is appropriate in the theory of Roscher as the economy is only one aspect of the development of a nation and should not be separated from its ethical development. But the ethical evaluation which is present all through Roscher's oeuvre carries its own relativity. Because in the end the decay of a nation cannot be avoided, its moral decay too is part of the historic necessity. One can enjoy the flourishing of a flower, bemoan its fading, as one can enjoy one's youth and suffer from ageing, but all that has to be accepted as inevitable.

The integration of history and economics which results in a mixing of normative and positive propositions, however, creates problems for the analysis. Roscher neither presents precise questions, nor does he intend to give answers to problems of economic policy (Rosner 1994). Smith and Rau were ahistoric in the political advice presented in their writings: because the structures of a good society are uniquely given and are independent from its history, the political conclusions are always clear and unambiguous. For example, freedom of competition is always an advantage, unless there is a market failure (Rosner 1997).

Roscher declines such a position. Political reforms have to be made at the appropriate time, because a nation has to be ripe for them. A few examples: free access to markets, which is generally considered beneficial by Roscher, was introduced too early in France under Turgot (Roscher 1899 [1881]: 870); the choice of the metal for circulation has to be made in accordance with the development of the economy (ibid.: 287); which taxes are appropriate in an economy is not to be decided on the basis of a general theory, but there is a natural order of differing taxes according to the development of the society (Roscher 1894 [1886]: 239), etc. Roscher does not write as an adviser of a fictitious assembly of wise persons who have to make decisions, as is usually done in applied economics, but he is looking at the course of history and gives comments. Anything else would interfere with the basic assumption of his theory: history will take its course.

Roscher's approach towards economic theory, namely to integrate economic theory in the narrow sense of the word with a theory of the developments of nations, remained rather embryonic. There is no systematic theory of social and economic development in Roscher's work. Economics and history are not linked in a unified approach. His *System der Volkswirthschaft* (the title of his textbooks as a whole) is organised in the same way as Rau's work, namely, in very short chapters – at most three pages – with a lot of notes at the end of each chapter containing many historic references and much historic material. In the main text the material from history is mostly relegated to the chapters which are explicitly historic. He often refers to his idea that a nation will have times of ascent and times of

decay, but how this idea is related to the economic development is completely open. This is not only strange in relation to Scottish enlightenment and to Hegel's philosophy of history, but to some aspects of Roscher's work as well. In the tradition of the aforementioned theories, he refers to the development of freedom in history and links the progress of history to the development of technology and accumulation of capital (Roscher 1868 [1854]: 123 ff.). He even notes that slavery in America will vanish, because slavery is unprofitable in the modern world (Roscher 1861: 20). But what the causes are of the decay of nations, to which he often refers, remains unclear. Probably he was afraid that in economically growing societies there is always a polarisation of the distribution of wealth, which will corrupt the higher classes (see also Roscher 1843: 45).

History as systematic development 2: Karl Marx[12]

About the same time as Roscher published his programmatic works – namely, the book about Thukydides and the *Grundriss zu Vorlesungen über die Staatswirthschaft* – Marx, together with Frederic Engels, worked on the manuscript which was published after their deaths under the title of *The German Ideology* (Marx and Engels 1973a [1843]). In this manuscript they were dealing with problems similar to those that had preoccupied Roscher: what are the fundamentals of the development of societies and in what way should they be analysed?

They took for granted the fact that societies develop according to some inherent logic. Their polemic was directed against some philosophers (Bruno Bauer, Max Stirner, Ludwig Feuerbach) who, arguing within the Hegelian tradition, had analysed the development of societies merely by taking recourse to the development of actual dominant ideas. Against this Marx and Engels set their materialistic interpretation of history, namely, that the development of societies can be understood only by looking into the way the economy of a society is organised.

This is a vague concept which gave rise to a lot of discussion. For the argument of this chapter, however, the following suffices: the institutions of a society which regulate its economic affairs – first of all, the property rights – must fit the political institutions and are closely linked to its technological knowledge and to its accumulated wealth. If the political institutions of a society do not conform to the underlying economic and social relations, the society under consideration is ripe for radical political change. Furthermore, if the economic and social relations inhibit the development of the productive forces, social changes are a precondition for economic development. The long-term development of a society, its history, is the main scope of economic analysis.

Although both Marx and Roscher consider the development of social and economic relations central for economics, there are important differences between these two authors. The former is more specific about the logic of

change than the latter. Whereas Roscher took recourse to the development of ethical virtues when analysing changes to the social and economic structures of a nation, Marx argued that in each society there is a class dominating the economy, in the sense that its members are organising the production. This class wants to organise political institutions, particularly those of the state, in such a way that they are subservient to its economic interest. This line of thought is worked out in the *Communist Manifesto* (Marx and Engels 1973 [1848]) and is probably amongst the most important tenets of Marx' theory. However, it was an insight of this analysis that in order to understand history one has to understand the economic laws of societies. Due to his materialism, economics was of far greater importance for Marx than it was for Roscher; it should provide the clue to the understanding of history.

Marx turned towards economic theory in the narrow sense of the word in order to work out a theory of historic development. Based on his readings of the authors of the classical school, he developed a price-theoretic framework for his analysis. This theory is, as all value theories, basically a static theory, namely that of an equilibrium. However, Marx's endeavour was to make it fruitful for the analysis of fundamental changes within the capitalist society. After all, it should provide the proof of the possibility and of the necessity of a radical change towards a socialist society, as it was envisaged already in the *Communist Manifesto* and in other early writings.

Using his value theory, Marx deduced Laws of long-term structural changes in his main economic work, *Das Kapital*. The most important ones are the following:

1 The tendency to increase the absolute amount of surplus value (s) by extending the labour time and the switch to the relative increase of surplus value (s/v) by decreasing the amount of labour time necessary for the production of wage goods (Marx 1968 [1867], vol. 1: chs 8–14). As the extension of the labour day has a natural limit, the production of surplus value is limited unless the time necessary for the production of wage goods (at subsistence level) can be decreased – the relative surplus value. However, that is the revolutionary aspect of modern capitalism.
2 The historic tendency of the rate of profit to fall due to the increasing organic composition of capital (c/v) (Marx 1968 [1867]: vol. 3: chs 13–15). This tendency can even lead to the final demise of capitalism.
3 The relation of values to prices, particularly in connection with the theory of absolute rent (Marx 1968 [1867]: vol. 3: ch. 45). Absolute rent is due to the lower organic composition of capital in low productivity, land intensive sectors of production. Therefore the value of their products is above the production prices at average profits. These sectors of production do not take part in the conversion of surplus-value into prices. Therefore an absolute rent can be paid. However, that is only possible as long as these sectors are not drawn into the conversion of

surplus-value into prices. That will happen in the course of economic development.

4 The tendencies towards concentration and centralisation of capital (Marx 1968 [1867]: vol. 1: ch. 23). The accumulation of capital in value units is closely connected with the development of technology and of the organisation of the production process within enterprises.

5 The emergence of modern means of finance and its repercussion on the development of capitalism (Marx 1968 [1867]: vol. 3: chs 21–7).

Unlike in modern growth theory, these developments are not merely changes of wealth and its components, but are closely connected with changes of the fabric of society and therefore give rise to political tensions. These tendencies and laws of development fit into Marx's programme, namely to relate historical changes to economic development and political turmoil. He wanted to show that when a society has reached a particular stage of development of its economic relations, it will not remain in static equilibrium. Every stage carries its own seed of destruction. Note that in each of the aforementioned cases technical and social developments are closely interrelated.

The much closer and more systematic relation between economic, social and political development in the theory of Marx, than in that of Roscher, gave history a different place in the works of Marx. *Das Kapital* contains long chapters on historic development, which are not merely digressions comparable to Smith's account of the development of the value of silver. The chapters on the working day (Marx 1968 [1867], vol. 1: ch. 8), on the division of labour and manufacture (ibid.: ch. 12), on machinery and big industry (ibid.: ch. 13), on primitive accumulation (ibid.: ch. 24), not only provide material against which a theorem can be tested, but are the expositions of the theorems.[13]

Besides the interest in the long-term development of societies, there are two further common traits in Roscher and in Marx. The first is methodological, namely, social wholes are seen as acting agents. When analysing the economic laws of a society, economists start from individual agents. This, of course, was already the case in the economic theories of Smith and Ricardo. Marx proceeded in the same way in his economic analysis. But since the development of a society can be understood only when one analyses the relation between political and economic changes, classes as acting wholes have to be taken into account. For example, when analysing absolute surplus value (Marx 1968 [1867], vol. 1: ch. 10) he describes the fight between the workers and the capitalists for the length of the working day as a political fight between groups. There can be no pure economic equilibrium to support a specific rate of exploitation. Politically acting classes are important agents, as there is a pure distributional conflict. Such political entities are not supplementary actors as, for example, unions in modern theories, but are essential for economic and social development.

The second common trait with Roscher relates to economic policy. Whereas, as already mentioned, modern economic theory supplies arguments for or against a policy with respect to the welfare of a given population, Marx as an economist did not plead for or against specific economic or social policies. He judges a specific policy merely on the basis of an historic question: is a proposed policy in line with the historic tendencies or against it? For example, the reduction of the working day is in line with the switch from the production of absolute surplus value to that of relative surplus value – i.e. towards technical progress. The working class can therefore fight for a reduction of the working day. The same logic applies to the envisaged change towards a socialist society: a socialist society is not merely better than a capitalist one, in a way a competitive economy is better than an economy with monopolies according to modern welfare analysis. The time has to be ripe for socialism; the means of production and the organisation of capital have to be sufficiently developed for this change.[14]

Abstract progress and political activism. History – a basis for political reform: Gustav Schmoller

Roscher and Marx, though looking for a systematic relation between economic development and overall historic changes, were economists in the sense the word is used today. This is obvious for Marx, since he looked for a price-theoretic framework for his economic laws; but also Roscher remained deeply rooted in the tradition of economics: the assumption of individuals acting self-interestedly is important for many propositions in his oeuvre. For Schmoller this is not any more true. He radicalises the approach of Roscher (and of Marx) in two aspects. First, economies must be considered as wholes, totally disregarding the actions of self-interested individuals. Second, persons have to be seen in their historic setting; this not only concerns the institutions to which they respond, but also the desires, the feelings of pleasure and pain, the ideas of justice, the propensity to care for the future – in short, everything that can be an argument in a utility function has to be seen in an historic context.[15]

These two points are closely related. For Schmoller, the founder of the younger historic school of economics in Germany, economics is not the study of economic laws, but of economies. An economy is an entity as a whole (Schmoller 1900, vol. 1: 3): a group of persons who are bound by law, by custom, or simply by a feeling of togetherness to solve their economic problem, namely to organise production and distribution. There are economies of families, as there are tribal economies, economies of villages, of towns, of nations – these are called *Volkswirtschaften* – and a world economy. Each economy is an entity. Persons who form these groups have as members of these entities the characteristics typical for that economy: certain desires, moral ideas, technological knowledge, etc. Persons are linked to one another not only by exchange or by relations of command in a unit of production,

but by mutual understanding and shared feelings. They are therefore able to pursue common purposes. Even an economy characterised by division of labour and by markets to integrate the independent agents must be conceived as a whole on the basis of common institutions, nationality, race, etc. Economies cannot be studied as the result of unintended consequences of individually planned actions, but have to be analysed as existing wholes. Nations or parts of nations as entities care for their members.

It would therefore be fruitless to analyse economies by taking recourse to actions of individuals without taking into account their total historic setting. For example, laws of demand and supply cannot be worked out unless one has empirical knowledge of desires, moral ideas, etc. In this context, the quest for an equilibrium price is meaningless, as any contract people agree upon is specific to all the conditions of the time. Amongst other things contracts must be consistent with prevailing ideas of justice. All that changes with the culture of a nation and must therefore be seen in its historic setting (Schmoller 1900, vol. 1: 24). Schmoller explicitly rejects the proposition of the older historic school, that persons are self-interested and public spirited as well, as being too general. There are many drives and virtues – e.g. tendency to work, to save etc. – which must be analysed in their historic setting (ibid., vol. 1: 33).

For Schmoller history has a greater role to play in economics than for Roscher or Marx, since only the study of history brings any relevant knowledge. But in contrast to the approach of Roscher (and of Marx), Schmoller's historicism is not rooted in a theory of economic development but is primarily a methodology which gives historic studies a dominant position. There are no economic laws to be found by research, there is only the history of economies. Schmoller himself complained that Roscher did not attempt to work out historic studies which he considered to be necessary for any scientific progress in economics.

> The difference between the younger historic school and him [i.e. Roscher] is that it is less quick with generalisations, that it has a much stronger desire to shift from a polyhistoric collection of data to special research of specific epochs, nations, and economic conditions. It demands most of all economic-historic monographs, the connection of all modern specialised research with its historic roots; it rather prefers to make understandable the development of single economic institutions than that of an entire economy or of the universal economy of the world.
> (Schmoller 1900, vol. 1: 118)

Due to the *Methodenstreit* this interest in economic history is usually seen as a disregard for theory. Such a view, however, is not justified, since it would belittle the differences between Schmoller and Menger. The dispute did not arise merely because Schmoller wanted to find the same type of theories by inductive generalisations which Menger wanted to find by deductive

reasoning. Schmoller denied that economic laws which were typical for classical economics, and had become dominant in economic theory after 1870, had any meaning at all.

Behind the interest in history lies an idea of development. But different from Roscher and Marx, Schmoller related development not to economic laws, but to a vague idea of progress: modern societies are richer and persons in these societies have virtues which are considered to be superior according to the ethical valuations within these societies. Schmoller writes about progress as if it were an actor in history. For example:

> Each progress in agriculture and in the sedentariness [of a tribe], each peaceful culture, each enlargement of the territory of a tribe, pressed for a division of labour, which liberates a part of the adult men temporarily or permanently of the burden of martial labour.
>
> (Schmoller 1918: 15)

> For the progress of culture [feudal bondage] was too rude a legal relation and too crude a division of labour; the bondage had to retreat and to vanish in the way in which the sentiments, the ideas of law had ennobled, the way in which better and more refined labour was demanded.
>
> (Schmoller 1918: 35)

> The division of labour is the great instrument of cultural progress, of greater welfare, of the greater and better productivity of labour.
>
> (Schmoller 1918: 79)

Numerous quotations like these can be found all over Schmoller's oeuvre: progress demands, development answers. Progress is abstract bettering with Schmoller's time as a point of reference.

With those two ideas – namely, the idea of economies as wholes, particularly *Volkswirtschaften* in their close relation to states, and the vague idea of progress – economics must be seen as a political science. It must serve a political purpose, namely, to support culture and progress as it is embodied in the states, the concretisations of modern economies (Meyer 1988). There existed two problems for Germany in the decades of Schmoller: unification and external strength on the one hand, and internal social peace on the other.

Schmoller saw the development towards the state under a uniform governance as a lasting achievement of the Prussian state of the eighteenth century (Schmoller 1884). This, of course, was progressive; however, it was not merely a question of the development of an economy. He considered institutionalised economies – states, nations, races – to stand necessarily against one another. There is a political and economic competition between states for economic supremacy:

> For us it was important to show, especially with the example of Brandenburg, that between the fifteenth and the seventeenth century the formation of the German territorial state was not only a political but also an economic necessity. ... It is an historic process, which strengthens the national feelings and memories, which puts the social and economic forces territorially together, which creates important national institutions of the judicial system and the economy, which leads the forces and organs unified in solidarity into a competitive fight with other territories. This fight entails many changes in customs, confiscations of ships and goods, territorial closures of trade, [and] national import and export prohibitions, while in the interior of the state the old contradictions are smoothed and commerce gets more freedom.
>
> (Schmoller 1884: 39)

The German state under Wilhelm continued the progress achieved under Frederic.

The other problem, namely, domestic peace, made Schmoller an academic political activist. As economics shows the close relation between the division of labour and the existence of classes (Schmoller 1875; Schmoller 1900, vol. 2: 496 ff.; Schmoller 1918), it should help to overcome the fissures in the society. Taking part in the political struggle with the means appropriate for an academician, namely, with research showing how internal peace might be obtained, was a logical consequence of his theories. Schmoller was partisan for the demands for social reform. Be that as it may, this was not due to a private ethical valuation, but, according to Schmoller, answered to the standard of democrats of his time. In his polemics against Treitschke, who had charged Schmoller and the academic social reformers (the so-called *Kathedersocialisten*) with being fellow-travellers of radical socialism (Schmoller 1875), he wrote that it is not him or other members of that group of professors who raise the question of justice for the lower classes, but the lower classes themselves who do it (ibid.: 19). He and his colleagues are merely aware of the demands of their time. It is not their ideal to overcome the existence of classes with a natural ranking amongst them, as there are higher and lower tasks to be fulfilled in a society. However, a mutual understanding between the classes has to be established, as all classes are necessary in the modern economy. After all the division of labour, important for any kind of progress, is the basis for the existence of classes (ibid.: 142 ff.). The social and economic development is a civilising force which works in favour of the unified state, not for the well-being of this or that class. To uncover the structure of this civilising force one needs history, as this is the only way to avoid the one-sidedness of any specific social science. Being partisan in favour of social reform is nothing but to help the demand for progress. There is not much economic theory in the writings of Schmoller; probably he should be seen rather in the context of the development of German political

theory in the nineteenth century where the consequences of the existence of classes for the political realm was discussed (Eder 1985: 285 ff.).

Conclusions

Today history is of minor importance for economics. This is due to its method. The continuously heralded call for interdisciplinary work is rarely explicitly disapproved, but hardly taken seriously. This chapter asks what earlier economists achieved by making ample use of history. Smith's *Wealth of Nations* serves as a reference point; it is not only seen as a major work on economics but, in addition, Smith's proficiency in using historic material cannot be denied. It is argued that Smith needed the material from history since it was the only material available for the empirical validation of his propositions. His use of history, therefore, is no different from our use of statistical material, in the same way as his theories are not systematically different from modern theories: he looks at the actions of individuals who are portrayed as being self-interested and examines the aggregate result. History has no role to play.

Rau is similar to Smith: history provides examples, which are necessary for the validation of theoretical propositions, but it has no theoretical importance. This is different for Roscher, Marx and Schmoller. The first two of them see long-term economic and social developments at the centre of economics. This is a result of taking nations, classes and other social wholes as existing entities, the histories of which can be analysed by economics. History, therefore, not only provides empirical material for validation but provides the phenomena to be analysed. Schmoller radicalises this approach and equates economics with a description of specific economies. There are no economic laws in the sense of Smith, or in the sense of economic development, as can be found in the writings of Marx; instead there is a progress towards a better state. The reference point for the underlying valuations is the Prussian state as Schmoller would have liked it to be: a well ordered, corporatist state that manages to integrate the lower classes without endangering the existence of hierarchical structures.

Notes

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1

> The value of that sort which sometimes does and sometimes does not afford rent, should constantly rise in proportion to that which always affords some rent. As art and industry advance, the materials of cloathing and lodging, the useful fossils and minerals of the earth, the precious metals and the precious stones should gradually come to be more and more

> in demand, should gradually exchange for a greater and a greater quantity of food, or in other words, should gradually become dearer and dearer.
> (Smith 1976 [1776]: 193)

2 In other places he makes digressions into pure history which are not related to economic theory at all. For example, his account of the development of philosophy taught at universities (Smith 1976 [1776]: 765–73).
3 In this context special institutional regulations are taken into account which are strange nowadays. As only masters could marry, the regulation of the number of guild masters was important for demography and total labour supply as well (Rau 1816: 103).
4 All German quotations in this chapter have been translated by the author.
5 The word 'nations' is used as a translation of 'Völker'.
6 In their early writings Marx and Engels used the same words – *wirkliche Verhältnisse* – in their polemic against the then prevailing philosophy.
7 Though there exist general laws of development of societies, one should be aware that one cannot learn from history (Roscher 1843: 40 ff.). This position, which is similar to that of Hegel's philosophy of history, looks strange: if there are general laws of history, why are nations unable to learn from them? To understand this, one has to look for the basis of the history – the will and consciousness of acting persons. The historian in his research stands outside the nations bound by their time and their realities when he looks for the truth. The only purpose of the research is to reflect on the development, but it cannot change the course of history, as this would mean an attempt to outwit it.
8 Roscher, a pious catholic, links *Gewissen* and *Gemeinsinn* to religious motives. For the approval of self-interest he also refers to a verse in the *New Testament* (Roscher 1868 [1854]: 19).
9 Roscher rejects materialist interpretations of history (Roscher 1843: 24).
10 Smith's distinction between productive and unproductive labour is an illustration of this idea.
11 In the context of demography, see Roscher (1868 [1854]: 543 ff.).
12 Given the restriction of space, the presentation of Marx can be much shorter, as his theory is probably better known to readers.
13 The history of economics as intellectual history was considered by Marx also as part of a systematic development.
14 This was taken very seriously by many socialist parties with a Marxist ideology. They considered it as their duty to fight politically for a rapid industrialisation along capitalist lines to reach the basis for the change towards socialism. Whether there could be a socialist revolution in Russia, due to its backwardness, was an important issue in the Bolshevik revolution. For Austria, Rosner (1987) shows that the Austrian social democrats argued in that way in their Marxist period up to the 1930s. They complained that the Austrian capitalists did not further the economic development of Austria.
15 This point was already directed against the emerging utility-based price theory.

Bibliography

Dietzel, C. (1864) *Die Volkswirtschaft und ihr Verhältnis zu Gesellschaft und Staat*. Frankfurt am Main: Sauerländer.
Eder, K. (1985) *Geschichte als Lernprozeß*, Frankfurt am Main: Suhrkamp.
Ferguson, A. (1767) *An Essay on the History of Civil Society*, Edinburgh: Bell.
Furniss, E.S. (1965) *The Position of the Laborer in a System of Nationalism*, New York: Kelley.

Knies, K. (1930 [1863]) *Die politische Ökonomie vom geschichtlichen Standpuncte*, 2nd edn, reprint, Leipzig: Büske

Marx, K. (1968 [1867]) *Das Kapital*, vol. 1, Berlin: Dietz.

—— (1966 [1894]) *Das Kapital*, vol. 3, Berlin: Dietz.

Marx, K. and Engels, F. (1973 [1843]) *Die Deutsche Ideologie*, Marx-Engels Werke vol. 3, Berlin: Dietz Verlag 1973.

—— (1973 [1848]) *Manifest der Kommunistische Partei*, Marx-Engels Werke vol. 4, Berlin: Dietz Verlag, 459–93.

Meyer, W. (1988) 'Schmoller's research program, his psychology, and the autonomy of social sciences', *Journal of Institutional and Theoretical Economics* 144: 570–80.

Milford, K. (1995) 'Roscher's epistemological and methodological position: its importance for the Methodenstreit', *Journal of Economic Studies* 22: 26–51.

Millar, J. (1779) *The Origin of the Distinction of Ranks*, 3rd edn, London: Murray.

Rau, K.H. (1816) *Über das Zunftwesen und die Folgen seiner Aufhebung*, Leipzig: Joachim Göschen.

—— (1821) *Ansichten der Volkswirtschaft mit besonderer Beziehung Deutschland*, Leipzig: Joachim Göschen.

—— (1826) *Grundsätze der Volkswirthschaftslehre*, Heidelberg: Universitätsbuchhandlung C.F. Winter.

—— (1828) *Grundsätze der Volkswirthschaftspflege*, Heidelberg: Universitätsbuchhandlung C.F. Winter.

—— (1837) *Grundsätze der Finanzwissenschaft*, Heidelberg: Universitätsbuchhandlung C.F. Winter.

Roscher, W. (1842) *Leben Werk und Zeitalter des Thukydides*, Göttingen: Wandenhoeck und Ruprecht.

—— (1843) *Grundriß zu Vorlesungen über die Staatswirthschaft. Nach geschichtlicher Methode*, Göttingen: Dieterische Buchhandlung.

—— (1861) *Ansichten der Volkswirthschaft aus dem geschichtlichen Standpunkte*, Stuttgart: Cotta.

—— (1868 [1854]) *Die Grundlagen der Nationalökonomie (System der Volkswirtschaft Bd. 1)*, 7th edn, Stuttgart: Cotta.

—— (1894 [1886]) *System der Finanzwissenschaft (System der Volkswirthschaft Bd. 4)*, 4th edn, Stuttgart: Cotta.

—— (1899 [1881]) *Nationaökonomik des Handels und Gewerbefleißes (System der Volkswirtschaft Bd. 3)*, 7th edn, Stuttgart: Cotta.

Rosner, P. (1982) *Arbeit und Reichtum*, Frankfurt am Main: Campus.

—— (1987) 'Der moderne Kapitalismus – die Vorstufe des Sozialismus', in G. Fischer and P. Rosner (eds), *Politische Ökonomie und Wirtschaftspolitik im Austromarxismus*, Wien: Österreichischer Bundesverlag, 11–50.

—— (1994) 'Wirtschaftspolitik als Eingriff in die Geschichte', in B. Schefold (ed.), *Wilhelm Roscher und seine 'Ansichten der Volkswirthschaft aus dem geschichltichen Standpunkte'*, Düsseldorf: Verlag Wirtschaft und Finanzen, 123–49.

—— (1997) 'Reichtum und Wohlfahrt – über einige Schwierigkeiten früher deutscher Ökonomie mit theoretischen Gundbegriffen', in B.P. Priddat (ed.), *Wert, Meinung, Bedeutung. Beiträge zu Geschichte der deutschsprachigen Ökonomie*, Bd. 3, Marburg: Metropolis, 191–216.

Schmoller, G. (1875) 'Straßburg zur Zeit der Zunftkämpfe', *Quellen zur Forschung zur Sprach und Kulturgeschichte der germanischen Völker*, Bd 11, Straßburg.

—— (1884) 'Studien über die wirtschaftliche Politik Friedrichs des Großen und Preußen überhaupt von 1680 – 1786', *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirthschaft im Deutschen Reich*, NF vol. 8.

—— (1900) *Grundriß der Allgemeinen Volkswirtschaftslehre*, Leipzig: Duncker and Humblot.

—— (1918) *Die soziale Frage. Klassenbildung, Arbeiterfrage, Klassenkampf*, München und Leipzig: Duncker and Humblot.

Schumpeter, A. (1926) 'Gustav Schmoller und die Probleme von heute', *Schmollers Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft im Deutschen Reiche*, 50: 337–88.

Smith, A. (1976 [1776]) *An Inquiry into the Nature and Causes of the Wealth of Nations*, Oxford: Oxford University Press.

—— (1978 [1763]) *Lectures on Jurisprudence*, Oxford: Oxford University Press.

Sowell, T. (1972) *Say's Law. An Historical Analysis*, Princeton: Princeton University Press.

Streißler, E. (1990) 'The influence of German economics on the work of Menger and Marshall', *History of Political Economy* 22, 5 (supplement): 31–68.

4 Jevons and Wicksteed

Crossing borders in the history of economics

Flavio Comim

Introduction

The term 'marginal revolution' is usually taken to refer to a radical change in the analytical techniques used by economists; a change that means 'crossing-borders' in economics towards mathematical forms of discourse, based on analogies from physics, and distant from the 'moral language' of political economists. Winch argues that economists, after the marginal revolution, 'acquired a stricter sense of what was logically, rather than politically or morally, relevant to explanations of economic reality' (Winch 1972: 326). But the logical and mathematical character of this revolution was not its only characteristic. A closer proximity to natural sciences seems also to have been an essential ingredient for the marginal revolution. As Mays has argued, for the case of one of the most important 'marginalists', 'there is a close relationship between Jevons's philosophy of the natural sciences and his methodology of the social sciences' (Mays 1988 [1962]: 223). Mirowski put forward the argument that 'when one observes that more than half of Jevons's published work concerns the logic and philosophy of science, one begins to see that the metaphor of physical science was the unifying principle, and not merely a rhetorical flourish' (Mirowski 1988: 14). There is *prima facie* enough evidence in the historiography of the marginalist revolution to suggest a 'crossing-borders' in economics towards mathematics and the natural sciences.

On the other hand, Jaffé's (1976) argument for de-homogenisation and Peart's (1998) re-homogenisation thesis have both illustrated how Jevons and Menger shared a more complex view of human behaviour – not exclusively influenced by mathematics and the natural sciences – than his interpreters usually allow. The 'crossing-borders' in economics appears to have been more complex than the one suggested by the standard reading of the marginalist revolution. Whatever the precise outcome of distinct 'crossing-borders' pursued by distinct authors, it is interesting to note that this period appears to be characterised by distinct 'crossing-borders' towards different disciplines. Jevons did seem to favour a 'close analogy' of economics and its 'laws' to the science of statical mechanics and the laws of equilibrium

of a lever. Whereas Jevons, the leading advocate of marginalism in Britain, emphasised a 'crossing-borders' towards mathematics and physics, Philip H. Wicksteed, who is often considered a disciple of Jevons, built his marginalist economics on a 'crossing-borders' towards ethics and psychology – closer to the moral language of political economists. It could be noted that the same marginal principle seems thus to have been subject to alternative 'crossing-borders' in the history of marginalist revolution.

Now, the above point cannot be fully made without further knowledge of the contribution of Philip Wicksteed to the marginal revolution which, to a certain extent, remains largely ignored by the historiography of economic thought. The aim of this paper is to investigate the significance of Wicksteed's work to the history of marginalism. It is argued that as a consequence the different 'crossing-borders' in the marginal revolution are characterised better, thus avoiding the usual simplified claim that marginalism meant *only* a 'crossing-borders' in economics towards mathematics and the natural sciences.

Given this context, the main objective of this essay is to investigate the contribution of Philip Wicksteed to economic theory, focusing on the issues considered to reveal the originality of his thought, with special emphasis on the issue of common sense as part of the foundation of his analysis. It illustrates in a wider context the sort of results we may expect to achieve when basing our method on psychology and ethics. Special emphasis is given to Wicksteed's handling of the problem of bridging the psychological and the economic aspects in his analysis of the market.

This chapter is divided into four parts. The first part outlines the basic characteristics of Jevons's system of thought, so as to illustrate a 'crossing-borders' towards mathematical and physical arguments. The second part presents the foundations and general aspects of Wicksteed's contribution to economic theory, focusing on his common sense approach and its methodological recommendations. The third part discusses the foundations of Wicksteed's ethical and psychological method of analysis. The last part examines the relation between Jevons and Wicksteed with the purpose of characterising the different 'crossing-borders' in the history of marginalism.

The relevance of Wicksteed to economics should not be underestimated. Jevons's arguments, as developed in his *Theory of Political Economy*, first published in 1871, were unsettled and would probably not have carried their message further were it not for the contribution of Wicksteed. Subsequently, marginalism, as interpreted by Wicksteed through Lionel Robbins, became very influential in the developments of the mainstream economic theory of the first quarter of the twentieth century, providing inspiration for the 'social theories' and 'economic imperialism' of Gary Becker. Thus, from an historical perspective, the interpretation of Wicksteed and his contribution to marginalism is relevant to the assessment of the historical legitimacy of the arguments that followed his contribution. From a theoretical perspective, the importance of his work lies in his unexplored

'common sense analysis' which could provide a contemporary argument for economics as a moral science based on the daily experience of individuals conceived of in all their complexities and psychological nuances.

'The revolution' of Stanley Jevons

The 1870s were a period of 'heart searching and stock taking in economic thought', as Black (1988 [1972]: 376) has observed, in which the foundations of economics were openly in dispute. Broadly speaking, the intellectual context of this period involved two different perspectives. On one side, there was the philosophical tradition of political economy represented by the widespread doctrines of John Stuart Mill and the pragmatic economic thinking developed by English political economists such as Bagehot, Cairnes, Fawcett, Price, Leslie, Rogers and Cunningham. On the other side, there was a small group of economists, represented by Jevons, Walras, Gossen and Macleod, who through their work expressed a world-view and used methodologies that were within the tradition of physical, biological and mathematical sciences. While the group following the doctrines of political economy was sceptical of attempts to quantify economic phenomena and of theoretical systems built on abstractions not related to their ordinary concepts (see Checkland 1988 [1951]: 129), the group associated with the tradition of natural sciences was sceptical of any scientific enterprise which did not involve measurement and abstractions isolating the realm of the theoretical from the empirical. Moreover, whereas the first were critics of methodological unity and the scientific pretensions for economics (Bonamy Price is the best example here), the latter believed that only a new precise 'scientific approach' involving theoretical unity could solve the problem of the 'chaotic state of Economics' and 'the too great influence of authoritative writers in political economy' (see Jevons 1879: xvi, 261).

The 'marginalist revolution' arose from the confluence of the incapacity of the first group to provide a satisfactory continuation of its 'research program' with the second group's dissatisfaction with the 'political-economy approach' of the first group – together with the independent trend of understanding economic behaviour according to the standards provided by 'the most advanced sciences'.[1] The manifestation of the marginalist outcome was a theoretical rejection of the labour theory of value, of the Wage Fund doctrine and of production as the 'core' of economic theory. In methodological terms it involved much greater emphasis on technique, achieved through a mechanistic programme of enquiry where the starting hypotheses concerning the behaviour of economic agents reflected an instrumental need to implement this programme, rather than the theorists' metaphysical beliefs about the nature of economic behaviour.

The development of marginalism in England was not as simple or as mechanical as the above paragraph might suggest. The influence of Millian orthodoxy and the wide gap between the 'political economy' of British

economists and the 'economics' of marginalists made the challenge of replacing the previous doctrines a hard one.[2] It is a well-known fact that Jevons's communication 'Notice of a General Mathematical Theory of Political Economy', which he presented in 1862 at the meetings of the *British Association for the Advancement of Science*, evoked no response,[3] and that during his struggle to have his ideas acknowledged he went through periods in which he 'had a sense of loneliness and failure', as Keynes (1988 [1936]: 69) reports. The lack of acceptance of mathematical-economic writings is well expressed by Jevons in the second edition of his *Theory of Political Economy* (1879) (hereafter *TPE*) where he mentions that his science 'only excites ridicule and incredulity among the followers of Mill and Ricardo' (Jevons 1879: xliv) and that there is 'absolutely no periodical in which such [mathematical economic] discussions could be conducted' (ibid.: xlv) in England. For this reason it should not be surprising to find in Jevons's economic writings a strong emphasis on the elements which distinguish his approach from the nineteenth-century doctrines of political economists.

A first element of Jevons's contribution to the 'marginalist revolution' was a vehement support for the use of mathematical methods in economics.[4] He claimed that economics should be mathematical on the basis that (a) it deals with quantities throughout, and (b) the use of mathematics is a *sine qua non* condition for scientific reasoning. Therefore, it was of vital importance to him that economists were able to recognise not only the mathematical character of science but also the possible analogies between economics and the other 'more developed' sciences. He explicitly argued that his theory was 'purely mathematical in character' and that in more general terms 'It is clear that Economics, if it is to be a science at all, must be a mathematical science' (Jevons 1879: 3). What he had in mind was the application of differential calculus and mechanical analogies to what he considered to be the core of economic behaviour: the Benthamite mathematical approach based on a hedonistic conception of human behaviour.

His conviction that economics must be a mathematical science was related to his conception of mathematics within the broader picture of scientific inquiry. Jevons's general view was based on his knowledge of the methods used by the natural sciences (which he insisted should be used also by the social sciences). According to his view,[5] scientific inquiry begins with the scientist formulating probable hypotheses out of facts and intuition (conformable to experience). In this first step success is determined either by trial or error or by acquaintance with the phenomena to be explained. Then, through a process of deduction the scientist finds out the implicit knowledge that is behind the hypotheses. In this second step the use of mathematics is to prevent logical errors, to guarantee that the theoretical results will 'guide our thoughts in the slippery and complicated processes of reasoning' and to disclose 'by symbolic inference the implicit results of these conditions' (Jevons 1879: xxv, xxxiii) provided by the initial hypotheses. Finally, the scientist should test the results, abandoning the hypotheses

when the results are different from those expected. In all this process the validity and reliability of the scientific inquiry depends on (i) the validity of the hypotheses, and (ii) the application of mathematics, inquiries that are not necessarily associated (see H.S. Jevons 1988 [1934]: 45–6).

Jevons's emphasis on the role of mathematics as the 'engine' of scientific inquiry was accompanied by his recognition of the limitations in the use of mathematics. As he argued in his *The Principles of Science*, 'Many processes of mathematical reasoning are of most doubtful validity. There are points of mathematical doctrine which must long remain matter of opinion' (Jevons 1909 [1874]: 154). The first limitation he points out is that mathematics could be improperly used, giving rise to 'symbols and equations with no result of value'.[6] The second – and most important – limitation is that the mere use of mathematics was not a guarantee of the truth of the theory since it depended on the initial validity of the hypotheses. As Schabas has observed, in Jevons's conception, 'Although mathematics might clarify or add rigor to rudimentary scientific ideas, it could never add to the initial truth of the theoretical claims' (Schabas 1988 [1984]: 408). As a result, it was vital for Jevons's view of science that the initial hypotheses, resulting from chance and accidental observations or intuition, were in accordance with facts,[7] since the whole reliability of the results of the scientific inquiry depended on this condition. Yet, according to him, hypotheses had to be formulated in a precise and mathematical way so as to facilitate 'satisfactory comparison with experience' (see Peart 1996: 187). In his discussions of the economic method he simply assumes that in economics we work with 'premises of almost certain truth'.[8] This is because he believes that

> The science of Economics, however, is in some degree peculiar, owing to the fact, pointed out by J.S. Mill and Cairnes, that its ultimate laws are known to us immediately by intuition, or, at any rate they are furnished to us ready made by other mental or physical sciences. That every person will choose the greater apparent good; that human wants are more or less quickly satiated; that prolonged labour becomes more and more painful, are a few of the simple inductions on which we can proceed to reason deductively with great confidence.
>
> (Jevons 1879: 19–20)

It might sound paradoxical that in a book (*TPE*) that makes a strong case for the use of mathematics in economics, the alleged source of confidence in the proposed theories rests on the scientist's *immediate intuition*. As White argued, Jevons's naturalistic utilitarian ethics 'did not rely on reports of individuals' intuition or consciousness to designate what was ethical' (White 1994: 431). Thus, it is interesting to note that Jevons kept an ambiguous position on the reliability of individuals' intuition according to his explanatory conveniences. Did Jevons explain why the scientist's intuitions are reliable? Has he discussed how they change? Did he delve into their founda-

tions? Did he establish the certainty of the economic axioms he claimed in his book? The answer to all these questions is 'no'. Not only did he not discuss the above issues but also he failed to prove convincingly the 'certain' nature of economic hypotheses for which he was arguing (see MacLennan 1988 [1972]: 262). In this sense, Jevons's lack of attention to these issues resulted in a severe limitation on his scientific method.

It is difficult to say whether Jevons really meant what he said in his *TPE* about the role of mathematics or if he thought that the use of mathematics per se associated with the imitation of more successful sciences would provide a reliable basis for his utilitarian argument. Ultimately, Jevons seems to have relied on the use of mathematics due to its successful use in the physical sciences. This conclusion reinforces Allyn Young's interpretation of Jevons's use of mathematics in *TPE*, according to which,

> The book is probably the best known single brief for the use of that [mathematical] method. But the work itself is mathematical only in a superficial way. Except for its use of mathematical symbols it is, for the most part, mathematical only in the sense that any economic reasoning dealing with changing quantities and ratios is *ipso facto* mathematical. ... There is no question but that some of Jevons's fundamental concepts presented themselves to him as mathematical quantities. But his manipulation of these concepts is for the most part non-mathematical. Jevons was not an accomplished mathematician. In some places the awkwardness of his mathematical processes indicates that he is giving a mathematical garb to results reached by non-mathematical reasoning. Such attempts as he makes to develop some of the mathematical possibilities of his concepts are perfunctory. His use of the differential calculus is more apparent than real.
>
> (Young 1927: 229–30)

Without proof of a solid beginning and without means of direct verification of economic 'laws', economics became a much more idealised subject in the hands of Jevons (see Mays 1988 [1962]: 221), considered reliable only because of its similarities and analogies with the physical sciences. If MacLennan and Young are correct in their judgements of Jevons's use of mathematics, Jevons did, quite paradoxically, violate the limitations which he himself imposed on the use of this 'scientific tool'.

A second element of Jevons's contribution to the 'marginalist revolution' was his adherence to the hedonist Utilitarian 'calculus of pleasure and pain' as the general principle behind economic theory. He clearly defined this position stating that Bentham's ideas were the starting point of his investigation of 'the mechanics of self-interest and utility' and mentioning his own discovery of 'the theory of pleasure and pain' (Jevons 1879: xxvii, xli). Jevons made it clear that he had 'no hesitation in accepting the Utilitarian theory of morals', but he also pointed out that 'there is [nothing] in that

theory to prevent our putting the widest and highest interpretation upon the terms used' (ibid.: 25). According to him, that was the way Bentham had defined his theory. Jevons interpreted the issue in these terms not because he seemed to have supported a hedonist psychology, as Higgins (1988 [1935]) and Mays (1988 [1962]) have suggested, but because he was concerned with the problem of comparison between 'higher' and 'lower' motives. What Jevons wanted was to operationalise the 'mechanics of utility': in order to do that he had to use 'pleasure and pain' in 'a sufficiently wide meaning'. This allowed him to include, in a first moment, 'all the forces which drive us to action' so that, in a second moment he could divide them according to a hierarchy. Ultimately, this meant that Jevons assumed constant the higher motives,

> assigning a proper place to the pleasures and pains with which the Economist deals. It is the lowest rank of feelings which we here treat. The calculus of utility aims at supplying the ordinary wants of man at the least cost of labour. Each labourer, in the absence of other motives, is supposed to devote his energy to the accumulation of wealth.
>
> (Jevons 1879: 29)

The main result of this division was (a) the isolation of the realm of economic behaviour (the realm of the 'lowest rank of feelings') from the realm of behaviour as a whole, and (b) the exaltation of accumulation of wealth (maximisation of utility) as the main motive behind economic behaviour. Jevons was conscious of the problems of measurement of utility that Bentham's approach implied and tried to get rid of them. However, because he denied the possibility of interpersonal comparisons of utility within the realm of the 'lowest rank' (which could have committed him to an egalitarian social doctrine) in his attempts at establishing the 'law of demand', he created an odd situation. On the one hand, he seemed to have adopted Bentham's general ethical calculus accepting that interpersonal comparisons of utility are possible in moral calculus. On the other hand, he claimed that in the more restricted domain of economic behaviour these comparisons are not possible. Paradoxically, he avoided answering the question about comparisons that he himself initially posed. As Mulberg (1995: 45) has argued, this division led Jevons to maintain two different notions of utility (the ethical and the economic), while making no attempt to distinguish between them nor giving any hint about how to do so.

However, Jevons did not see this limitation as a major problem. His main object was not to solve the problems associated with utilitarianism but to operationalise the objective nature of utilitarian ethics. Jevons developed the operational aspects of economic behaviour because he believed that economic phenomena 'could be studied in the same objective way as natural phenomena' (see Mays 1988 [1962]: 215). As Keynes observed, Jevons was a 'dependent moralist' who did not believe that 'we have any "moral sense"

altogether separate and of a different kind from our animal feelings' (Keynes 1988 [1936]: 60). Moreover, Jevons thought that material reality pushed man to be selfish, or, as he put it,

> essentially selfish, that is as doing every thing with a view to gain enjoyment or avoid pain. This self interest is certainly the main-spring of all his actions, and I believe that it is beyond a man's nature to act otherwise.
>
> (Jevons 1972: 133)

'Human nature', expressed in terms of the absolute concept of utility,[9] replaces in Jevons the concept of individuals as moral and thoughtful beings, as used by political economists. In order to discover the 'universal truth' about the economic behaviour of individuals, Jevons used utility as 'the regulating force' that 'determines human motivation and action' (Clark 1992: 134). The objective and operational 'universal law of human nature' takes the form of the law of diminishing marginal utility. As White (1994: 431–3) explained, Jevons's naturalistic utilitarian ethics aimed at characterising moral behaviour in terms of empirically meaningful properties of the world which could be reduced to quantitative aspects.

The main outcome of Jevons's naturalistic approach to economic behaviour is, as pointed out by Fonseca (1991: 54), the disconnection between the foundations of economic theory and any psychological or ethical doctrine. Thus, the fact that Jevons conflates psychological hedonism and economic theory is incidental. The important result is that when individuals' ends, value judgements, non-economic behaviour and beliefs are no longer considered as legitimate explanatory elements, 'Economics ceases to be a moral science' (ibid.: 45).

Finally, a third element of Jevons's contribution to the 'marginalist revolution' is his emphasis on aggregates and averages as the main explanatory variables of economic phenomena. Despite Jevons's insistence on the importance of grounding economic analysis on individual psychological laws, he stated clearly that 'our laws of Economics will be theoretically true in the case of individuals, and practically true in the case of large aggregates' (Jevons 1879: 97). This distinction was a result of his concern with universal aspects of human behaviour – according to which, aggregates were seen as individuals – and his incapacity (or lack of theoretical interest) in transposing his logical schema into concrete results. MacLennan argued that 'although Jevons was aware of some of the modifications required in transposing a logical schema to the field of scientific analysis he tended to lose sight of these in the actual course of his own scientific work' (MacLennan 1988 [1972]: 251).

Peart (1995) examined how Jevons's emphasis on averages, as relevant explanatory variables, contrasted with J.S. Mill's theory–practice distinction. While Mill's method stressed the importance of 'disturbing causes' and

specific observations as a way to bridge the gap between general theoretical results and particular concrete aspects of reality, Jevons de-emphasised all elements that did not contribute to the establishment of regularities and patterns. The contrast between these two distinct approaches is partly due to their different assumptions about the possibility of defining precise behavioural laws and partly a result of their different opinions concerning the need to relate theoretical arguments to concrete phenomena.[10]

For Jevons the reliability of a theory was mainly associated with its intuitive appeal rather than with its potentiality for reducing the gap between theory and reality (as it was for Mill). The application of a theory was understood by Jevons to be an attempt to isolate and measure its main causes. But this would suppose that the effects of disturbing causes had been eliminated and Jevons knew that this was not achievable in practice (Jevons 1879: 16). Therefore, he used the Law of Error and the method of reversal as the means to explain general results in economics. The assumption behind this application is that 'The use of an average, or, what is the same, an aggregate result, depends upon the high probability that accidental and disturbing causes will operate, in the long run, as often in one direction as the other, so as to neutralise each other' (ibid.: 17). The widely used 'principle of insufficient reason', so influential in statistical research, was here the supporting principle of Jevons's appeal to generalisations and universal principles as the main source of explanations. The prescriptive result of Jevons's argument is that scientists should avoid the particularities of each situation, both in theory and in practice, in order to abstract from disturbing causes (see Peart 1995: 1209).

Jevons's average laws came under the name of the 'Fictitious Mean' characterised as being 'numerical results which do not pretend to represent the character of any existing thing' (Jevons 1879: 98). Thus, the concept of generalisation-as-explanation assumed, in Jevons's hands, the form of a normalisation of individuals performing economic actions. Because he thought that he would never be able to appropriately represent individuals, he opted for abandoning the characterisation of those individuals. Doing so, he expressed his aim, as Mazlish puts it, for 'a special kind of purity, uncontaminated by the messy reality of humans and their actual history' (Mazlish 1988 [1986]: 422).

In the cases where Jevons did link universal laws to their concrete application he used, as argued by White (1994), the Victorian language of class, race and character as the principal means of bridging the two different domains of theory and reality. However, it must be noted that these links were considered by Jevons as exogenous to economics,[11] like the prescriptive questions of policy that 'fell outside the domain of the science of political economy because it [they] involved questions of ethics and duty' (ibid.: 441). When theoretical results were unable to provide determinate solutions, as in his discussion of working hours, Jevons appealed to concrete aspects of human behaviour. 'Jevons's concern with the particular' was a

concession to his search for determinate results and for this reason cannot be interpreted as a feature of his scientific method.

In no other topic did the limitations of his generalisation-as-explanation approach become more visible than in the problem of moving from an individual utility schedule to a general market demand. The fact that it has been demonstrated (see Ekelund and Shieh 1989) that a demand curve may be derived from a utility schedule does not prove, as White (1991: 81) argues, that Jevons had proceeded in this direction. The evidence, based on his use of utility diagrams and his discussion of the 'laws of utility' in his lectures of 1875, suggests that Jevons was *not* trying to make a bridge between utility and demand.

In his *TPE* he moves directly from utility to demand. In the context of a barter economy, Jevons considers individuals whose marginal utilities are measurable and whose utility functions are independent. In order to show how total demand functions for commodities could be derived from the hedonist psychology of individuals, he simply assumes that the utility of money is constant and that individuals can be aggregated in 'trading bodies' (Jevons 1879: 96). These assumptions, which actually beg the whole issue of aggregation, as argued by Mulberg (1995: 43), were the price he paid for his denial of the possibility of interpersonal comparisons of utility. The final result was a theory emphasising the statical and logical aspects of trade in a barter economy. Jevons does not show how aggregate results are associated with concrete and particular situations. Rather he seems to ignore the whole issue.

The role of common sense

Economics was for Wicksteed part of a system of thought that also included sociology, philosophy and religion. More specifically, he conceived of economics as a key element in his Aristotelian ethics based on common sense principles. Differently, perhaps, from Jevons, Wicksteed was not doing economics for its 'scientific value' but as a way to explain the complementarity between spiritual and earthly matters – that was one of his deepest convictions in life. As Steedman observes 'for Wicksteed, the spiritual, the social, and the material are inextricably interrelated' (Steedman 1994: 98–9). This meant that the 'crossing-borders' for Wicksteed was pursued from a different perspective and a different purpose than those of Jevons. There is an explicit difference in intellectual backgrounds between both authors: while Jevons was a scientist, concerned with natural sciences and measurement of empirical phenomena, Wicksteed was a scholar, a Unitarian minister interested in Comte's writings and Aristotelian philosophy. The relation between intellectual backgrounds and different 'crossing-borders' is merely suggested here. A further discussion of this issue is beyond the scope of this chapter.

Herford, the biographer of Wicksteed, has remarked that 'he was a

genuinely "modern" man himself, a man of his own time and place, with open eye and heart, as we know, for the ideals and problems of the England in which he lived and worked' (Herford 1931: 262). It should come as no surprise then that much of Wicksteed's contribution to Economics reflects the reality of his time: the problems of middle-class London housewives managing a tight budget, the problems of small producers fighting against adverse conditions and the problems of industrial sectors hit by crisis.[12] Wicksteed's moral sympathy towards other minds and common-sense principles materialise in the starting point of analysis: his attempt to scan the minds of his time. He assumed that every mind started from somewhere and that this somewhere could be found initially in the characteristics of the historical time the mind was living. 'Every age', as reported by Joseph Wicksteed, 'he believed, proceed to think upon certain basic assumptions: Aristotle had his; the minds of the Middle Ages had theirs, and we had ours' (ibid.: xix). Thus, part of Wicksteed's starting point of analysis consisted in finding out the particular aspects of a given historical time incorporated into individuals' thoughts.

However, it must be emphasised that part of Wicksteed's economic works also expresses his attempts to describe in more concrete terms the general Aristotelian problem of excellence in choice through the doctrine of marginal utility: the choice of a housewife in the distribution of milk for her family, the choice of an 'indolent young man' making his arrangements to get up at a given hour, the choice of 'Caesar' between devoting words of exhortation to his troops and starting an attack, the choice of 'Robinson Crusoe' allocating his time according to the returns of alternatives and the choice of a 'South American planter' who stopped praying and set about defending himself against the enemy are only some of Wicksteed's illustrations of the fact that different individuals administrate their resources according to the same basic principles.

Wicksteed's economic writings reflect his well-balanced and eclectic personality. The man who was a Unitarian minister, a philosopher, an economist, a scholar of Aristotle, Dante and Aquinas and a leader of the Labour Church movement in England, was also the man who insisted that economic agents should be conceived of according to their social context, that Economics should not be a separate discipline because there are no special laws of the economic life and that the basic question of human choice should be understood in its general as well as in its particular aspects. These elements are part of Wicksteed's method of analysis which, as we shall argue here, are inspired by his personal beliefs but are more concretely based on his common-sense methodology. Before discussing the general aspects of Wicksteed's contribution to Economics we acknowledge the seminal contributions of Steedman to the elucidation of his work that have motivated many of the issues discussed here.

Steedman (1989) analyses the issues of rationality and altruism in Wicksteed's *The Common Sense of Political Economy* (1933 [1910]; hereafter

CSPE). He starts by examining Wicksteed's conception of choice and illustrates with examples how his approach involved a wide and complex spectrum of objects of choice selected through detailed considerations emerging from the particular contexts in which they were embedded. As Steedman points out, 'it is not to be expected that a writer as thorough and as thoughtful as Wicksteed could be satisfied with any suggestion that selection between alternatives is always both simple and rationally executed' (Steedman 1989: 191). Thus, the discussion of 'complications' of the process of choice follows as a natural result, focusing on the issues of irrational aspects and the effects of habit, convention and tradition.

Wicksteed's comments on the rationality issue are brimming with examples, which leads Steedman to argue that 'Wicksteed seems to have been very fond of specific examples' (Steedman 1989: 188). After these illustrations Steedman sets forth Wicksteed's basic principle of choice according to which individuals use the same selection process whatever fields of activity and objects of choice they face. He also discusses Wicksteed's distinction between the 'ultimate desired objects of choice' and the means (that enter the circle of exchange) through which they may be achieved. Commenting on his views of Pareto and Comte, Steedman writes about Wicksteed's beliefs in the 'impossibility of drawing a line between economic and non-economic phenomena'. A result of this belief is Wicksteed's rejection of the concept of economic man, and with it of any primacy of ultimate motives behind the analysis of human behaviour (he was particularly critical of the wealth motive). Instead, Wicksteed proposes to consider individuals as a whole (in practice, including all motives). He rejects egoism as the basis of 'economic behaviour' with the consequent acceptance of the term 'non-tuism' to describe individuals' moral indifference towards trade relations. The main conclusion reached in Steedman's analysis of Wicksteed is that altruistic behaviour is compatible with a wider concept of rationality built around the above guidelines.

Steedman (1994) focuses on the relation between Wicksteed's religious and economic ideas. He describes the wider context of his social and intellectual background and his support of the Labour church movement. As he emphasises, 'Wicksteed sought consistently to hold the material and the spiritual simultaneously in play' (ibid.: 80). His sermons and economic papers are examined as evidence of it. While in the economic writings we find a constant appeal to the ethical aspects of human behaviour, in the religious writings there is a permanent awareness of economic issues (ibid.: 93–4). Steedman then describes the methodological consequences of Wicksteed's 'remarkable unity in his vision of life' (ibid.: 100), stressing their social and ethical aspects.

A series of specific questions concerning Wicksteed's work arises from reading Steedman's two papers. For instance, if Wicksteed was a 'forceful advocate of the Jevonian, or marginal economics' – which actively contributed to the establishment of the 'economic man' – how was it that

Wicksteed's views seem to be so opposed to it? In the same way, how could Wicksteed be 'very fond of specific examples' when Jevonian economics implied a normalisation of human conduct? Moreover, what was the root of Wicksteed's disagreements with Jevons? Were they due to Wicksteed's religious views?[13] In what sense? Finally, what is the relation, if any, between Wicksteed's methodology and his appeal to common sense? In order to answer these and other questions, raised by reading Steedman, it is important, in the first place, to delve into the foundations of Wicksteed's analysis and to look for the principles which coordinate his unique approach to economics. Second, the issue of Wicksteed's place in the history of economic thought becomes predominant, when a comparison with Jevons's work may reveal the nature of Wicksteed's contribution to Economics. It is argued here that common sense is the foundation of Wicksteed's analysis. However, before proceeding to discuss this argument it is useful to consider an opposite view, the view expressed by Lionel Robbins (1933). Robbins saw Wicksteed's *CSPE* as a comprehensive and systematic guide to the 'implicit philosophy' behind marginalist economics. Apart from its 'subtlety', 'persuasiveness' and 'literary charm', Robbins does not seem to differentiate Wicksteed's methodological contribution from Jevons's or from any other contribution by marginalists. Perhaps for this reason Robbins dismisses the importance of common sense as an explanatory element of Wicksteed's purposes. Robbins, commenting on Wicksteed's *CSPE*, argues that,

> The title conveys less than nothing; indeed, never was a work of this kind more unfortunately named. *It is not 'common sense' in the ordinary sense of the term, and it is not political economy.* It is, on the contrary, the most exhaustive non-mathematical exposition of the technical and philosophical complications of the so-called *marginal* theory of pure Economics, which has appeared in any language.
>
> (Robbins 1933: xi–xii) [first emphasis added]

Robbins's general argument appears to be that because Wicksteed is merely Jevons's disciple, he could not have proposed anything intrinsically different from Jevons's theory. According to this perspective, Wicksteed's *CSPE* is merely an 'utterance' of Jevons's *TPE*. He considered Wicksteed's criticisms of economic man relevant but thought they were compatible with Jevons's framework of analysis. For this reason he denies the role of common sense and the possibility of Wicksteed's commitment to *political* economy. Robbins admits that Wicksteed provided new contributions to marginalist economics, but he seems unwilling to accept that any of these contributions were methodological nor that they had any relation with 'common sense'.

However, a concern with common sense and ordinary reasoning was present in Wicksteed since his early economic writings. In his *The Alphabet of Economic Science* (Wicksteed 1955 [1888]; hereafter *AES*), despite his use of 'forty pages of almost unbroken mathematics', he made it clear that his

objective was 'to bring Economics down from the clouds and make the study throw light on our daily doings and experiences, as well as on the great commercial and industrial machinery of the world' (ibid.: x). Whenever possible he tried to show how 'our common sense notion turns out to be rigidly scientific' (ibid.: 30) and how theoretical concepts could be brought 'more nearly within the range of our ordinary experiences, and make it [them] stand for something more definitely realisable by the practical intellect' (ibid.: 41). His defence of the marginal principle in contrast to the use of total utilities reflects his concern with practical aspects of choice in opposition to abstract principles. According to him,

> But if it is obvious that when we look upon life as a whole, and in the abstract, we are chiefly concerned with total utilities, and ask what are the commodities we could least afford to dispense with altogether, it is equally obvious that in detail and in concrete practice we are chiefly concerned not with the total utility but the marginal usefulness of things, or rather, their marginal utility.
>
> (Wicksteed 1955 [1888]: 47)

His preoccupation with the ordinary experience of individuals results in a discussion of the behaviour of a young housekeeper,[14] 'our heroine' (ibid.: 49), a concern for 'the great numbers who are habitually hungry' (ibid.: 130) and a constant mentioning of choice-problems that transcend the realm of economics (ibid.: 52). When he discusses the difficulties involved in the construction of economic curves he relates individuals' daily experiences to attempts to construct and compare fragments of economic curves (ibid.: 55). His argument is full of expressions such as 'concrete utilities', 'concrete results', 'concrete investigation', 'in practical life', 'accordance with facts', expressing a constant concern for 'an adequate conception of the real economic conditions of life' (ibid.: 63). Indeed, the index of the *AES* is made up entirely of examples. Moreover, in his examination of the relation between exchange and equilibrium and how departures in the relative individual scales will induce new exchanges that will lead to a new equilibrium, he concludes that 'after all, this is no more than the simplest dictate of common sense and experience' (ibid.: 81).

He also criticises those economists who have tried to empty economic concepts of their moral significance. He states clearly that he is against the idea that economics has 'nothing to do with ethics'. He insists that economists use ethical words (ibid.: 8) and that we should be conscious of the interdependence between moral and economic aspects. Doing so is a precondition for a sense of 'the unity and continuity of life', and that

> by heightening our feelings of responsibility in dealing with material things, and showing that they are subjectively commensurable with immaterial things, will not lower our estimate of affection, but will

> increase our respect for potatoes and for the now no longer 'dismal' science that teaches us to understand them in their social, and therefore human and spiritual, significance.
>
> (Wicksteed 1955 [1888]: 138)

However cogent the above evidence might be for a case that Wicksteed's economic arguments were based on common sense, it could be subject to the criticism of the *AES* being an elementary treatise on marginalist analysis.[15] Hence, common sense could be understood as a strategy of introductory essays, which is needed (for didactical and motivational purposes) in order to make a bridge between the abstract theory and the more concrete problems lived by the students. Despite other introductory treatises which do not proceed in this way, this could be the case for Wicksteed's *AES*.[16] Nevertheless, the same cannot be said of the *CSPE* which reflects a more mature and ambitious position in Wicksteed. On 11 November 1907 he wrote to his friend and colleague E. Gardner commenting of his forthcoming *CSPE*,

> I am nearing the time when I shall commit the work of ten or twelve years to the public. It is *my life effort to do something real for thought and life*; and I can honestly say that I look forward with perfect serenity to the possibilities of being entirely ignored, of being violently attacked, or of being convinced that I was mistaken and presumptuous in thinking that I had any *serious contribution* to make to the subject.
>
> (Wicksteed in Herford 1931: 156) [italics added]

His comments illustrate clearly that the *CSPE* was not meant to be merely another introduction to the marginalist doctrines, but that it was a result of his best reflexive thought and was intended to be a 'serious contribution' to political economy.

Wicksteed in *CSPE* dwells on the foundations of his common-sense perspective and on the variety of aspects that it may assume when analysing economic problems. It must be noted that the main aspect of his common-sense approach is the realism that permeates throughout the analysis. He starts building his conceptual system from the broad and common experience of daily life, that he expects his readers would share with him, and finishes discussing the principles on which individuals *actually* conduct their choices. He proposes to 'start with the reader from the very beginning, and to place a clue in his hands which will lead him, directly and inevitably, from the facts and observations of his own daily experience to an intimate comprehension of the machinery of the commercial and industrial world' (Wicksteed 1933 [1910]: 2). Behind this approach lies his belief that personal experiences can reflect the social knowledge of the time, which he considers the starting point for an understanding of (economic) reality. For this reason, the common-sense elements presented in the *CSPE* cannot be

dismissed as introductory devices used to make concepts easier to be assimilated.

Wicksteed's realism, in more concrete terms, expressed through his common-sense approach, assumed the form of certain methodological recommendations that guided his investigation of the 'machinery of the commercial and industrial world'. In other words, to use common sense meant for Wicksteed more than a commitment to a realist analysis based on individuals' intuitions or empirical experiences; it took the form of a coherent set of normative 'suggestions', according to which economists should,

1 *Examine individuals in all their complexities*
Wicksteed urged to describe and examine individuals in all their complexities. As he put it, 'We are not to begin by imagining man to be actuated by only a few simple motives, but we are to take him as we find him, and are to examine the nature of those relations into which he enters, under the stress of all his complicated impulses and desires' (Wicksteed 1933 [1910]: 4). An important consequence of this view is that the concept of economic man is too much a simplification of man to serve any useful analytical purpose for Wicksteed.

2 *Extend the scope of economics*
Wicksteed believed that there are no special laws of economic life and that the term 'economic motive' could suggest a misapprehension of human nature. He thought that wealth had only instrumental value for individuals and that therefore the hedonic moral and egoistic psychology of the economic man should be rejected. The main characteristic of the economic relation was, for Wicksteed, what he defined as 'non-tuism'. He warns that we should avoid confusion between the egoistic motive and the fact that people do not need any degree of sympathy to interact with other people in the market. As he puts it, 'What makes it an economic transaction is that I am not considering you except as a link in the chain, or considering your desires except as the means by which I may gratify those of some one else – not necessarily myself. The economic relation does not exclude from my mind every one but me, it potentially includes every one but you' (Wicksteed 1933 [1910]: 174). In other words what he was saying is that individuals' attitude towards life is determined by their character and not by the particular act they perform (ibid.: 177). Individuals' moral conduct is determined by general principles that influence their economic behaviour and not otherwise.

3 *Base conceptual inquiries on familiar principles and then proceed to general principles*
Wicksteed argued that theoretical analysis should be based on principles familiar to individuals. These principles, obtained through observation

and introspection at a personal level, would provide initial empirical foundations for conceptual inquiries, which could later be corroborated or not by 'the social instincts which prompt them' (ibid.: 17). According to him, it is only through 'familiarity' with phenomena that we can discuss with confidence their limits, restrictions and moral importance. He states his position, arguing that:

> We will begin with that part of our economic world which we ourselves immediately control, or which is generally accessible to observation from the inside, about which we are constantly thinking, and in which we are all concerned, namely, the expenditure of our personal and domestic resources. This we may reasonably hope to be able to understand and analyse.
>
> (Wicksteed 1933 [1910]: 19)

When the concepts are not familiar, they might be accepted for the conceptual inquiry if they comply with 'our practical dealings and deliberations' (ibid.: 440). Wicksteed insists on 'the great advantage of keeping us upon ground with which we are all broadly familiar' (ibid.: 18).

4 *Make use of practical judgements*

Wicksteed noted that there are some situations where it is impossible to achieve a correct answer based exclusively on theoretical grounds but that, in practice, people are to take decisions concerning intrinsically difficult philosophical dilemmas. He makes a distinction between what can be asserted *strictly speaking* and what can be stated using the *language of common sense* (ibid.: 149), which could be theoretically false but true in practical terms. A good example is provided by our habitual estimates of the relative urgency of wants experienced by different people:

> Philosophically we may admit that it is impossible to prove that one man suffers as much from being burnt alive as another man does from a gnat bite; but we can say that, measured by every conceivable test as to the alternatives they would accept or reject, this must be so, and we are practically troubled by no philosophic doubts on the subject.
>
> (Wicksteed 1933 [1910]: 148)

Thus, there are instances when practical arguments could be considered not because they are true theoretically or strictly speaking but because they are considered acceptable in practical terms.

5 *Avoid terminology that contradicts ordinary language*

Wicksteed warned that concepts at odds with ordinary language are difficult to define. They may encourage confusion and loose thought because individuals may not have the means to know by introspection and observation what exactly these concepts really mean. For instance,

when discussing the term 'labour market', he observes that he has preferred to speak of remuneration rather than wages. He claims:

> The reason is sufficiently obvious. It is true that writers on Political Economy often show a tendency to stretch the term 'wages' till it covers all remuneration for the output of human energy; but since the word will always carry certain limiting associations with it there is a manifest danger in wrenching its technical employment too far apart from current usage. Such specious attempts at simplification always avenge themselves.
>
> (Wicksteed 1933 [1910]: 337)

6 *Use diagrammatic methods as ideal simplifications*
Because curves are ideal simplifications they cannot represent any isolated and concrete experience. Therefore, Wicksteed stressed the importance of using with caution diagrammatic methods, avoiding giving a meaning to curves that they do not have. While he pointed out the usefulness of these methods 'as a means of mentally arresting phenomena' (ibid.: 445) that are very complex and elusive, he advised constant check on (i) the possibility of mathematical representation of facts, and (ii) the implications of particular mathematical configurations. Diagrammatic methods and geometrical deductions should be used with prudence, then. They cannot be applied to practical matters without the demonstration that what they are representing is actually the fact underlying the problem. Sometimes, familiarity with methods or deductions makes them appear axiomatically true (ibid.: 551). It is thus very easy to take for granted results without a constant 'take and give' with reality.

7 *Assess general principles by investigating their application to particular cases*
Wicksteed argued that particular circumstances and aspects should receive practical priority over general ones. By that he meant that individuals' conduct in a given situation is mainly determined by the interaction of the particular circumstances and specific factors that contribute to the emergence of that situation. General rules of conduct are not always the best way to go about a problem; therefore they should be assessed according to the particular details of experience.

The priority of particulars is so important to Wicksteed's analysis that when discussing the difficulties related to the practical aspects of choice he argues that 'The significance of this occasional contretemps may well constitute the actual unit of greatest proportional accuracy of estimate' (Wicksteed 1933c [1910]: 459). Thus, circumstances and particular aspects should be taken into account, according to Wicksteed, because of their influence on the accuracy of estimates. It is very easy to lay down general principles without any concern for their application to particular cases. The difficult thing is to

relate the general to particular cases. General principles per se do not take into account particular and special circumstances; circumstances Wicksteed argues 'on which after all everything really depends' (ibid.: 301).

The Aristotelian foundation of Wicksteed's common-sense approach

The above normative guidelines are meant to be a broad representation of Wicksteed's use of common sense in his main economic writings. Together they illustrate the claim that what could be initially conceived of as only a commitment to a realistic approach assumed in his writings a more concrete and coherent form of methodological clarification about how he conducted his investigation in the field of economics. But, how do we know that he was really using common sense, as seems to be the case, and not another principle? As we have discussed elsewhere (see Comim 1997), broadly speaking, common-sense beliefs or propositions refer to assertions about what we primitively know about fundamental features of the world. They are presupposed in our practical attitudes and assumed to be reliable. According to Bharadwaja, who provides a definition of common sense based on the writings of G.E. Moore, but one which is wide enough to apply to other cases, common-sense propositions are 'descriptive of facts, contingently true, have the evidence of senses and their truth is assumed by us in whatever we do in the ordinary life and in the sciences as well' (Bharadwaja 1977: xiv). Thus, common-sense propositions are not 'proof-driven' but 'fact-driven', because they are concerned with fundamental features of the world rather than features of particular (usually deductive) systems of thought. Therefore, no one is expected to hold initially a hypothetical case when one is confronted with a concrete fact that contradicts it. This means that if our concepts are to be intelligible they should have an approximate correspondence to adequate factual evidence. Hence common sense is committed to a realistic reading of the world.

The important issue that warrants attention is the extensive intersection between Wicksteed's conception of common sense and the more general definition provided by common-sense philosophy or folk psychology. In addition to the evidence discussed above, Wicksteed has remarked that:

> Our only guides are experience and analogy; and wherever experience seems to contradict analogy, as will often be the case, our rule must be to analyse more carefully and to correct the analogy, instead of ignoring or denying the experience.
>
> (Wicksteed 1933 [1910]: 806)

But is not this giving of priority to experience the 'engine' of common sense, as Bharadwaja claims?

Wicksteed's conception of common sense has its roots directly in

Aristotle's writings. The similarities between Aristotle's approach to ethics and economics and Wicksteed's in *CSPE* are remarkable. As an examination of Aristotle's *Nichomachean Ethics* (hereafter *NE*) reveals, Wicksteed has adopted many of the principles defended by Aristotle in this book. For instance, Aristotle argues that an enquiry into human choice and behaviour must begin with what is familiar to us because 'facts are the starting-point' (Aristotle 1987: I, iv, 1095a, 15–25; 1095b, 5) of it. It is very important to begin the analysis from first principles that are well established (by induction, perception or habituation), because on them depends the whole analysis. As Aristotle has put it,

> But each set of principles we must try to investigate in the natural way, and we must take pains to determine them correctly, since they have a great influence on what follows. For the beginning is thought to be more than half of the whole, and many of the questions we ask are cleared up by it.
>
> (Aristotle 1987: I, vii, 1098b, 5)

There is no better description for Wicksteed's *CSPE* than to say that it is a book where 'the beginning is thought to be more than half of the whole'. Another aspect that should be mentioned is Aristotle's view of wealth as something instrumental. Wealth, he argued, 'is evidently not the good we are seeking; for it is merely useful and for the sake of something else' (Aristotle 1987: I, iii, 1096a, 5). The view of wealth as a tool, so important to Wicksteed's argument on 'economic nexus', altruism and 'economic relations', is an intrinsic part of Aristotle's view that practical reason without moral excellence is not possible. Choice, the origin of action for Aristotle, 'cannot exist either without thought and intellect or without a moral state; for good action and its opposite cannot exist without a combination of intellect and character' (ibid.: VI, ii, 1139a, 35).

Aristotle praises the picture of the 'wise man' (ibid.: I, xiii, 1103a, 10), the man who is 'able to deliberate well about what is good and expedient for himself' (ibid.: VI, v, 1140a, 30) and who exercises excellence. This man is not concerned with things that he cannot deliberate nor with universals. Rather, the wise man 'is concerned with action', with things he can deliberate according to the particular situations he faces. As Aristotle argued, 'a man has practical wisdom not by knowing only but by acting' (ibid.: VII, xi, 1152a, 10). The idea behind this principle is that because conduct deals with particular cases they are considered more 'true' than general ones. For this reason, individuals' final conduct depends on their judgement of particular cases, 'for not only must the man of practical wisdom know particular facts,[17] but understanding and judgement are also concerned with things to be done, and these are ultimates' (ibid.: VI, xii, 1143a, 35).

However, the most remarkable similarity between Aristotle and Wicksteed consists in Aristotle's principle of mean, which becomes, in

Wicksteed's hands, the principle of marginal utility. This similarity has been noted by Hutchison, who pointed out that Wicksteed's analysis 'amounted to a refinement of Aristotle's doctrine of virtue as a mean into the doctrine that virtue lies in a nicely adjusted margin, or that virtue requires a conscientious balancing, as precisely as possible, of one's duties at the margin' (Hutchison 1953: 99). Broadly speaking, the principle of mean is based on the idea that excellencies of human conduct involve choice and that the best choice entails avoidance of excess or defect. Excellence, as Aristotle argued, 'is a kind of mean, since it aims at what is intermediate' (Aristotle 1987: II, v, 1106b, 25). From this perspective, excess and defect are vices and 'the middle' is virtue. Thus, the man of practical wisdom chooses his act so as to achieve a balance, a harmony, a proportion between alternatives because only by doing so can he achieve excellence or virtue. But not all men are wise, which means that the principle of mean is a normative principle, associated with an 'economic virtue'. On these same lines, Wicksteed defines the marginal principle as a normative guide to exercise excellence in choice. He believed that 'human effort is constantly and directly under the control of the human will' (Wicksteed 1933 [1910]: 325) and that 'we shall always be able to bring our marginal increments of satisfaction into *balance* with the respective terms on which they are open to us' (ibid.: 373 [italics added]). He gave the loosest meaning he could to the marginal principle, dissociating it from the 'mechanics' that other economists, such as Jevons, had suggested. The marginal principle, for Wicksteed, was a principle with the status of common sense; it was a 'wise (moral) principle' that might be applied if people behave with virtue aiming, as he put it, at 'fruitful action' (ibid.: 398). Wicksteed addressed directly the above comparison in his *The Scope and Method of Political Economy in the Light of the 'Marginal' Theory of Value and Distribution* (Wicksteed 1933 [1914]). He commented that,

> The application of this differential method to economics must tend to enlarge and to harmonise our conception of the scope of the study, and to keep it in constant touch with the wider ethical, social, and sociological problems and aspirations from which it must always draw its inspiration and derive its interest; for if we really understand and accept the principle of differential significances we shall realise, as already pointed out, that *Aristotle's system of ethics and our reconstructed system of economics are twin applications* of one identical principle or law, and that our conduct in business is but a phase or part of our conduct in life.
>
> (Wicksteed 1933 [1914]: 779 [italics added])

There are other similarities that could be mentioned. As Crespo (1997) discusses, Aristotle began the study of the *oikonomiké* from an analysis of the management of a household, following later with an examination of the proper administration of the state resources ('political economy') – and so did Wicksteed. Also, Aristotle's concern with economic aspects focused,

according to Crespo, on 'the citizens as consumers, not as producers; and as producers, merely as functional to the consumers' (ibid.: 76 [my translation]) – and so did Wicksteed's. Despite the controversies about Aristotle's economic writings, Crespo concludes that Aristotle supported 'a version of the subjective theory of value' (ibid.: 101 [my translation])[18] – and so did Wicksteed. Finally, the general meaning of economics for Aristotle, as a moral activity and practical science (ibid.: 93), is at the heart of Wicksteed's original contribution to economics. All the reasons mentioned above support the claim that Wicksteed's *CSPE* was an 'utterance' and elaboration of Aristotle's ideas applied to the problems of Victorian and Edwardian England at the turn of the century. And not, as, for instance, Robbins has suggested, an 'utterance' of Jevons's *TPE*. Aristotle, not Bentham, was behind Wicksteed's analysis. Common Sense, not the mechanics of utility, was the foundation of his original contribution to economics. The 'crossing-borders' pursued by Wicksteed followed a distinct path from that of Jevons.

Crossing borders in the history of marginalism

Wicksteed's affinity with the disciplines of ethics and psychology was manifested in his rejection of the hypothetical nature of economic science arising from the use of the concept of economic man. He stressed that 'The laws of political economy then, being ultimately laws of human conduct, are psychical and not physical; and therefore psychology enters into political economy on something more than equal terms with physical science and technology' (Wicksteed 1933 [1894b]: 767). As discussed above, Wicksteed was against reducing human behaviour exclusively to its rational aspects. He justified his approach by arguing that 'A great part of our conduct is impulsive and a great part unreflecting; and when we reflect our choice is often irrational' Wicksteed 1933 [1910]: 28). For this reason, Wicksteed tried to formulate a concept of rationality wider than the concept of economic man that could include practical and axiological dimensions of choice.

In Wicksteed's hands, the concept of economic man is replaced by the concepts of 'rational woman' and 'wise man'. These concepts are chosen by him to convey acquaintance with familiar situations involving choice and rationality. In his description of the 'economic woman', he emphasises her use of judgement according to the circumstances (practical dimension) and her sense of moral fairness and equality (axiological dimension) (Wicksteed 1933 [1910]: 18, 20, 83). When describing the normative dimension in the concept of 'wise man', Wicksteed emphasises the importance of keeping one's mind alert against the negative influences of inertia, custom and tradition; he also stresses the effects of good judgements on achieving a balanced and regulated mind (ibid.: 93, 297, 308). According to him, the discretionary aspects of economic choice are as wide as the general ethical question of human choice. Thus, for Wicksteed, the (Jevonian) concept of rationality

is too narrow to justify the 'proper' conduct of human choice that it is as wide ranging and complex as portrayed by ethics and psychology.

The contribution of Jevons to the marginalist revolution was developed around three main topics: his defence of the use of mathematical methods in economics, his hedonist utilitarian calculus and his emphasis on aggregates as explanatory variables of the economic phenomena. It might be logically expected from 'the most eminent disciple of Jevons', as Wicksteed is generally portrayed, that he would also be engaged in the pursuit and development of these topics. Indeed, Wicksteed wrote that reading *TPE* had a major impact on his thought; and he wrote much on Jevons, taught Jevons to Shaw and to others. However, a close inspection of Wicksteed's analysis reveals that he did not share most of Jevons's principles and that his 'marginalist story' was built on quite different 'crossing-borders', and with different purposes, than that of Jevons.

On the use of mathematical methods in economics, Wicksteed exerted much more prudence than Jevons. Jevons's defence of mathematical methods was subordinated to his view that scientific inquiry must be based on hypotheses very close to the facts. But Jevons seems to have 'forgotten' this requirement in his *TPE*, and economic analysis became in his hands a 'hypothetical subject' because he over-emphasised the role of mathematics in his contributions. Wicksteed, however, did not only respect the limitations of mathematical methods throughout his economic writings, but he also complemented Jevons's argument for the use of mathematics through his work on the elucidation of the hypotheses economics is based on. The whole discussion about the foundations of economic assumptions, however essential to Jevons's argument, was only brought into the 'marginalist revolution' through Wicksteed's *CSPE*.

Wicksteed comments in his essay on *The Co-ordination of the Laws of Distribution* (1932 [1894a]) that in investigating the laws of distribution one should take care not to make 'extremely definite assumptions'. The use of mathematical forms may bring definiteness and boldness into the economic analysis and may provide 'a safeguard against unconscious assumptions' (ibid.: 4), but ultimately the outcome should be 'capable of being translated into a logically cogent economic argument' (ibid.: 5). Also, assumptions may sometimes be expressed in mathematical language, he points out, 'without becoming one whit more definite than they were before' (ibid.: 3). Mathematics was, for Wicksteed, a way of making thought clear through the avoidance of errors and, as he said in 'On certain passages in Jevons's *Theory of Political Economy*' (Wicksteed 1933 [1889], hereafter *CPJ*), important as a '*hypothetical* and analytical instrument' (ibid.: 734 [italics added]). It was not 'the engine' of thought that it was for Jevons.

The upshot of this comparison is that the use of mathematics was supported by Wicksteed but that he was not as actively engaged in its defence as Jevons was. On the contrary, as discussed above, he was against the application of 'purely geometrical deductions' to 'important practical

matters'. He also argued that there was 'little to be gained by putting [some] truisms into mathematical form' (1932 [1894a]: 11), as it seems to have been done by Jevons. Probably due to Wicksteed's modesty and his respect for Jevons, he did not make an issue of their disagreement on the role of mathematics even when disagreement was clearly stated. In his article on *Jevons's Economic Work*, Wicksteed argued that,

> It may indeed be true (and probably is) that Jevons hoped by the aid of statistics to obtain a larger number of exact formulae than are *ever likely to be actually secured*, and that he, therefore, *over-estimated the extent* to which mathematics can penetrate the body of Economic Science. But if so, this was a mistaken estimate, not a mistake of principle.
>
> (Wicksteed 1933 [1889]: 811 [italics added])

On the issue of Jevons's hedonist utilitarian calculus, it must be stressed that in his attempts to operationalise 'the mechanics of self-interest and utility' Jevons argued for (i) the isolation of the realm of economic behaviour, concerned exclusively with 'the lowest rank of feelings', from the realm of behaviour as a whole, and (ii) the elevation of the accumulation of wealth (maximisation of utility) as the main motive behind economic behaviour. On no two other issues could Jevons and Wicksteed have disagreed more. Wicksteed vehemently rejected wealth as the ultimate motive behind economic behaviour (as he did any other isolated motive) and the possibility of special laws of economics. The disagreement between them was not directly related to the introduction of natural science's methods into economics by Jevons, 'welcomed' by Wicksteed in *CPJ* (Wicksteed 1933 [1889]: 738). Rather, the main source of divergence lies in their different opinions about individuals' moralities. While Jevons believed that we do not have any moral sense different from our animal feelings, that material reality pushes us to be selfish and that value judgements should stay away from economic analysis, Wicksteed had a very high opinion of individuals' characters, believed that the material reality interacted with spiritual reality and that value judgements were an integral part of economic analysis as they were part of any other field of human activity. As in the previous comparison, it is clear not only that there was a divergence between Jevons's and Wicksteed's approaches to 'crossing-borders' in economics, but that Wicksteed's discussion of it became an answer to the shortcomings of Jevons's analysis. In the first case, by providing a discussion about alternative hypotheses needed to justify the whole scientific enterprise; second, by providing a theoretical alternative to the limiting features of the analysis imposed by Jevons in order to operationalise the marginal principle.

On the issue of Jevons's emphasis on aggregates and averages as relevant explanatory variables, it is important to mention that a significant consequence of it was the practical elimination of the theory-practice distinction from economic analysis. Jevons made *practically* no attempt to transpose his

logical scheme into concrete results. Conversely, he strove for the exclusion of disturbing causes from his analysis. He wanted a theory free of the 'contaminated messy reality of humans'. The best illustration of Jevons's emphasis on aggregates, and consequent lack of concern with bridging the general and the particular, is his characterisation of the laws of supply and demand. It is a 'well-known puzzle', as White (1989, 1991) has put it, that Jevons's motivation in writing the *TPE* was partly a rejection of Jenkin's analysis of supply and demand which was built ignoring mental phenomena, but 'gave no indication in *TPE* that his utility curves were to be linked to demand curves' (White 1991: 82). In addition, White acknowledges that Wicksteed answers this problem through the use of a 'collective demand curve' (ibid.: 82).

Wicksteed's answer to the problem of bridging the general and the particular in the case of the laws of supply and demand led him to criticise the distinction between buyers and sellers because he saw supply as demand understood from the perspective of the sellers. The 'dealer's mind' was the concept through which Wicksteed linked the minds of the individual consumers to the collective scales representing the facts of the market. As he argued,

> the collective curve directly represents the facts of the market in the form in which the sellers actually endeavour to estimate them. They have more knowledge by experience of the collective scale than they have of the individual scales, and each purchaser may find a price ruling in the market which has been arrived at by a direct attempt on the part of the sellers to construct a portion of this collective scale, without reference to the elements out of which it is composed.
>
> (Wicksteed 1933 [1910]: 497)

Therefore, he argued – in contrast to Jevons – that the curves of supply and demand did not represent the ultimate facts of the market and that 'the two curves could hardly be regarded as co-existing on the same plane, and no satisfactory interpretation can be given to their intersection' (ibid.: 536–7). He insisted that while the demand curve represents a group of contemporary possibilities, the supply curve represents historical processes. It did not make much sense, in his opinion, to mix possibilities with actualities on the same plane.

What should be emphasised here is that it is precisely the theory–practice distinction that concerned Wicksteed in his *CSPE*. There, he combined values, circumstances, practical considerations, emphasis on particular situations and unforeseen contingencies into very general principles and showed how psychological 'laws' could be related to the 'messy' economic reality of our everyday lives. Once again Wicksteed did not follow uncritically in Jevons's 'crossing-borders' footsteps. We therefore conclude that only in a very general sense can Wicksteed be seen as a disciple or follower of Jevons.

Wicksteed did certainly build his theory using theoretical elements elaborated by Jevons, but in Wicksteed's hands the marginalist theory acquired a different – and more complex – meaning. While Jevons provided a mathematical background to a reading of the marginal principle, Wicksteed contextualised it within the discipline of ethics. Thus, the same theory was object of two alternative 'crossing-borders' in the history of economic thought.

Notes

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1 As pointed out to me by Geoff Harcourt, these factors were associated with a swing to the subjective theory of value combined with a misunderstanding of what the labour theory of value was for Marx.

2 As Paul (1988 [1979]) has observed, the main focus of disagreement between Jevons and the political economists of the last quarter of the nineteenth century was methodological. He argues: 'Jevons's approach to economics differed *quite radically* from that of the dominant English Ricardian economists who preceded him' (ibid.: 311 [emphasis added]).

3 Black (1988 [1962]: 198) comments that Jevons's failure to have caused an impression cannot be explained by the absence of papers on related topics, but he does not go into the reasons for it. For more on the poor reception of Jevons's work, see Peart (1996: ch. 2).

4 Schabas claims that 'Jevons was the first to insist that economics must necessarily be treated mathematically' (Schabas 1988 [1984]: 401). This seems to be a contentious claim in the light of the contributions of Cournot, Walras, Gossen and MacLeod, but expresses properly the emphasis put by Jevons on the role of mathematics as a scientific tool. It also reveals how Jevons's claims for a mathematical economic science were interpreted by some of his contemporaries as his major contribution to economics. Schabas reports that 'Cairnes had informed Mill that the primary thrust of Jevons' book was to promote mathematical economics' (Schabas 1985: 345).

5 For alternative descriptions of Jevons's scientific method, see Mays (1988 [1962]), MacLennan (1988 [1972]) and Schabas (1988 [1984]).

6 Jevons (1879: xxiv, xxv) is accusing Canard and Whewell of using mathematics in their works as a way of presenting results reached by non-mathematical reasoning. It is interesting to note that Allyn Young (1927: 230) accused Jevons of exactly the same 'fault'.

7 By that we mean a process in which hypotheses reflect the scientist's prior convictions about the phenomena to be studied. It is different from the inductive processes claimed by Bacon and Mill in the sense that Jevons was critical of the concept of induction as a 'routine process in which facts are first collected without the benefit of any prior hypotheses or "anticipations of nature"' (see Mays 1988 [1962]: 213).

8 For more see Peart (1996, ch. 9) on Jevons's methodology of economics.

9 When Jevons comments on the 'law of utility', he mentions the contribution of Richard Jennings, claiming that 'This work treats of the physical groundwork of Economics, showing its dependence on physiological laws. It displays great

insight into *the real basis of Economics*' (Jevons 1879: 59 [italics added]). Jevons's belief in a constant human nature seems to be based on physiological rather than psychological laws. It is a very narrow view of human beings that he is advocating in the name of 'science'.

10 For Mill, the approximation of theoretical conclusions to concrete phenomena was an essential element in the assessment of the reliability of a theory. He believed that social phenomena were a consequence of multiple causes and that only through an observation of all disturbing causes and circumstances could we be certain of the results provided by a theory. As Peart explains 'Mill insisted that while the theoretical analysis necessarily entailed abstraction from causal influences at work, in practice, or application, the social scientist must correct the analysis by accounting for those abstracted-from causal influences and by making a judgement as to whether or not those influences warranted a change in the theory' (Peart 1995: 1201).

11 There is a certain amount of dissent on this issue. For instance, Peart considers that, for Jevons, some prescriptive questions of policy may fall inside the domain of political economy; she is of the opinion that Jevons felt very strongly that education could be used to 'correct' decision making on, for example, savings, family size and marriage decisions. Similarly, Mosselmans believes that Jevons's practical work must be taken into account when considering Jevons's views on 'the particular'. I am grateful to Professor Sandra Peart and Dr Bert Mosselmans for drawing my attention to these points.

12 The historical context in which Wicksteed wrote included (i) the crisis in Manchester's cotton industry due to the American Civil War, (ii) the crisis in Sheffield's cutlery trade due to the actions of trade unions, and (iii) Dukinfield's 'industrial agitations'. On this last event, Herford comments that

> At Dukinfield, too, Wicksteed found, as he would have found all over the industrial north, working men who were keen students and hard thinkers; also, original types of social organization, run by the men themselves, for the benefit of their common studies. He was fond of telling of the little group of mill-hands there, field-naturalists, who each put by a weekly sum to enable one of their number, chosen not by rotation, but for his fitness, to devote a fortnight's holiday to the botanizing or entomologizing, and then communicate the results. It was out of his reflection on such experience that Wicksteed, forty years later, built *The Common Sense of Political Economy*.
>
> (Herford 1931: 48)

13 It must be noted that Jevons also had a Unitarian background and it therefore seems unlikely that the root of their disagreements was inspired by religious matters. I am grateful to Professor Ian Steedman for bringing to my attention this aspect of Jevons's life.

14 He contrasts the concept of the 'clever housekeeper' with the concept of the 'clumsy housekeeper'. While the first 'has a delicate sense for marginal utilities', 'balance them with great nicety' and 'is always on the alert and free from the slavery of tradition[s]' (Wicksteed 1955 [1888]: 126), the other has a slow-to-change system of expenditure, following according to custom and tradition (ibid.: 127).

15 Wicksteed referred many times to his *AES* as an 'elementary treatise' (ibid.: xii, 136–7).

16 This possibility is only considered for the sake of argument. A reading of both books reveals that many arguments and examples used previously were still present in the latter. There is no substantial disagreement between the two

books and this is only considered to be the case as a logical possibility because the *AES* does not contain as elaborate an argument as the later *CSPE*.

17 Aristotle acknowledges that practical wisdom is not knowledge, because it is concerned with the ultimate particular fact. Instead, practical wisdom is a result of individual experiences. As he observes, 'while young men become geometricians and mathematicians and wise in matters like these, it is thought that a young man of practical wisdom cannot be found. The cause is that such wisdom is concerned not only with universals but with particulars, which become familiar from experience, but a young man has no experience, for it is length of time that gives experience' (Aristotle 1987: VI, ix, 1142a, 15).

18 Crespo's argument is based on an assessment of the concept of *chreia*, which he translates as utility, use, need, as a means to the good life. According to his discussion, Aristotle supported a theory of value and moral need based on the reciprocity achieved when needs are exchanged. As Crespo points out, 'demand is impregnated with an ethical attitude' (Crespo 1997: 105 [translated]).

References

Aristotle (1987) *The Nicomachean Ethics*, transl. W.D. Ross (and J. Urmson), in J. Ackrill (ed.) *A New Aristotle Reader*, Oxford: Clarendon Press.

Bharadwaja, S. (1977) *Philosophy of Common Sense*, New Delhi: National Publishing House.

Black, R.D.C. (1988 [1962]) 'W.S. Jevons and the economists of his time', in J. Wood (ed.), *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

—— (1988 [1972]) 'W.S. Jevons and the foundation of modern economics', in: J. Wood (ed.), *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

Buchanan, J. (1969) *Cost and Choice: An Inquiry in Economic Theory*, Chicago: Markham.

Checkland, S. (1988 [1951]) 'Economic opinion in England as Jevons found it', in: J. Wood (ed.), *William Stanley Jevons: Critical Assessments*, London and New York: Routledge, vol. I: 125–45.

Clark, C. (1992) *Economic Theory and Natural Philosophy: The Search for the Natural Laws of the Economy*, Aldershot: Edward Elgar.

Coats, A. (1972) 'The economic and social context of the marginal revolution of the 1870's', *History of Political Economy* 4: 303–24.

Comim, F. (1997) *Common Sense Economics*, History of Economics Society, Invited Guest Editorial. Available HTTP: http://www.eh.net/ehnet/HisEcSoc/Resources/Editorials/Comim/

Cramp, A. (1994) 'Mappings of (economic) meaning: here be monsters', in H. Brennan and A. Waterman (eds) *Economics and Religion*, London: Kluwer.

Crespo, R. (1997) *La Economía como Ciencia Moral*, Buenos Aires: Ediciones de la Universidad Catolica Argentina.

Dean, P. (1978) *The Evolution of Economic Ideas*, Cambridge: Cambridge University Press.

Ekelund, P. and Shieh, D. (1989) 'Jevons on utility, exchange, and demand theory: A reassessment', *Manchester School* 57, 1: 17–33.

Fonseca, E.G. da (1991) *Beliefs in Action: Economic Philosophy and Social Change*, Cambridge: Cambridge University Press.

Harcourt, G.C. (1995) 'Recollections and reflections of an Australian patriot and a Cambridge economist', *Banca Nazionale del Lavoro Quarterly Review* n. 194, September.

Herford, C.H. (1931) *Philip Henry Wicksteed: His Life and Work*, London and Toronto: Dent.

Higgins, B. (1988 [1935]) 'W.S. Jevons: A centenary estimate', in J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, London and New York: Routledge.

Hutchison, T.W. (1953) *A Review of Economic Doctrines*, Oxford: Oxford University Press.

Jaffé, W. (1976) 'Menger, Jevons and Walras de-homogenized', *Economic Inquiry* December, 14: 511–24.

Jevons, H.S. (1988 [1934]) 'William Stanley Jevons: his scientific contributions', in J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

Jevons, T.E. (1988 [1889]) 'Mr. Wicksteed's notes upon Jevons', in J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. II, London and New York: Routledge.

Jevons, W.S. (1909 [1874]) *The Principles of Science: A Treatise on Logic and Scientific Method*, London: Macmillan.

—— (1879) *The Theory of Political Economy*, 2nd edn, London: Macmillan.

—— (1972) *Papers and Correspondence of William Stanley Jevons*, ed. R.D. Collison Black, London: Macmillan.

Keynes, J.M. (1971 [1910]) 'Wicksteed, Philip H. *The Common Sense of Political Economy*', *The Hibbert Journal*; reprinted in J.M. Keynes, *The Collected Writings*, Vol. XI, ed. by D.E. Moggridge, London: Macmillan.

—— (1988 [1936]) 'William Stanley Jevons 1835–1882: a centenary allocution on his life and work as economist and statistician', in: J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

MacLennan, B. (1988 [1972]) 'Jevons's philosophy of science', in: J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

Mays, W. (1988 [1962]) 'Jevons's conception of scientific method', in J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

Mazlish, B. (1988 [1986]) 'Jevons' science and his "second nature"', in: J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

Mirowski, P. (1988) *Against Mechanism: Protecting Economics from Science*, Totowa (N.J.), Rowman and Littlefield.

Mulberg, J. (1995) *Social Limits to Economic Theory*, London and New York: Routledge.

Paul, E. (1988 [1979]) 'W. Stanley Jevons: Economic revolutionary, political utilitarian', in J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

Peart, S. (1995) '"Disturbing causes", "noxious errors", and the theory-practice distinction in the economics of J.S. Mill and W.S. Jevons', *Canadian Journal of Economics* 28, 4b: 1194–1211.

—— (1996) *The Economics of W.S. Jevons*, London and New York: Routledge.

—— (1998) 'Jevons and Menger re-homogenized? Jaffé after 20 years', *American Journal of Economics and Sociology* 57, 3: 307–26.

Robbins, L. (1931) 'The economic works', in C.H. Herford *Philip Henry Wicksteed: His Life and Work*, London and Toronto: Dent.

—— (1933) 'Introduction', in P.H. Wicksteed *The Common Sense of Political Economy and Selected Papers and Reviews on Economic Theory*, ed. Lionel Robbins, London: Routledge.

Schabas, M. (1985) 'Some reactions to Jevons' mathematical program: the case of Cairnes and Mill', *History of Political Economy* 17, 3: 327–53.

—— (1988 [1984]) 'The "worldly philosophy" of William Stanley Jevons', in J. Wood (ed.) *William Stanley Jevons: Critical Assessments*, Vol. I, London and New York: Routledge.

Steedman, I. (1989) 'Rationality, economic man and altruism in P.H. Wicksteed's *Common Sense of Political Economy*', in I. Steedman *From Exploitation to Altruism*, Cambridge: Polity Press.

—— (1990) 'P.H. Wicksteed on *Das Kapital*, Volume I', in D. Moggridge (ed.) *Perspectives on the History of Economic Thought*, Vol. III, Aldershot: Edward Elgar.

—— (1994) 'Wicksteed: economist and prophet', in H. Brennan and A. Waterman (eds) *Economics and Religion: Are They Distinct?*, Boston, Dordrecht, London: Kluwer.

Stigler, G.J. (1946) *Production and Distribution Theories: The Formative Period*, New York: Macmillan.

White, M. (1989) 'Why are there no supply and demand curves in Jevons?', *History of Political Economy* 21, 3: 425–56.

—— (1991) 'Jevons on utility, exchange, and demand theory: comment', *Manchester School* 59, 1: 80–3.

—— (1994) 'Bridging the natural and the social: science and character in Jevons's Political Economy', *Economic Inquiry* 32, July: 429–44.

Wicksteed, J.H. (1931) 'Foreword and appreciation', in C.H. Herford *Philip Henry Wicksteed: His Life and Work*, London and Toronto: Dent.

Wicksteed, P.H. (1932 [1894a]) *An Essay on the Co-ordination of the Laws of Distribution*, in Series of Reprints of Scarce Tracts in Economic and Political Science, n. 12, London School of Economics and Political Science, London: Macmillan.

—— (1933 [1889]) 'On certain passages in Jevons's *Theory of Political Economy*', *Quarterly Journal of Economics* 3: 293–314; reprinted in P.H. Wicksteed, *The Common Sense of Political Economy and Selected Papers and Reviews on Economic Theory*, ed. L. Robbins, London: Routledge.

—— (1933 [1894b]) 'Political economy and psychology', *Palgrave's Dictionary of Political Economy*, 2nd edn, Vol. III: 140–2; reprinted in P.H. Wicksteed, *The Common Sense of Political Economy and Selected Papers and Reviews on Economic Theory*, ed. L. Robbins, London: Routledge.

—— (1933 [1910]) *The Common Sense of Political Economy*, in P.H. Wicksteed *The Common Sense of Political Economy and Selected Papers and Reviews on Economic Theory*, ed. L. Robbins, London: Routledge.

—— (1933 [1914]) 'The scope and method of political economy in the light of the "marginal" theory of value and distribution', *Economic Journal* 24, 93: 1–23; reprinted in P.H. Wicksteed, *The Common Sense of Political Economy and Selected Papers and Reviews on Economic Theory*, ed. L. Robbins, London: Routledge.

—— (1955 [1888]) *The Alphabet of Economic Science: Elements of the Theory of Value or Worth*, New York: Kelley and Millman.

Winch, D. (1972) 'Marginalism and the boundaries of economic science', *History of Political Economy* 4: 325–43.

Young, A. (1927) *Economic Problems New and Old*, Cambridge: Riverside Press.

5 Economists as demographers

Wicksell and Pareto on population

Mauro Boianovsky

Introduction

Demography established itself as a separate discipline in the last quarter of the nineteenth century and the first two decades of the twentieth. That was also the period when neoclassical economics became dominant. Historians of economic thought (Schumpeter 1954: 889–90; Blaug 1997: 278–9; Ekelund and Hébert 1993: 141; Mitchell 1969: 764; see also Samuelson 1985: 166–7; Ehrlich and Lui 1997: 209) have suggested that this development can in part be explained by the irrelevance of population growth for the static marginal utility system, in contrast with the dynamic approach of classical economics. But this is a non sequitur. The contributions of Malthus and other classical economists to the formation of the statistical and mathematical core of demographic analysis were quite small, if any (Westergaard 1932: 125–8; Dupâquier 1985; Behar 1987). Furthermore, the question that should be asked is whether neoclassical economists applied the concept of utility maximisation to the study of population. I shall argue that, while population was not a general concern among neoclassical economists (as illustrated by Léon Walras and Gustav Cassel, who assumed an exogenously given population size), the topic was an important one for Knut Wicksell and Vilfredo Pareto.[1] They introduced, respectively, the notions of 'optimum population' (the population size that maximises utility per capita) and of what may be called 'Pareto optimum population' (the rate of population growth consistent with competitive efficiency). These concepts are conspicuous in the modern economic approach to population (see, for example, Samuelson 1975; Razin and Sadka 1995: ch. 5; Robinson and Srinivasan 1997: 1211–22). While Wicksell's contribution has been occasionally mentioned in the modern literature, Pareto's early investigation of the optimal growth path of the population has remained unnoticed.

Both Wicksell and Pareto included chapters on population in their respective *Lectures*, vol. 1, first Swedish edition (Wicksell 1901a), and *Cours*, vol. 1 (Pareto 1896–7). Wicksell's population chapter was successively revised and published separately in 1910 (see the English translation Wicksell 1979 [1910a]) and 1926 (posthumously; edited by his son Sven

Wicksell), which explains why it was excluded from the second and third editions of his *Lectures*, from which the 1934 English translation was made (see Wicksell 1934 [1901c]: xxi); it was, however, kept in the 1913 German translation (see Wicksell 1913 [1901b]). Pareto also included a chapter on population in his 1909 *Manuel* (see the English translation Pareto 1971 [1909]), much shorter than the version in the *Cours* (38 pages, against 87 in 1896–7). That shrinkage had to do in part with the publication in 1901 of the first Italian treatise on demography by Rodolfo Benini, as we shall see below. Other important sources for the study of Wicksell's approach to population are his report to the Swedish Commission on Emigration (see the English translation Wicksell 1999 [1910b]) and three articles on the changing patterns of fertility in Europe (Wicksell 1999 [1914a], 1916a, 1924).

Like the classical economists before them, Wicksell and Pareto did not contribute to the hard core of demography (which, in its prehistory, was part of 'Political Arithmetic'; see Westergaard 1932: chs 3–8; Dupâquier 1985: ch. 5; Schumpeter 1954: 210–12), with the possible exceptions of Wicksell's use of a succession of survival curves to discuss the actual age composition of population (Wicksell 1979 [1910a]: 127), and Pareto's fitting of a curve to mortality data (Pareto 1893). They did contribute, however, to what Coleman and Schofield (1986: 5) have called the 'softer socio-economic and biological rind' of demography, which is essentially interdisciplinary (see also Lorimer 1959: 165). Their contribution was not extended to the treatment of children as 'consumption goods' and to the discussion of time allocation decisions by parents, though. By the early 1900s, empirical investigations by demographers had disclosed an inverse relation between wealth and fertility. Interestingly enough, it was Lujo Brentano (1910), a member of the so-called 'Younger German Historical School' (see Schumpeter 1954: 809), who came up with an explanation based on children's quality and parents' time opportunity costs, which is quite reminiscent of the 'economic analysis of fertility' which would be introduced by Gary Becker (1960) and others fifty years later.

Composition and changes of population

Wicksell and Pareto started their respective chapters on population by summing up the determinants of the size of a given stationary population or of the change of a population growing at a steady rate (Wicksell 1901a: 16–25; 1979 [1910a]: 123–8; Pareto 1896–7: 75–86). They made use of concepts that had been developed since the introduction of the life table by John Graunt in 1662 and the first investigations on the properties of stable populations by Leonhard Euler in 1760. The formal treatment of vital statistics by Knapp, Zeuner and Lexis in the last decades of the nineteenth century and by Bortkiewicz in the early 1900s – under the stimulus of the foundation of the *International Statistical Institute* in 1885 and the starting of

the publication of its *Bulletin* in 1886–7 – gave new impetus to the development of demographic analysis in Europe (see Westergaard 1932: ch. 17; Schumpeter 1954: 212 and 891; Lorimer 1959: 149–55; Dupâquier 1985: chs 5, 6, 9 and 11). This process culminated with two seminal articles by the American mathematician Alfred Lotka in 1907 and 1911 (with F. Sharpe), which became well known only after the publication of his 1925 book.[2] By applying the renewal equation introduced in physics in the early 1900s to human populations, Lotka showed that a population subject to unchanging age schedules of fertility and mortality has an age distribution, birth rate, death rate and rate of increase that do not change. Such a population is 'stable', in the sense that it returns to its equilibrium state with the same age distribution if perturbed by a momentary change in fertility or mortality (see Lotka 1956 [1925]: ch. ix). As R. Vance (1959: 295) put it, 'demography owes to Lotka the operational definition of the concept of population and virtually all of demography's entire core of analytical development'.

The chapters on population in Wicksell's *Lectures* and Pareto's *Cours* and *Manuel* were written before the Lotka era in demography. Nevertheless, reflecting the demographic knowledge of their time, they pointed out the pivotal role of the age distribution in the study of population dynamics. Wicksell was particularly aware that the way ahead for analytical demography was the increasing mathematical sophistication of statistical analysis. He complained in 1914 that Bortkiewicz's discussion of a 'problem in population statistics of great importance' at the international statistical congress in The Hague 'fell on deaf ears' because of the absence of other trained mathematical statisticians, which changed in the next congress in Paris (Wicksell 1914b: 62).[3] Pareto stressed the notion of equilibrium and stability of population:

> The equilibrium between the number of births and the number of deaths, from which the increase in population results, depends on an infinite number of economic and social causes; but once established, if a change takes place in one direction, it immediately produces a change in the opposite direction, thus reestablishing the original equilibrium. To tell the truth, this observation is a tautology because it is this fact itself which is characteristic of and defines equilibrium. Hence we must modify the form of the observation and say that experience shows us that in reality there is an equilibrium, which, however, can slowly change.
>
> (Pareto 1971 [1909]: 306)

Pareto illustrated his argument with temporary disturbances such as 'a war or an epidemic' (1971 [1909]: 307; cf. Pareto 1896–7: sec. 164; Lotka 1956 [1925]: 111) and pointed out that permanent changes affect the equilibrium itself. He described the 'state of the existing population' in the first sections

of his chapter on population in his *Cours*, before examining on which factors 'this state depends' (1896–7: 86–7). In the same vein, Wicksell (1979 [1910a]: 123–8) started by investigating the characteristics of populations with fixed age schedules of mortality and fertility, while calling attention to the possibility of 'demographic waves' caused by 'abnormal' changes in the birth or death rates (brought about by events such as a 'trough or a drought ... a crest or a flood'; see ibid.: 128, n. 1).

In order to represent the composition of the population Pareto (1896–7: sec. 156) deployed 'stereograms' (two-dimensional representations of three dimensional relations) elaborated by Luiggi Perozzo (1880) to represent the population of Sweden in the period 1750–1875, after theoretical models developed by G. Zeuner in the late 1860s (see Dupâquier 1985: 386–7; Beniger and Robyn 1978: 5–6). Such representations were designed to solve an important problem in life-table theory at that time: that is, the allocation of deaths to moving cohorts of persons who pass birthdays at different times during chronological intervals (see Lorimer 1959: 153–4). In the stereogram (see Figure 5.1 below) the years are represented on axis OX, and the number and age of individuals on axes OZ and OY, respectively. As an illustration, Pareto assumes that MN is the number of births in 1850; for each age M*m*, the corresponding number of survivors *mn* from the 1850 cohort is plotted on the chart, which gives the line NQ. The set of these lines constitute a surface 'which represents in all its details the composition of the population'

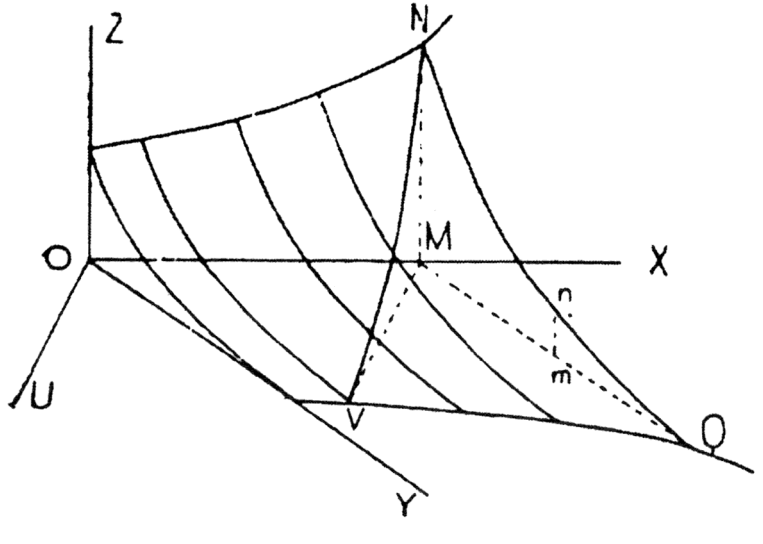

Figure 5.1 Stereogram

Source: Pareto (1896–7, Vol. I: 76)

(Pareto 1896–7: sec. 156). Furthermore, if M is the year of a census, the curve NV gives the number of survivors from several cohorts measured by the census. The age distribution is determined by the line N of births, and by the curves NQ given by the life table. For the same 'survival law', the age distribution depends on whether the population is stationary or not. In the first case, the line of births is parallel to the axis OX, and the lines of the census are the same as the lines of survivors. Pareto next considers an 'ideal population', defined as a population with the same life table for a century ibid.: sec. 160), and then compares a stationary (constant stream of births) with a growing population (a stream of births that increases at a constant rate). His tables indicate that the ratio between 'active population' (between ages 20 and 50) and total population is lower in a growing population (sec. 161–4). The other initial sections of the chapter sum up empirical investigations by demographers on mortality (including infant mortality) in several European countries (ibid.: secs 165–9).[4]

Wicksell starts his discussion of age distribution by assuming the simplest case, that is, a stationary population with mortality in higher age (80–100 years) groups only. He gives as an illustration a population with 100,000 births every year and with all age groups (except the oldest) of the same size. The form of the survival curve (see Figure 5.2) and the constant stream of births decide the total size of the population, which is about 9 million (the exact number depends on whether the curve on the right of Figure 5.2 is convex or concave). The annual birth and death rates would be about 11 per thousand, and the age distribution would be about 44 per cent over 50, 39 per cent between 15 and 50, and 17 per cent below 15. As Wicksell put it, 'the population would be like a river fed from one single source, in which not a drop is lost until the river reaches its estuary' (1979

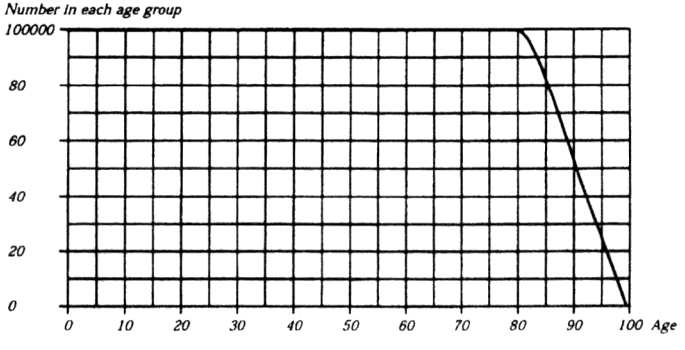

Figure 5.2 A stationary population with mortality in higher age groups only
Source: Wicksell (1926: 5)

[1910a]: 124). He next considers another (stationary) population with the same stream of births as before, but with the age schedule of mortality of Sweden in the decade 1890–1900. In the case of successive mortality (see Figure 5.3), the age distribution has a different shape. The total population would accordingly be smaller (about 5.25 million), and the birth and death rates higher (19 per thousand); the age distribution would be about 28 per cent over 50, 48 per cent between 15 and 50, and 24 per cent below 15.

After establishing the influence of the survival curve on the size of a stationary population, Wicksell compares the age distribution in Figure 5.3 with the actual age distribution of Sweden as estimated in 1906 on the basis of the census of 1900 (Figure 5.4). He finds that, even though the actual number of births was about 135,000, the total population in 1906 was only 5,337,000, which is quite close to the hypothetical stationary population. The age distribution was 20.5 per cent above 50, 47.5 per cent between 15 and 50, and 32 per cent below 15. The fewer number in the aged group (with higher mortality levels) explains the lower death rate in Sweden in 1890–1900 (16.33 per thousand) when compared to the hypothetical

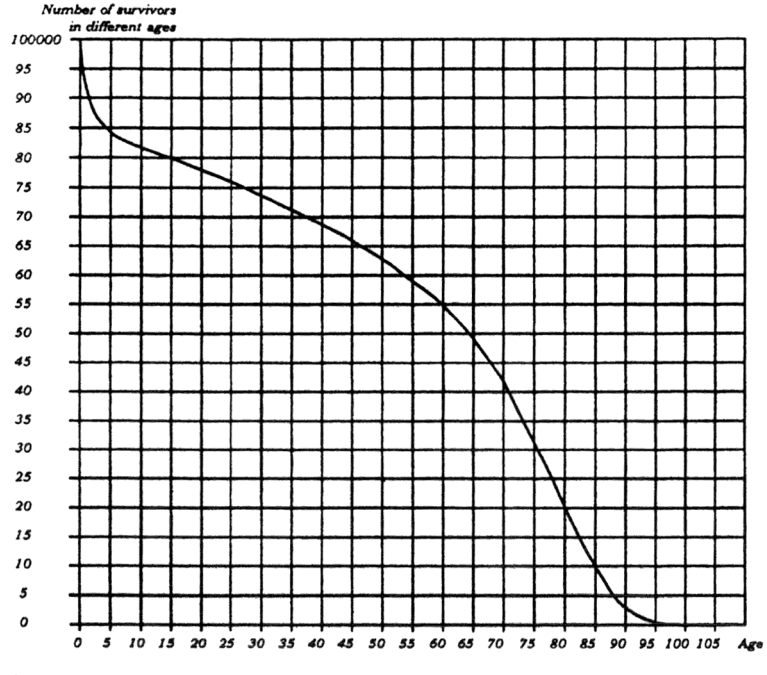

Figure 5.3 A stationary population with successive mortality

Source: Wicksell (1926: 7)

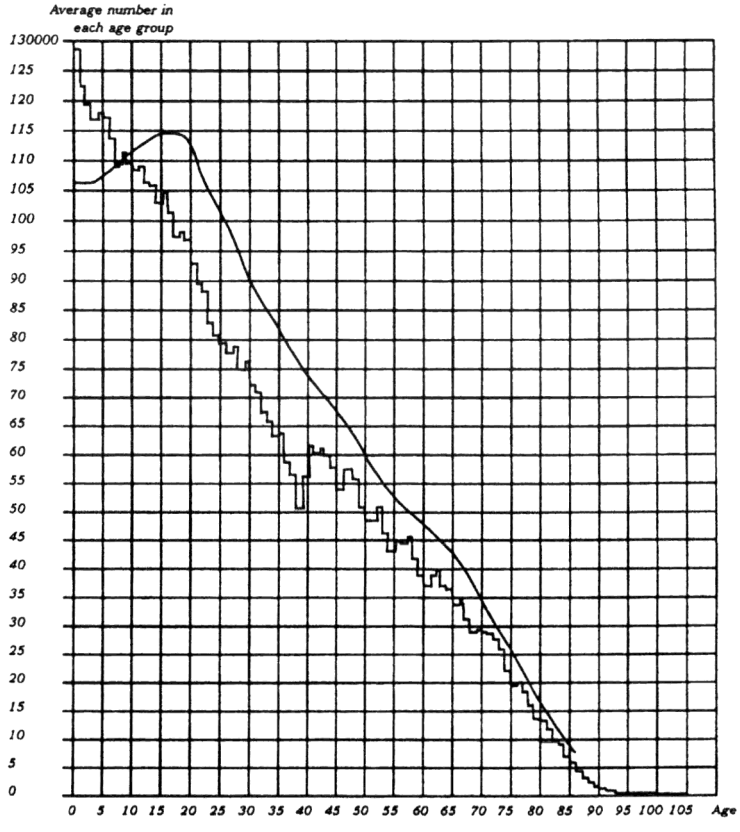

Figure 5.4 The actual population in Sweden in 1906 (in detail) and in 1925 (in broad outline)

Source: Wicksell (1926: 9)

stationary population with precisely the same age specific mortality. The main difference between the actual and the hypothetical populations is, according to Wicksell (1979 [1910a]: 126), the growth of population that characterises the former. The invariable age composition of the population is determined by the fixed mortality schedule and by a stream of births that increases at a constant rate (this is a 'stable population', as shown by Lotka; see Pressat 1972: 318–28). Instead of Perozzo's stereogram used by Pareto, Wicksell draws the survival curve for the births in each year over the period 1806–1906 (see Figure 5.5). The age distribution of the actual population is 'represented by a locus made up of only one point on each of these 101 curves' (1979 [1910a]: 127). In Figure 5.5, only every tenth survival curve is

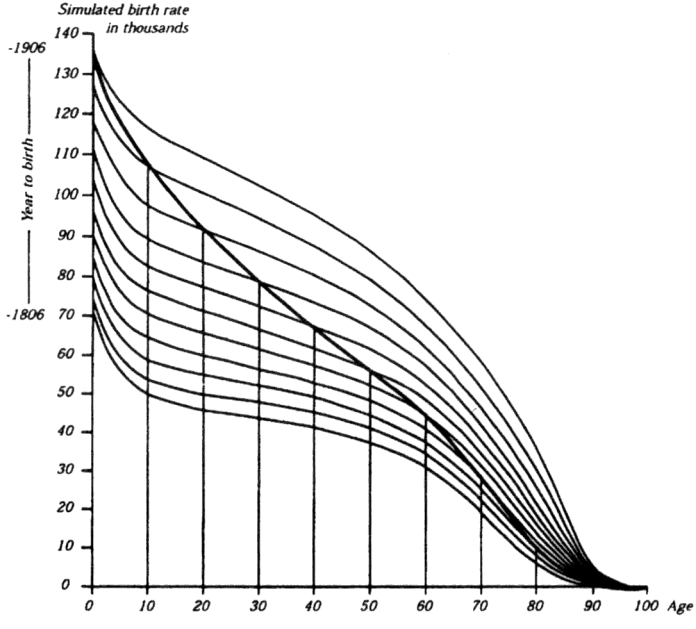

Figure 5.5 The effects of a successively increasing birth rate
Source: Wicksell (1926: 11)

included and it is assumed a constant geometric rate of growth of births of about 0.7 per cent per year in the period.

Other factors that account for the discrepancy between the age distributions of the actual and stationary populations are the facts that mortality was higher in the past in all age groups (which reduces the participation of the aged group in the current population) and that the population system is open (Wicksell 1979 [1910a]: 127–8). An emigration flow evenly distributed among all age groups would have the same effect on the age distribution as a stronger mortality. As Wicksell (ibid.: 127) explains, 'the curve would decline more steeply but without any change in its general shape'. But, emigration at that time was concentrated in the 15–35 age group, which means that in the long run all groups over 15 will fall relative to the childhood groups (this is complicated by the effect of the smaller number of women in the fertile age on the stream of births, as Wicksell pointed out).

Pareto dropped from the *Manuel* (1971 [1909]: ch. vii) the discussion on age distribution and the several statistical tables, charts and diagrams displayed in the chapter on population in the *Cours*. Instead, in a footnote on the opening page of chapter vii of the *Manuel*, he referred the reader to Benini (1901): 'On population, see R. Benini, *Principii di Demografia* 1901, a

little-known work, but excellent from all points of view' (Pareto 1971 [1909]: 281, n. 1). The publication of Benini's book gave impulse to what has been described as an era of 'enthusiasm' for demographic studies in Italy. It may be considered the first systematic treatise on the subject in any language, combining elements from the (statistical) core and the (economic and sociologic) rind of demography (see Lorimer 1959: 146; Costanzo 1959: 222). Pareto reviewed the book in 1901 for a German journal and urged its translation, praising especially Benini's approach to social hierarchies (Pareto 1966 [1901]; see Benini 1901: 289 ff., where he referred to Pareto's research on what later became known as 'Pareto's Law' of income distribution, advanced in the *Cours*, vol. 2, book 3). Probably under the influence of Benini's arrangement of the subject, Pareto (1971 [1909]: 281–92) started the chapter on population in the *Manuel* by presenting the main results of his statistical research on income distribution and social heterogeneity.[5]

Wicksell (1901a: 16) listed a few works in the bibliography supplied at the beginning of his chapter on population, among them a couple of entries from German encyclopaedias and an essay by the Swedish demographer Gustav Sundbärg. He did not refer to those works or to any others while discussing the age composition of population, though. Judging by Bortkiewicz's (1914: 972) reaction – in his review of the German edition of *Lectures*, vol. 1 – to Wicksell's diagrammatic presentation of population dynamics, it may be the case that there was an element of originality in Wicksell's treatment, especially as far as Figure 5 is concerned. According to Bortkiewicz, 'in themselves, these illustrated statements [about population composition] are really instructive for political economy because of their practical graphic presentations ...'. In the same vein, L. Robbins, in his preface to the English translation of Volume 1 of *Lectures*, stated that 'in the statistical field, [Wicksell] did much important work on the mechanics of population increase' (Wicksell 1934 [1901c]: xii). Robbins probably had in mind Wicksell's discussion of demographic transition paths (see also Henriksson 1991: 41).

There were no diagrams in the essay on the 'theory of population' by G. Sundbärg (1902), the leading Swedish demographer of the early 1900s. Apart from one analytical point, Sundbärg's exposition of the subject was dominated by the presentation of statistical data. The analytical point (ibid.: 8; 1900: 92) was his finding that the participation of the 15–50 age group in the population of several countries under different circumstances is stable. Assuming that mortality is approximately the same in the age groups 0–15 and above 50, Sundbärg (1900: 93) claimed that the general death rate is not affected by age distribution. Interestingly enough, as we saw above, Wicksell (1979 [1910a]: 125–26) also found in his exercise little variation in the participation of the 15–50 group, but, in contrast with Sundbärg, he concluded that the death rate is lower in a growing population because of the higher mortality of old age groups in comparison with young age (despite high infant mortality in the first year of life). Bortkiewicz (1911:

especially 108; see note 3 above) carried out a detailed mathematical and statistical investigation of the matter by calculating the death rates (and average life expectancy) for stationary and growing populations subjected to the same life table. He came to the conclusion that the death rate is lower in a steadily growing population, which is the same result as the one obtained by Wicksell in his brief exercise.

Population and 'maximum ophelimity'

Having finished the description of the 'state of a population', Pareto (1896–7: sec. 171) set out to examine whether such a state depends on economic conditions. The main goal of the rest of the chapter on population in the *Cours* is to establish whether the production of 'capitaux personnels' (personal capital, or population) follows rules similar to the production of other categories of capital. Pareto (ibid.: sec. 90) borrowed from Walras the notion of capital as all economic goods that can be used in production more than once, and its classification into three categories: that is, mobile capital, land capital and personal capital. But, while Walras (1954 [1874–7]: ch. 17) distinguished 'capital proper' ('produced' capital goods) from 'natural capital' (land and population), Pareto (1896–7: sec. 97) adopted in his equations of production the general expression 'capitaux', without any separation into categories (cf. Garegnani 1978 [1960]: appendix G). According to Walras (1954 [1874–7]: sec. 237), the quantity of personal capital 'does not depend on fluctuations in industrial productivity, but on changes in population'. But, like capital goods proper, personal capital is subject to 'wear and tear' (depreciation) and to 'destruction by accident' (insurance), which are 'provided for by procreation and the maintenance, rearing and education of wives and children of workers'. Walras concludes from this that 'the quantity of personal faculties, like the quantity of land, is always a given and not an unknown element of our problem'. Walras's assumption that the quantity of workers is independent of the price system was repeated by Cassel (1932 [1918]: 351–2; cf. Spengler 1969: 156–7), who did not refer to Walras, as usual.[6] It should be noted that the 'given' population does not result from the assumption of stationarity as the condition of equilibrium à la J. B. Clark (see Robbins 1930: 204), but from the notion that population is basically decided by non-economic causes and should be taken (like tastes in the utility functions) by the economist as a datum.[7]

In contrast with Walras and close to Marshall (1990 [1890]: book iv, ch. 4, and book vi, ch. 2; cf. Robbins 1930: 204–5; Spengler 1955: 56–62), Pareto (1896–7: secs 171, 174, 266) contends that the formation of personal capital is significantly affected by changes in economic conditions, in the sense that 'the production of men is proportional to the need for personal capital' in the economy, just like other capital goods. In this case, savings are allocated to the production of personal capital (that is, population growth) in accordance with the principles of 'maximum ophelimity in capitalisation',

which, together with the equilibrium conditions in the spheres of consumption and production, is one of the conditions to achieve maximum ophelimity for each individual in society (see 1896–7, vol. 2: secs 723–4; cf. Spengler 1944: 572–81).[8] Savings are absorbed in the production of personal capital because of the expenses involved in bringing children to adult age, that is, what Pareto called (after Ernst Engel) the 'cost of production of a man' (1896–7: secs 253 and 258). Pareto was aware of the influence of non-economic factors on the level and growth of population, but pointed out that, for his results, it was enough to assume that population dynamics is at least partially governed by economic conditions (ibid.: sec. 171) and that the production of personal capital reacts to changes in demand for workers, given the tastes and habits of individuals (cf. Becker 1960: 211, for a similar reasoning in order to allow for demographic changes unrelated to economic factors).

> The facts show us that [population] increase is closely bound to the economic and moral benefits that transformations of other capital into personal capital procure. These benefits depend naturally upon the tastes and habits of the individuals under consideration.
>
> (Pareto 1896–7: sec. 185)

Despite his reference to 'moral benefits' (see also ibid.: sec. 256), Pareto stressed mostly the 'economic profit' aspect of parenthood (cf. Carbon 1976: 18–19). The production of children was treated by Pareto mainly as a means of investing in 'capital goods' with expected future returns, not as a means of spending income on 'consumption goods' that give psychic satisfaction in the present (see Blaug 1997: 74, for this distinction in connection with classical economics; cf. Razin and Sadka 1995: chs 3 and 4). This put him firmly in the classical Malthusian tradition, as attested by his quotation of Adam Smith's (1976 [1776]: 98) famous remark that 'the demand for men, like that of any other commodity, necessarily regulates the production of men' (Pareto 1896–7: sec. 183; quoted also by Wicksell 1979 [1910a]: 142). Pareto (1896–7: secs 171 and 258) points out that even if most people do not decide rationally their course of action, but act instinctively on tradition and custom, it is still true that such customs are 'formed under the empire of economic agents'. It was clear to Pareto that his maximum ophelimity result is only valid if parents are able to forecast correctly future demand for labour (which is complicated by the business cycle) and are altruistic (that is, care about the welfare of their children).

> The ophelimity of parents is not identical with that of children. The entire reasoning which has led us to assume that free competition ensures maximum ophelimity was based on the hypothesis that each individual is free to choose according to his preferences. But it is not the child who chooses to turn savings into personal capital; it is the parents

> who decide for her ... It is the egoism of parents, putting in the world more children than they can conveniently nourish, which is the cause of many of the troubles of humanity.
>
> (Pareto 1896–7: sec. 268)[9]

This double assumption of perfect foresight and altruism is also part of the formal proof by Pazner and Razin (1980: 249 and 252) that the production of the commodity 'population' is Pareto-efficient; another assumption is the existence of perfect capital markets, which is necessary to define the intertemporal family budget constraint (see also Samuelson 1975; Razin and Sadka 1995: ch. 5). Instead of treating children as akin to capital goods, Pazner and Razin, in the tradition of Gary Becker (1960) and others, include children (and their utilities) in the utility function of parents. Pareto's approach in the *Cours*, on the other hand, makes his efficiency result dependent on a positive relation between economic conditions (wealth) and fertility, since he assumed that the 'cost of production of men' does not change with economic conditions. As we shall see below, however, Pareto found in the *Manuel* an inverse relation between permanent positive changes in wealth and fertility variations (1971 [1909]: 294 and 302). This may help to explain why the connection between 'maximum ophelimity' and the production of personal capital is conspicuous by its absence in that book, in marked contrast with the *Cours*.[10]

Pareto based his conclusion of a positive association between economic conditions and population growth on an extensive discussion of the empirical evidence (1896–7: secs 176–9, 226–41). Building on data organised by demographers such as Bela Weisz, Quetelet, Levasseur, Bodio and Körosi, Pareto was able to establish by means of the 'graphical method' a positive relation between cyclical economic fluctuations and oscillations in marriage and birth rates (see also Pareto 1897, where he made use of interpolation methods to fit functions relating the marriage rate in England to the level of exports). It is worth noting that Pareto (1896–7: sec. 176; 1971 [1909]: 295) referred to Marshall (1990 [1890]: 157–8) in this connection. He also carried out an econometric investigation on the influence of infant mortality on the 'cost of production of men', using Engel's (1883) results on cumulative expenditures per child as a function of age (Pareto 1893; 1896–7: secs 253–5). After fitting a curve to mortality data, Pareto obtained an elaborated expression for the cost of production of a person as a function of their age (1893: 454; see also Chipman 1976: 111–2) and concluded that a decrease in infant mortality does not produce a corresponding decrease in that cost, since 'many of those who have survived early childhood die a little later, before becoming adults' (Pareto 1971 [1909]: 302). He then applied these results to estimate the cost to Italy of emigration in the period 1887–93 (*Cours*: secs 253–4).[11] The upshot of his analysis of personal capital in the *Cours* can be found in sections 257–8 on 'the enterprise of the production of men', where he pointed out that it is 'from the comparison between

the cost of production (economic and moral) of men and the advantages (economic and moral) that arises the motive that brings to an extension or restriction of that production'. It is this behaviour (whether instinctive or not) that, according to Pareto, is behind the efficient allocation of savings to personal capital.

The optimum population size

According to Wicksell (1934 [1901c]: 5–6, 8) in the introduction to volume 1 of his *Lectures*, the theory of population and the theory of value constitute 'the foundation of the whole edifice of political economy', since they provide a general theory of consumption (or of 'human wants') in its quantitative and qualitative aspects.

> As regards such needs, or consumption, the *quantitative* point of view emerges first, and in this respect the number of consumers is of decisive importance. Thus, in our first subsection, we naturally treat of the theory of *population*, its composition and changes. Man is, indeed, not only a consumer; he is also a producer. Yet he is, both phylogenetically and ontogenetically ... a consumer long before he is a producer ... Generally speaking, and even apart from the above division of the subject, it will be found that the theory of population, which can never be omitted from a complete treatise on political economy, can never find a suitable place in the system unless it forms an introduction to the whole.
>
> (Wicksell 1934 [1901c]: 6)[12]

In contrast with Pareto's *Cours* (and perhaps contrary to what one might expect from this quotation), Wicksell assumed for the rest of his *Lectures* that the population, as well as the territory and the amount of capital (before part iii on 'capital accumulation') are always the same, in accordance with the 'static point of view' (1934 [1901c]: 7 and 105; see also 1954 [1893]: 22 and 24, for the assumption of a 'completely stationary economy'). Stationarity is here, of course, an assumption and not a result of economic analysis (see Robbins 1930). Wicksell (1934 [1901c]: 105) vindicated the realism of the assumption of no population changes in his theory of production and distribution on the grounds that 'for the most part, they are due to other than purely economic causes and only rarely do they cause the supply of labour available at a given moment, or in the near future, either to increase or decrease', but the main purpose of the stationarity assumption is analytical, not descriptive. This did not prevent the study of the effects of changes in the amounts of population and capital, provided that the 'actual transition stage' is not taken into account, but only the new position of static equilibrium (ibid.: 121, 152, 157). Alternatively, Wicksell (1954 [1893]: 165) considered the possibility of tackling a problem of 'dynamic

equilibrium', where a 'certain rate of progression' of population and the amount of capital goods 'may be assumed to be given'. He was not prepared, however, to 'lay dawn laws for determining the rate of progression itself'.[13]

> How far present-day political economy still is from being able to treat these situations in an exact way, becomes clear if we consider the fact that economists are still by no means agreed as to the extent to which such a progression of society is advantageous or not. In particular, so far as I know, the question has never been raised in economic writings, what size of population is economically most profitable when the amount of capital, size of the area of land, etc., are given. If, therefore, these problems are solved according to the principle of greatest utility, it is obviously a serious drawback that there is not even common agreement *in what direction* economic advantage or disadvantage in fact lies. If, on the other hand, we assume that changes of population are not regulated according to the principle of what is economically most advantageous (in the widest sense of the world), but are regulated now and for ever merely by blind natural instincts, then at least we are on firm ground. In that case, however, we should have no alternative but to accept Ricardo's doctrine of the natural wage – that is, the smallest possible wage – as a fact beyond dispute.
>
> (Wicksell 1954 [1893]: 165–6)

This was the first appearance in print of the notion of 'optimum population', even though the term itself would be introduced by Wicksell later in the *Lectures* (1901a: 49; 1979 [1910a]: 146) and become known in the literature only after its 1913 German translation and Wicksell's address to the 1910 neo-Malthusian conference held in The Hague (Wicksell 1910c; cf. Robbins 1927: 118, n. 3, Buquet 1956: 38, Overbeek 1974: 58–61). It is different from the concept, introduced by Pareto in the *Cours*, of a population consistent with competitive efficiency. What Wicksell had in mind is the socially optimal population size, in the sense that the welfare of society is maximum, which is consistent with his overall utilitarian standpoint.[14] The strong influence of utilitarianism shows in Wicksell's statement that 'the definition of political economy as a practical science is the theory of the manner of satisfying human needs which gives the greatest possible satisfaction to society as a whole, having regard to future generations as well as to the present' (1934 [1901c]: 3; see Gårdlund 1958: 11–12, on Wicksell's general utilitarianism). He warned that one should avoid the 'fundamentally meaningless expression "the greatest happiness of the greatest number" of individuals', which he ascribed to Cesare Beccaria (Wicksell 1934 [1901c]: 3, n. 1; 1997 [1900]: 10; cf. Schumpeter 1954: 131–2), but stick to Bentham's phrase 'greatest possible *sum* of happiness'. Beccaria's definition implies the simultaneous maximisation of two quantities (population and happiness) which are not independent of each other. The utilitarian theory

has two versions: (i) 'classical utilitarianism', formulated by Sidgwick (1907 [1874]) and adopted by Edgeworth (1881, 1925 [1891]), which argued for maximisation of total utility (sum of the utilities of all people), and (ii) 'average utilitarianism', ascribed by some to J.S. Mill (1965 [1848]) and advocated by Wicksell, which argued for maximisation of the average (per capita) utility (see Myrdal 1953: 38–9; Spengler 1955: 268–73; Rawls 1972: 161 ff.; Sumner 1978; Parfit 1984; Broome 1991). These alternative formulations have different implications as far as the determination of 'optimum population' is concerned.

The question 'which is, under given conditions, the optimal density of population in a country? Is the actual population, under these conditions too large, about right, or too small, and which criteria could be used?' was, according to Wicksell (1979 [1910a]: 146), 'eminently economic'. One could say it belongs to the realm of welfare (i.e. normative) economics, adding a new dimension (population growth) to the traditional approach to welfare economics (cf. Pitchford 1974: ch. 5; Sumner 1978: 95; Razin and Sadka 1995: 37–8). On the other hand, the second problem of population, that is, 'in what way should the equilibrium between births and deaths, if it is necessary or desirable, be achieved and maintained?' is of a quite 'different nature', since 'it touches on a great number of other social concerns than the purely economic ones' (Wicksell 1979 [1910a]: 147; see also Wicksell 1913 [1901b]: ix–x). This is the so-called 'Malthusian dilemma' between preventive checks, which reduce fertility, and positive checks, which increase mortality. As we shall see below, Wicksell stressed the close connection between preventive checks and the widespread knowledge and application of contraceptive methods.

Wicksell did not make clear, in the first edition of his population chapter, which of the two utilitarian schools (classical or average) he supported. He referred generically to '*economic* overpopulation' as a condition defined by a population '*larger than the desirable*, so that its reduction should raise general welfare' (Wicksell 1901a: 49–50 [my translation]). In the 1910 revised version, he defined optimal population density as 'the point where an increase of population would no longer in itself lead to any average increase in welfare but to the opposite' (1979 [1910a]: 146), which is clearly in the 'average utilitarianism' tradition. As suggested by Wicksell in an unpublished manuscript also written in 1910, the choice between the two utilitarian approaches has to do with whether or not individual men view society as an organism distinct from its individual parts and, accordingly, whether one should maximise total utility $u(c)N$ or average utility $u(c)$, where u, c and N stand for utility, consumption per capita and population, respectively (cf. Pitchford 1974: 89–90; Razin and Sadka 1995: 49–50). After referring to data organised by the German demographer P. Mombert (1907) showing that, despite intense economic growth in Germany in the second half of the nineteenth century, about one half of the German population was underfed, Wicksell contends:

> Can there be any reasonable doubt that this thrifty and intelligent people would have been enormously better off if it had kept its number at the same figure (35 million) as fifty years ago? Of course the population question has other aspects than the *purely* economical. 'Man is man's joy' as the Edda says, and if two families can get a moderate livelihood on a spot where one family alone could be just indifferently better off, the 'sum of happiness' may in reality be greater in the first instance. And there are other apprehensions in connection with the lamentable fact that to a considerable extent man is man's terror also. But with all this we as economists have nothing to do. Our task is to find out the optimum conditions of economic life even in regard to population ... . And I have little doubt that when economists once get the courage of truly grasping this problem their unanimous verdict will be that the number of population most conductive to human happiness lies far below the present figure in every old country.
>
> (Wicksell 1910d)[15]

Wicksell's adoption of average utilitarianism may be explained in part by his path breaking development of the concept of the optimal size of firms subjected to production functions whose scale properties change with different input combinations, advanced in 1902 and incorporated in the second edition of *Lectures* in 1911 (see Wicksell 1958 [1902]: 122–7; 1934 [1901c]: 126–31). He showed how the optimum scale of operations towards which firms gravitate lies at the point of transition from increasing to diminishing returns, where the production function shows local linear homogeneity such that the 'advantages of centralisation' are about to be 'out weighted by the increased costs which are encountered when larger areas must be exploited for the provision of raw or auxiliary materials, or else for the marketing of the product' (1934 [1901c]: 129; see also Blaug 1997: 435–6; Pitchford 1974: 97–8). In contrast with the classical utilitarian solution (which is consistent with universal constant returns to scale), average utilitarianism must assume that production conditions are such that the productivity of labour is maximum for an intermediary point in the production function (cf. Robinson and Srinivasan 1997: 1214).[16] As Wicksell put it at the 1910 neo-Malthusian meeting,

> Of course there are here two opposite tendencies at work. On the one hand, the productivity of labour is necessarily diminished when each gets a smaller part of the soil or of the powers of nature in general for his share. On the other hand, the joint effort of man in subduing nature, the division of labour, co-operation, the organisation of industry, etc., always tells for something, and under certain conditions for a good deal. The point where these tendencies are just balancing each other is, in fact, the true optimum of population. Now this point is not a fixed one, the stream of invention, the increase of technical knowledge, will gener-

> ally, if not always, push it further; but to assert that therefore this point is not yet reached because there are still inventions in wait for us, is a mere confusion of thought.
>
> (Wicksell 1910c: 84; see also the passage added to second edition of *Lectures* 1934 [1901c]: 123–4; 1979 [1910a]: 147; 1958 (1916b]: 135)[17]

The development of the notion of optimal population by Wicksell in the 1890s and early 1900s was parallel to his studies of production functions and, particularly, to his pioneer conception of a Cobb–Douglas production function. Assuming that 'the amount of concentration [of population] necessary for running certain branches of industry in a sufficiently large scale can generally be had even in a rather thinly populated country, e.g. the west of the United States', Wicksell writes the production function $P = L^a M^b$, where P is the annual output, L the area of land and M the number of men (capital is left out for the sake of simplicity). The 'law of increasing returns' applies if $a + b > 1$; Wicksell contends that in general (except for newly settled countries) $a + b$ will be 'very little more than 1' and makes $a = b = 0.51$, that is, if labour is increased more than land 'the law of diminishing return in its unpleasant meaning soon will come into force', as witnessed by European countries (1910d). As far as the 'colonial countries' are concerned, Wicksell (1999 [1910b]: 148 and 166] suggests that their surplus of exports of foodstuffs and raw materials as a function of population size can be expressed by a sum of two terms, 'of which the first is positive and has a large numerical coefficient and ... is in proportion to the size of the population, while the other is *negative*, with a relatively small coefficient, but ... is proportional to a higher power of the population's numerical strength, e.g. to its square', so that, as the population grows, the export surplus would eventually turn into a surplus of imports. He claims, furthermore, that the kind of inventions relevant for promoting the 'happiness of man' are those that increase output per worker, not per acre – that is, what we call nowadays 'land-augmenting' technical progress (which increases the marginal productivity of labour at the expense of land) and extensive agricultural techniques (1934 [1901c]: 135–6; 1999 [1910b]; 1910c; 1910d).

Wicksell complained that the question of which criteria could be used to decide whether the actual population is 'too large or too small' had not been investigated by economists in depth (1979 [1910a]: 146; 1910c: 83–4). This was not just a theoretical, but mainly a practical issue. As J. Meade (1938: 287–9) was the first to show, assuming that aggregate output is for private consumption only, average utilitarianism implies that population will be at its optimum level when the marginal product of labour is equal to average output per labour, which means that wages, paid according to marginal productivity, absorb the total output (cf. Razin and Sadka 1995: 45–6). Despite Wicksell's (1958 [1902]: 124–6) description of the equality between marginal and average productivities when the latter is at its maximum, there is no indication that he used a criterion similar to Meade's

to establish whether the actual population size is at its optimum level. This can be in part explained by the fact that when Wicksell (1999 [1910b]) carried out an estimation of the optimum population of Sweden as part of his report to the *Commission on Emigration*, he considered an agricultural system consisting of independent families, instead of capitalist farmers and landlords à la Ricardo. This reflected the prevailing conditions in Sweden and, above all, the 'home ownership movement' ('egna-hemsrörelsen') supported by the Swedish state since the early 1900s. Under these conditions, Wicksell (1999 [1910b]: 142–3) assumed that there is a ratio of land to units of work that maximises output per unit of work, which means that (for a family of given size) usually the labour force will cultivate only a fraction of the total area of the farm (see Robinson and Eatwell 1973: 64–70, for a simple but illuminating treatment of agricultural production in the 'independent families' case). Wicksell shows that if the farmer decides to cultivate the whole area more intensively by hiring workers up to the amount at which the marginal productivity on his land is equal to the average income of poorer peasants (assuming for the sake of argument that farms are of different sizes; cf. Robinson and Eatwell 1973: 69–70), he will 'make a profit at the expense of wages', so that the average result per unit of work is necessarily smaller than the current extensive, well-managed farming, although the yield per acre is higher. He stressed that 'relative yield', as opposed to 'profitability', has nothing to do with prices and wages:

> [One] should learn to distinguish between the technical and the economic aspects and, within the latter, between agricultural profitability – which is a matter for the private economist and of only limited interest for the political economist – and relative returns – which are entirely a matter of political economy, or rather, of population.
>
> (Wicksell 1958 [1916b]: 137; cf. Wicksell 1934 [1901c]: 123)

Using data from other studies, Wicksell (1999 [1910b]: 144) assumed that a family of about five working people would maximise average productivity per worker if only one-fourth of the area of a farm of typical size (about 53 hectares) were cultivated. The total farming area of Sweden (3.6 million hectares) would then be enough to 'provide a *good* living and employment to an agricultural population of approximately 1,350,000 people', that is, about one million less than the actual figures (ibid.: 157–8). As Wicksell put it at the 1922 neo-Malthusian conference held in London, with such a population 'the extremely small lots of arable land available for the present farming population would be extended so as to give full occupation for each family of farmers'. In order to calculate aggregate population, Wicksell further postulated that under these improved productivity conditions, the farming population would be able to support a proportionally larger amount of the urban population (but smaller in absolute amount) than currently,

which led him to a number somewhat larger than the farming population itself (1,700,000), adding up to an aggregate population of about 3 million people, quite below the actual number of 5.4 million in 1910. He referred elsewhere to that result and reaffirmed his conclusion that a reduction of population in Sweden as in the rest of Europe should 'continue through decades' towards the optimum level (1979 [1910a]: 146; 1913 [1901b]: ix).[18] The sharp decline in fertility noticeable since the early 1900s suggested to Wicksell that such a reduction of population was not unthinkable, as we shall see next.

Population growth, Malthus and 'Brentano's law'

Pareto (1896–7: secs 196 and 211) applied interpolation methods to population data of England and Wales between 1801 and 1891 to establish the 'law of population growth' over that period. Such a 'law' was encapsulated by a geometric rate of growth that would double the population every 54 years. He came back to that in 1897 and found that the series was not homogeneous as the growth factor had clearly declined since the 1880s (1897: 81–3); the elaborated statistical formula for the time evolution of population included a negative term representing that influence (see Boianovsky and Tarascio 1998: 18, n. 17, for Pareto's curve-fitting methods, which he also used in order to distinguish between fluctuations of different amplitude in business-cycle analysis). Pareto (1896–7: secs 196 and 211) had forecast, against the view of 'sentimental anti-Malthusians', that the high rates of population growth of England and Wales and Germany over most of the nineteenth century would not continue during the twentieth, but give way to a new law of population increase (that is, a lower rate of annual geometric growth). He was pleased to see those forecasts confirmed while discussing later on the facts of population growth in the early 1900s (Pareto 1935 [1916]: sec. 77) and reaffirmed in Malthusian fashion that 'it is therefore evident that forces limiting increment of population must have interfered with the genesic tendency in the past, or will do so in the future' (1896–7: sec. 198; cf. Spengler 1944: 586–7).[19] In the same vein, Pareto (1896–7: sec. 234) interpreted the measured tendency to delay marriage as an indication of the 'increased intensity of the preventive check' to population growth (see also 1971 [1909]: 305).

Wicksell (1958 [1897]: 146–7) approved of Pareto's conclusion that the rate of increase of population during the 1800s was 'quite exceptional'. The falling trend in the birth rate that had begun in the last decades of that century gradually convinced him that the 'population question' was taking on a new aspect (see especially Wicksell 1924; see also the literature on the so-called 'demographic transition' mentioned in Ehrlich and Lui 1997: 211–2). Instead of Pareto's interpolation methods, Wicksell used in his population projection exercises the concepts of age-specific fertility and mortality as encapsulated by life table rates. Although he did not refer to the

pioneer study by Edwin Cannan (1895), Wicksell did mention Bowley's (1924) conclusion (largely based on Cannan's method) that, given the then current life table rates, the population of England and Wales would start falling after 1941. In his projections, Wicksell made use of a crucial concept introduced by demographers in the late 1800s, that is, the 'net reproduction rate', which measures the extent to which a given generation assures its replacement (see Pressat 1972: 344 ff.). Fertility data for Berlin in 1914 indicated that population would decline by one-third at the end of each generation assuming the same mortality conditions: 'From all children born today in Berlin during one year, those who survive will be, when they reach the age of 25, one-third less numerous than the men and women of age 25 who live today in Berlin' (Wicksell 1916a: 461–2 [my translation]). In the last edition of his essay on population, Wicksell (1926: 12–14) discussed in detail the effects of the falling birth rate on the age distribution of the Swedish population and, therefore, on future population growth, taking into account changes in average mortality in part induced by the new age distribution itself. He argued that a declining fertility would in the long run necessarily result in an interruption of population growth, or even its turning into a fall, in part because the secular decline of mortality caused by improved medical and sanitary conditions was close to its end. More importantly, the reduction in the birth rate would bring about, after an initial period of transition, a higher participation of old-age groups in population, with ensuing increase of average mortality and reduction of natural population growth (1916a: 459; 1924: 197–9; 1926: 13–14).

But how did Pareto and Wicksell account for declining fertility? According to Pareto's approach, that could only be explained by a reduction (or at least a smaller rate of growth) of the demand for labour, which was not taking place. Empirical research by demographers since the 1890s had established a negative relation (cross section and time) between wealth and fertility (see Lorimer 1959: 144–5). Pareto (1926 [1903]: 142; see also 1971 [1909]: 294) reproduced a table from Benini (1901: 274–5) showing the inverse relation, which he explained by distinguishing between temporary (or cyclical) and permanent effects of changes in economic conditions.

> In certain countries the wealthiest part of the population has a lower birth rate than the poorest; this does not mean that an increase in wealth may not have an initial effect of increasing the number of marriage and births ... Very probably by accustoming men to an easier life, [the increase in wealth] tends to decrease the rate of increase of the population ... The immediate result of an improvement in economic conditions is an increase in the number of marriages and consequently of births; but against it is the other fact that a permanent increase in wealth is linked to a decrease in the number of births; and the second effect greatly outweighs the first.
>
> (Pareto 1971 [1909]: 294 and 302; see also 1897: 86–7)

This was an important distinction, which could also be found in Marshall and in the demographer Mombert (quoted by Brentano 1910: 384).[20] Nevertheless, Pareto's notion of a gradual improvement of the 'standard of life' could only explain why economic prosperity is not accompanied by increasing fertility, not its turning into a fall (cf. Pareto 1896–7: sec. 181).

Wicksell was aware of the empirical findings of an inverse wealth–fertility relation, but, in contrast with Pareto, he put emphasis on the 'supply' factors affecting fertility.[21] According to Wicksell (1979 [1910a]: 133, n. 1), 'the lower fertility of the wealthy is not, as we are sometimes told, directly and physically related to their favourable economic conditions, but at least largely a result of their greater prudence, responsibility and foresight'. The reduction of the birth rate had been observed initially among better educated groups and gradually spread to the rest of the population (Wicksell 1916a: 461–3). Better contraceptive knowledge, strongly advocated by the Malthusian League (of which Wicksell was a prominent member), was instrumental in reducing what Easterlin (1987: 304) has called 'perceived costs of fertility regulation' (see also Carlsson 1966, and Bengtsson and Ohlsson 1994, for an interpretation of fertility reduction in Sweden akin to Wicksell's).[22] Wicksell (1999 [1914a]: 127) pointed to two main categories of motives behind the observed fall in the birth rate: the 'desire to keep the children's future inheritance intact, and not split it up', and, furthermore, 'the anxiety to provide the children with a careful upbringing', so that children are in the same or possibly better social position than their parents. He argued that this process would not lead to an indefinite population decline (that is, to 'underpopulation'), since, as soon as a stationary population was reached, the process of capital accumulation would go on until the economy became saturated with capital. The rate of interest would be zero and permanent consumption (as a function of the stock of capital) would be maximum (cf. Wicksell 1934 [1901c]: 214; Boianovsky 1998: 154). Under these circumstances, 'parents' worries about their children's future would naturally be greatly alleviated', and society would converge to a new condition of 'social equality at a far higher level of social prosperity than at present, but without any tendency to put this prosperity at risk again by either too high or too low a birth rate' (1934 [1901c]: 128–9; see also 1916a: 463–5).[23]

Besides Pareto and Wicksell, the decline of fertility in the early 1900s was also analysed by other economists, among them especially Lujo Brentano (1910), who was a prominent supporter of the German Historical School tradition. After presenting in detail the main facts concerning the inverse relation between wealth and fertility, Brentano (ibid.: 385 ff.) set out to explain the phenomenon and, by that, to criticise the 'doctrine of Malthus'. His explanation was based on the notion that parents are concerned with the quality of their children and, more importantly, on the view that childbearing entails significant opportunity costs (see also Coontz 1957: 67–9).

> The main cause of the decline of fertility is the diminution of the desire for reproduction. As prosperity increases, so do the pleasures which compete with marriage, while the feeling towards children takes on a new character of refinement ... . Parents will rather strive to ensure to the children whom they have already brought into the world a good education and a larger patrimony, so as to equip them better for the modern struggle of life ... . With increasing wealth and culture the variety of man's wants increases, and Gossen's law as to the limit up to which different kinds of pleasure are gratified, in order to realise the maximum of satisfaction on the whole, becomes applicable. Man limits his family when the increase of his family tends to diminish the sum total of satisfaction.
>
> (Brentano 1910: 385–9)

It is worth noting that, according to Brentano, the applicability of Gossen's law to the determination of family size is historically conditioned. Moreover, he believed that the assumption of diminishing marginal utility was justified on the grounds of the well-known Weber–Fechner psychophysical law (cf. Kauder 1965: 136; see also Krabbe 1996: 80, for a discussion of the connections between Brentano's utilitarian philosophy and his historical approach to economics). Interestingly enough, H. Gossen (1983 [1854]: ch. 1) started his path-breaking presentation of the law of equalisation of marginal utilities ('Gossen's second law') from the problem of optimal allocation of lifetime to enjoyable activities (cf. Kauder 1965: 46–8). Brentano's contention was that the cost of child-rearing is an increasing function of child quality and of the value of parents' time, which are positively related to wealth and income per capita.[24] The resulting negative association between wealth and fertility has been called 'Brentano's law' by Dennis Robertson (1958: 134).

Wicksell (1999 [1914a]: 127) referred to the 'reluctance to assume the trouble of giving birth to or bringing up children' as a possible cause of the observed reduction in fertility, but, in contrast with Brentano, he did not express it in terms of time opportunity costs. Moreover, he dismissed its practical relevance on the grounds that these cases 'have perhaps been more the object of outcry than of actual observation'. In the same vein, he listed some of the factors mentioned by Brentano to account for reduced fertility ('large patrimony' and 'better education and training'), but did not organise them in a single utility maximisation formula. Brentano (1910: 385–6) stressed particularly the changing position of women in society and its consequences in terms of opportunity costs. The changing role of women in the early 1900s in Europe and America was acknowledged (and criticised) by Marshall and Pareto, without leading to an application of 'Gossen's law' to the determination of family size, though.

> The rather violent checks to population, which have recently appeared in some strata of some Anglo-Saxon peoples, seem to be partly caused by selfish devotion to 'sports' and other amusements on the part of men; and partly to a selfish desire among women to resemble man; with the effect that, without rendering any high service to the state in masculine work, they destroy that balance and mutual supplementary adaptation of masculine and feminine character, which enabled a man to secure rest and repose by marriage ... . This cause does not seem to diminish the number of marriages much; but it tends to make men delay marriage till their best strength has gone.
>
> (Marshall's letter of 2 June 1909 to L. Dumer; in Pigou 1966 [1925]: 459–60)

> Among very poor peoples women are treated with less regard than domestic animals; among civilised peoples, especially the very wealthy population of the United States of America, women have become objects of luxury who consume but do not produce ... . This condition of women reacts in turn on customs. *Feminism* is a malady which can only beset a rich people, or the rich portion of a poor people.
>
> (Pareto 1971 [1909]: 297–8)

The idea of an economic theory of fertility consistent with observed patterns of behaviour was still largely foreign to neoclassical economics in the early twentieth century.

Final remarks

The study of Wicksell's and Pareto's writings on population shows that a process of 'exchange' of concepts between economists and demographers took place at the time when neoclassical economics established itself as the new orthodoxy. Wicksell and Pareto (like Marshall before them; see Spengler 1955: 56) paid careful attention to the work of demographers in the late 1800s and early 1900s, when the gradual process of development of population studies since the seventeenth century culminated in the emergence of demography as a discipline with a well-defined hard core. The empirical and analytical research of demographers such as Sundbärg, Bortkiewicz, Perozzo, Bodio, Lexis and Benini was extensively referred to in Wicksell's and Pareto's writings on population, as discussed above. According to the neoclassical approach deployed by Wicksell and Pareto, the role of economic theory in the field of population is the study of the relation between optimum or efficient economic states and the size of population. On the other hand, some demographers read Pareto's and Wicksell's respective chapters on population (see Benini 1901: 62, 68, 230–1, 280, 289–90; Bortkiewicz 1914; Buquet 1956: 45 ff., on Wicksell's influence on Mombert and others). However, their notions of optimality and efficiency in

population are nowadays cultivated largely by economists in the new field of 'population economics' (as witnessed by the *Journal of Population Economics*, started in 1987, by Razin and Sadka's 1995 textbook, and by the publication in 1997 of Rosenzweig and Stark's *Handbook of Population and Family Economics*), which combines those concepts into economic models of fertility often based on the inclusion of children in the utility function of parents and on time opportunity costs, a development unanticipated by Wicksell, Pareto and their neoclassical contemporaries.

Notes

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1 The foremost historian of the connections between demography and economics is, of course, Joseph Spengler. His long article on Pareto (Spengler 1944) is a standard reference, but his piece on Wicksell (Spengler 1983) is much shorter and restricted to Wicksell's translated books, without any mention of Wicksell (1979 [1910a]). I shall refer also to Spengler's (1955) comprehensive account of the state of theories of population in British economics immediately before and during the Marshallian era. Jevons's treatment of population in his applied economics has been discussed by Peart (1990), who places him in the 'classical' tradition of Malthus and Ricardo.

2 See articles by Euler, Lexis, Lotka and others reproduced in the collection edited by Smith and Keyfitz (1977). The only piece by an economist included in that collection – apart from an article by Samuelson on the history of stable population theory – is Cannan's (1895) pioneer projection of the population of England and Wales, based on the investigation of the different sex and age components of an initial population.

3 See Bortkiewicz (1911), an article that came close to formulating Lotka's concept of stable population (cf. Samuelson 1977). The path of mathematical statistics was followed by Sven Wicksell, who put forward in the early 1930s an influential attempt to fit equations to the net reproductivity function (S. Wicksell 1977 [1931]).

4 Pareto (1896–7: sec. 158) also referred to Lexis's 'very important' investigations on the 'normal age of death' and reproduced Lexis's famous probability distribution. See Wicksell (1997 [1914c]: 29–39) on Lexis's study of the 'below-normal' and 'above-normal' distributions.

5 On Benini, see Heiss (1978). Benini's most original contribution to demography was the development of an attraction-repulsion index to study cohesion between social groups. See also Benini (1924), written on the occasion of Pareto's death.

6

> Men are not produced for economic reasons, and ... we cannot avoid men being born and brought up who will afterwards prove to be of inferior quality, and will never be able to cover their cost of production by their labour. ... The theory of pricing in the exchange economy must regard the supply of workers primarily as a factor of the problem determined on independent grounds, and thus a given factor, and that in any case it can never

> place this supply on an equal footing with the supply of products of various kinds as one of the unknowns in the pricing problem.
>
> (Cassel 1932 [1918]: 352)

Cassel's criticism was apparently addressed to Marshall's 'supply price' of labour (1990 [1890]: 181, 275).

7 On this see W. Jaffé's illuminating note in Walras (1954 [1874–7]: 530). Jaffé shows that, in order for population to remain constant, Walras's expression $(\mu_p + \upsilon_p)P_p$, in which μ_p and υ_p are respectively the special rates of depreciation and insurance applicable to personal capital of price P_p, must include provision for the 'productive consumption' of the individual worker himself. Walras considers population growth in Chapter 36, but only in the form of shifts in the static equilibrium position brought about by exogenous changes in population, paying his respects to Malthus in the process.

8 Pareto defined 'ophelimity' as 'economic utility', to avoid the ambiguity of the term utility as applied to, e.g. 'unhealthy' consumption (1971 [1909]: 111). It was in his *Manuel* that Pareto (1971 [1909]: 261) put forward the definition of 'maximum ophelimity of the collectivity' as the position when it is impossible to increase the ophelimity enjoyed by certain individuals without decreasing that which others enjoy, known as 'Pareto optimum'. Nevertheless, the concept is already implied in the *Cours* (1896–7: secs 720 ff.).

9 Spengler (1944: 115) drew from that passage the conclusion that Pareto in the end gave up the 'maximum ophelimity' result. However, Pareto did assume in the rest of his *Cours* (see, for example, 1896–7: sec. 724) that the 'capitalisation optimum' applies to all forms of capital, including personal capital, and, therefore, that the production of population is efficient in competitive markets.

10 Spengler (1944: 572) suggested that this change could be explained by the 'less subjective' approach of the *Manuel*. Another factor that should be taken into account is the absence of any analysis in the mathematical appendix to that book of the equalisation of rates of return of the several kinds of capital and, therefore, of the 'capitalisation optimum' of the *Cours* (cf. Garegnani 1978 [1960]: 241–4). Pareto discussed the relation between population increase and the maximum utility of a community from a sociological perspective in the *Trattato* (1935 [1916]: sec. 2134).

11 The topic was discussed by Marshall (1990 [1890]: 469, n. 1, and 705–6), who put forward a mathematical expression for the 'present value of a man' based on the deduction of the worker's consumption from his 'production of wealth' during his lifetime. For a comparison between the 'cost of production' approach of Engel and Pareto and the 'capitalisation' approach of Marshall and others (first used by the English demographer W. Farr), see Kiker (1966). It is worth noting that Wicksell also discussed, in his first published work, the costs of emigration, as measured by the loss of the capital invested in rearing the emigrants (1882; see also 1999 [1910b]: 137–8). He pointed out, however, that, the capital invested is not completely lost, since children who have emigrated generally take care of their own parents in old age (cf. Razin and Sadka 1995: ch. 4, on the so-called 'old-age security motive' and the notion of children as a capital good).

12 It is worth noting that Bortkiewicz (1914: 448) did not accept Wicksell's justification that the special status of population statistics – in an otherwise strictly theoretical book – was granted by the 'quantitative' study of consumption. According to Bortkiewicz, such a quantitative point of view could be represented just as well by statistics of production and consumption of different

goods, which are nowhere to be seen in the *Lectures*. It is hard to resist the interpretation that Wicksell's decision to put population as the starting point of his book had to do in part with the fact that it was his deep concern with population questions in the 1880s which attracted him to economics (see Gårdlund 1958: chs iii–vii).

13 It was only in 1914 that Wicksell put forward a rule for the determination of the pace of net saving (Wicksell 1997 [1914c]; see also Boianovsky 1998).

14 In the approach of Razin and Sadka (1995: 53), the socially optimal population is a point on the frontier of Pareto-efficient allocations decided by the market. It should be noted that Wicksell (1958 [1897]: 142–4) was critical of Pareto's notion that the gain of utility from exchange is an absolute maximum under free competition, since it presupposes an even distribution of the national wealth (cf. Wicksell 1934 [1901c]: 82–3; see also Hennipman 1982: 53–5, for a defence of Pareto against Wicksell's criticism).

15 Wicksell's support of average utilitarianism is also perceptible in his reference to 'the more immaterial good of a not too dense population, the opportunity afforded to everyone of enjoying natural beauty and grandeur, and of occasional solitude, so well pointed out by Mill' (Wicksell 1910c: 85; cf. Mill 1965 [1848]: 750). Wicksell defended Mill against Marshall's (1990 [1890]: 267, n. 1) criticism in that regard.

16 The first mathematical formula for the optimum size of the population according to classical utilitarianism was given by Meade (1955: 1): $u(c) = (c - m).u'(c)$, where m stands for marginal productivity. Adding a new member to the society will raise output by m, so that existing members benefit by m less the new individual's consumption c; but we have to take into account the increase in welfare measured by the utility of the new individual's consumption $u(c)$. One basic problem with the classical principle is that, if the elasticity of average utility with respect to population size is less than one in absolute value, population increases indefinitely as average utility approaches zero (Rawls 1972: 162–3), which has been called the 'repugnant conclusion' by Parfit (1984). Contractual theory (see Rawls 1972: 163 ff.) has provided a rational basis for average utilitarianism, since individuals, if asked to choose between joining two societies of different population sizes, will opt for the one with higher average utility. Sumner (1978: 100–1) has shown that this is only true if the individual has 'an assured place in both societies, however their population may differ'. If this is not the case, probability considerations and expected utility become relevant, and may lead to the sum of utilities criterion.

17 The notion that average productivity is maximum at a given population size can be also found in Cannan (1888) as part of his sharp criticism of Malthusian population theory and of the 'law of diminishing returns' (see Robbins 1927: 114–8; Spengler 1955: 272–3). Cannan (1928 [1914]: 58) suggested that 'just as there is a point of maximum return in each industry, so there must be in all industries taken together'; but, as Pitchford (1974: 102–3; see also Buquet 1956: 30) has shown, this is not necessarily the case. Robbins (1969: 40), after an initial enthusiasm for Cannan's approach, made it clear that he did not bring out enough the contrast between increasing returns due to division of labour and diminishing returns due to the fixity of natural resources. The claim sometimes found in the literature (see, for example, Myrdal 1953: 39) that Stuart Mill originated the concept of optimum population was rejected by Robbins (1969: 39), and by Sumner (1978: 107, n. 8). Fong (1976) ascribes implicitly the paternity of the concept to Wicksell, without referring to the rest of the literature. According to Schumpeter (1954: 258), the notion of an optimum

population goes back at least as far as A. Genovesi's 'popolazione giusta' in the middle of the eighteenth century.

18 Wicksell (1999 [1910b]: 157) stressed that his calculation was only a rough approximation, since a complete answer presupposes a statistical knowledge that is 'far beyond the resources of the present descriptive economic statistics'. Although Wicksell referred elsewhere (1913 [1901b]: ix; 1979 [1910a]: 146; 1922) to the population size obtained in his 1910 exercise as 'optimal', he made clear in that study that the population optimum was probably lower than that (1999 [1910b]: 158). Wicksell's calculation has been surrounded in the literature by a certain mystery, as his assumptions and method have never been described. Buquet (1956: 39), for instance, quotes the passage from Wicksell (1913 [1901b]: ix), where reference is made to Wicksell (1999 [1910b]), but refrained from tracing Wicksell's report on the grounds that even a rough estimate of the optimum size of population is 'impossible' (see also Overbeek 1974: 61). It is true, though, that empirical estimates similar to Wicksell's have been rare in the literature (see Pitchford 1974: 146 ff., for estimates for Australia). It is worth noting that Wicksell discussed the concept of 'le nombre optimum de la population' in the third section of his 1891 manuscript essay written for a French competition on population (see Gårdlund 1958: 150–2).

19 Pareto (1896–7: secs 199–200) suggested a curve reminiscent of the famous 'logistic' in order to describe the evolution of population size through time and its eventual convergence to a stationary level. It could not be the logistic, since that curve – introduced by Pierre-François Verhulst in 1838 to represent the 'law of population growth' (reproduced in Smith and Keyfitz 1977: ch. 37) – became effectively known in the literature only after its independent discovery by the biologists R. Pearl and L. Reed in 1920 (Smith and Keyfitz 1977: ch. 38). Pareto used his curve to interpret Mathus's theory of population in terms of 'virtual' versus 'real' movements of population. In the same vein, Wicksell (1979 [1910a]: 144) pointed out that the 'core of Malthus's doctrine' is the contrast between the physiological potential (the doubling of population every 25 years) and effective population growth. The notion that the competitive economy converges to a steady state with zero population growth has been formalised by Eckstein, Stern and Wolpin (1988) in an overlapping generations growth model with a fixed amount of land.

20 Marshall (1990 [1890]: 439) left the matter undecided: 'It is indeed true that, though a temporary improvement will give a good many young people the opportunity to marry and set up house, for which they have been waiting; yet a permanent increase of prosperity is quite as likely to lower as to raise the birth-rate'. Marshall's main contribution to population economics was probably his notion that the long-run supply of labour in the economy is formed by the number of workers and their *efficiency* (see Coontz 1957: 93–5; Walker 1974; Ehrlich and Lui 1997: 220). Marshall (1990 [1890]: 423) was critical of Malthus's neglect of 'the effects that high wages have in increasing the efficiency not only of those who receive them, but also of their children and grandchildren' (cf. Wicksell 1934 [1901c]: 105).

21 See R. Easterlin (1987), for a comparison between the 'demand approach' started by G. Becker in the 1960s (the 'Chicago–Columbia model') and the 'demand–supply approach' put forward by Easterlin himself in the 1970s (the 'Pennsylvania model').

22 See Himes (1963 [1936]: 256–9) for a history of contraceptive methods in general and of the role of the *Malthusian League* in particular (which existed from 1878 to 1927) in their promotion as part of neo-Malthusianism. Wicksell's pivotal role in the introduction and spreading of neo-Malthusianism in Sweden is discussed in detail by Kock (1945). The use of contraceptive methods was, of

course, extremely controversial at the time, as witnessed by Pareto's remarks that 'the idea that man be so audacious as to calculate the consequences of his sexual satisfaction and, looking ahead, regulate them, appears to certain people to be such a monstrous thing that it is difficult for them to discuss it dispassionately' (1971 [1909]: 309).

23 This was not necessarily the optimal size of population, which Wicksell (1999 [1914a]: 128–9) discussed later on in the article in connection with his 1910 report. He had dealt before (1979 [1910a]: 147–51) with the problem of how population should converge to its eventual stationary – and, if possible, optimal – level. Wicksell rejected the mechanism of increased mortality, which he ascribed to Charles Darwin.

> Darwin himself relates that it was by the study of Malthus' work that he was led to postulate the principle of natural selection. ... In *The Descent of Man* he raises a qualified objection to Malthus' own point of view: he argues that the repressive or positive check, whatever suffering it may inflict on humanity, cannot be completely set aside or even be significantly curtailed, without a considerable danger that mankind would degenerate and decline. The correct reply to this objection ... is probably that the so-called natural selection by its very nature is an unconscious selection, and therefore ceases to exist, in its pure form, as soon as its significance has been discovered and realised.
> (Wicksell 1979 [1910a]: 149; cf. Darwin, 1962 [1859, 1871], ch. 21: 919)

Increased mortality is part of the cyclical convergence process in the tradition of 'the prey and the predator mechanism' of Volterra and Lotka (see Goodwin 1978). Wicksell rejected 'social Darwinism' and stressed instead fertility reduction by means of early marriage and contraceptive methods. He was aware that this 'neomalthusian programme' was against Malthus's own suggestion of 'moral restraint' – late marriage and chastity in the single state – an opinion ascribed more to Malthus's position as a 'clergyman than as a social reformer' (Wicksell 1979 [1910a]: 150; 1922: 65–6; cf. Pareto 1971 [1909]: 305).

24 Cf. the Chicago–Columbia style fertility model put forward by Barro and Sala-i-Martin (1995: 308–21). It is hard to know whether Brentano (1910) had any influence on Becker and others, but the fact that Becker (1960: 215, n. 9) referred to Coontz (1957) (who, as we have seen, included a subsection on Brentano) suggests that the probability of such an influence is not zero.

Bibliography

Barro, R. and Sala-i-Martin, X. (1995) *Economic Growth*, New York: McGraw-Hill.

Becker, G. (1960) 'An economic analysis of fertility', in *Demographic and Economic Change in Developed Countries*, New York: NBER and Columbia University Press.

Behar, C. (1987) 'Malthus and the development of demographic analysis', *Population Studies* 41, 2: 269–81.

Bengtsson, T. and Ohlsson, R. (1994) 'The demographic transition revisited', in T. Bengtsson (ed.), *Population, Economy, and Welfare in Sweden*, Berlin: Springer-Verlag, ch. 2.

Beniger, J. and Robyn, D. (1978) 'Quantitative graphics in the history of statistics: A brief history', *The American Statistician*, 32, 1: 1–11.

Benini, R. (1901) *Principii di Demografia*, Firenze: G. Barbèra.
—— (1924) 'Da Malthus e Ricardo a Vilfredo Pareto', *Giornale degli Economisti*, 64: 90–102.
Blaug, M. (1997) *Economic Theory in Retrospect*, 5th edn, Cambridge: Cambridge University Press.
Boianovsky, M. (1998) 'Wicksell, Ramsey and the theory of interest', *European Journal of the History of Economic Thought* 5, 1: 140–67.
Boianovsky, M. and Tarascio, V. (1998) 'Mechanical inertia and economic dynamics: Pareto on business cycles', *Journal of the History of Economic Thought* 20, 1: 5–23.
Bortkiewicz, L. (1911) 'Die Sterbeziffer und der Frauenüberschuss in der stationären und in der progressiven Bevölkerung', *Bulletin de L'Institut International de Statistique* 19: 63–138.
—— (1914) [Review of K. Wicksell's *Vorlesungen über Nationalökonomie*], *Schmollers Jahrbuch* 38, 2: 447–52.
Bowley, A. (1924) 'Births and population of Great Britain', *Economic Journal* 34: 188–92.
Brentano, L. (1910) 'The doctrine of Malthus and the increase of population during the last decades', *Economic Journal* 20 (Dec): 371–93.
Broome, J. (1991) *Weighing Goods*, Oxford: Basil Blackwell.
Buquet, L. (1956) *L'Optimum de Population*, Paris: Presses Universitaires de France.
Cannan, E. (1888) *Elementary Political Economy*, Oxford: Oxford University Press.
—— (1895) 'The probability of a cessation of the growth of population in England and Wales during the next century', *Economic Journal* 5: 505–15.
—— 1928 [1914] *Wealth*, 3rd edn, London: P.S. King.
Carbon, B. (1976) 'Discussion of the paper by Professor Ohlin', in A. Coale (ed.) *Economic Factors in Population Growth*, London: Macmillan.
Carlsson, G. (1966) 'The decline of fertility: Innovation or adjustment process', *Population Studies* 20, 2: 149–74.
Cassel, G. (1932 [1918]) *The Theory of Social Economy*, New York: Harcourt, Brace.
Chipman, J. (1976) 'The Paretian heritage', *Revue Européene des Sciences Sociales* 14: 65–171.
Coleman, D. and Schofield, R. (1986) *The State of Population Theory: Forward from Malthus*, Oxford: Basil Blackwell.
Coontz, S. (1957) *Population Theories and the Economic Interpretation*, London: Routledge and Kegan Paul.
Costanzo, A. (1959) 'Contributions of Italy to demography', in P. Hauser and O. Duncan (eds) *The Study of Population: An Inventory and Appraisal*, Chicago: University of Chicago Press, ch. 10.
Darwin, C. (1962 [1859, 1871]) *The Origin of Species* and *The Descent of Man*, New York: Modern Library/Random House.
Dupâquier, J. (1985) *Histoire de la Démographie: La Statistique de la Population des Origines à 1914*, Paris: Pervin.
Easterlin, R. (1987) 'Fertility', in J. Eatwell, M. Milgate and P. Newman (eds), *The New Palgrave*, London: Macmillan, Vol. 2: 302–8.
Eckstein, Z., Stern, S. and Wolpin, K. (1988) 'Fertility choice, land, and the Malthusian hypothesis', *International Economic Review* 29, 2: 353–61.
Edgeworth, F.Y. (1881) *Mathematical Psychics*, London: Kegan Paul.
—— (1925 [1891]) 'Review of H. Sidgwick's *The Elements of Politics*', in *Papers Relating to Political Economy*, London: Macmillan, Vol. 3: 15–20.

Ehrlich, I. and Lui, F. (1997) 'The problem of population and growth: A review of the literature from Malthus to contemporary models of endogenous population and endogenous growth', *Journal of Economic Dynamics and Control* 21, 1: 205–42.

Ekelund, R. and Hébert, R. (1993) *A History of Economic Theory and Method*, 3rd edn, New York: McGraw-Hill.

Engel, E. (1883) *Der Kostenwerth des Menschen*, Berlin: Simion.

Fong, M. (1976) 'Knut Wicksell's "The Two Population Questions"', *History of Political Economy* 8, 3: 311–23.

Gårdlund, T. (1958) *The Life of Knut Wicksell*, Stockholm: Almqvist and Wiksell.

Garegnani, P. (1978 [1960]) *Il Capitale nelle Teorie della Distribuzione*, Milano: Giuffrè.

Goodwin, R. (1978) 'Wicksell and the Malthusian catastrophe', *Scandinavian Journal of Economics* 80, 2: 191–8.

Gossen, H. (1983 [1854]) *The Laws of Human Relations and the Rules of Human Action Derived Therefrom*, trans. R.C. Blitz, Cambridge, MA: MIT Press.

Hauser, P. and Duncan, O. (eds) (1959) *The Study of Population: An Inventory and Appraisal*, Chicago: University of Chicago Press.

Heiss, K.-P. (1978) 'Benini, Rodolfo', *International Encyclopaedia of Statistics*, New York: Free Press, vol. 1: 16–18.

Hennipman, P. (1982) 'Wicksell and Pareto: Their relationship in the theory of public finance', *History of Political Economy* 14, 1: 37–64.

Henriksson, R. (1991) 'The facts on Wicksell on the facts: Wicksell and economic history', *Research in Economic History* suppl. 6: 33–50.

Himes, N. (1963 [1936]) *Medical History of Contraception*, New York: Gamut.

Kauder, E. (1965) *A History of Marginal Utility Theory*, Princeton: Princeton University Press.

Kiker, B. (1966) 'The historical roots of the concept of human capital', *Journal of Political Economy* 75, 5: 481–99.

Kock, K. (1945) 'Nymalthusianismens genombrott i Sverige', in *Studier i Ekonomi och Historia – Tillägnade Eli Heckscher*, Uppsala: Almqvist and Wiksell, 73–88.

Krabbe, J. (1996) *Historicism and Organicism in Economics: The Evolution of Thought*, Dordrecht: Kluwer.

Lorimer, F. (1959) 'The development of demography' in P. Hauser and O. Duncan (eds) *The Study of Population: An Inventory and Appraisal*, Chicago: University of Chicago Press, ch. 6.

Lotka, A. (1956 [1925]) *Elements of Mathematical Biology*, New York: Dover.

Marshall, A. (1990 [1890]) *Principles of Economics*, London: Macmillan.

Meade, J. (1938) *An Introduction to Economic Analysis and Policy*, New York: Oxford University Press.

—— (1955) *Trade and Welfare*, Vol. 2, London: Oxford University Press.

Mill, J.S. (1965 [1848]) *Principles of Political Economy*, Toronto: Toronto University Press.

Mitchell, W.C. (1969) *Types of Economic Theory*, Vol. 2, New York: Kelley.

Mombert, P. (1907) *Studien zur Bevölkerungsbewegung in Deutschland in den letzten Jahrzehnten mit besonderer Berücksichtigung der ehelichen Fruchtbarkeit*, Karlsruhe: G. Braunsche.

Myrdal, G. (1953) *The Political Element in the Development of Economic Theory*, London: Routledge and Kegan Paul.

Overbeek, J. (1974) *History of Population Theories*, Rotterdam: Rotterdam University Press.

Pareto, V. (1893) 'La mortalitá infantile ed il costo dell'uomo adulto', *Giornale degli Economisti* 2 (Nov): 451–6.

—— (1896–7) *Cours d'Économie Politique*, 2 vols, Lausanne: F. Rouge.

—— (1897) 'Quelques exemples d'application des méthodes d'interpolation à la statistique', *Journal de la Societé de Statistique de Paris* 38 (Nov): 367–79.

—— (1926 [1903]) *Les Systèmes Socialistes*, Vol. 2, Paris: Giard.

—— (1935 [1916]) *The Mind and Society*, New York: Harcourt, Brace.

—— (1966 [1901]) 'De la démographie', in G. Busino (ed.), *Mythes et Ideologies*, Geneva: Droz, p. 194.

—— (1971 [1909]) *Manual of Political Economy*, London: Macmillan.

Parfit, D. (1984) *Reasons and Persons*, Oxford: Oxford University Press.

Pazner, E. and Razin, A. (1980) 'Competitive efficiency in an overlapping-generation model with endogenous population', *Journal of Public Economics* 13, 2: 249–58.

Peart, S. (1990) 'The population mechanism in W.S. Jevons's applied economics', *Manchester School* 58, 1: 32–53.

Perozzo, L. (1880) 'Della representazione graphica di una colletività di individui nella successione del tempo', *Annali di Statistica* 12: 1–16.

Pigou, A. (ed.) (1966 [1925]) *Memorials of Alfred Marshall*, New York: Kelley.

Pitchford, J. (1974) *Population in Economic Growth*, Amsterdam: North-Holland.

Pressat, R. (1972) *Demographic Analysis*, Chicago: Aldine-Atherton.

Rawls, J. (1972) *A Theory of Justice*, Oxford: Oxford University Press.

Razin, A. and Sadka, E. (1995) *Population Economics*, Cambridge, Mass.: MIT Press.

Robbins, L. (1927) 'The optimum theory of population', in *London Essays in Economics: In Honour of Edwin Cannan*, London: Routledge, pp. 103–34.

—— (1930) 'On a certain ambiguity in the concept of stationary equilibrium', *Economic Journal* 40 (June): 194–214.

—— (1969) *The Theory of Economic Development in the History of Economic Thought*, London: Macmillan.

Robertson, D.H. (1958) *Lectures on Economic Principles*, Vol. 2, London: Staples.

Robinson, J.V. and Eatwell, J. (1973) *An Introduction to Modern Economics*, London: McGraw-Hill.

Robinson, J. and Srinivasan, T. (1997) 'Long-term consequences of population growth' in M. Rosenzweig and O. Stark (eds) *Handbook of Population and Family Economics*, Amsterdam: North-Holland, ch. 21.

Rosenzweig, M. and Stark, O. (eds) (1997) *Handbook of Population and Family Economics*, Amsterdam: North-Holland.

Samuelson, P.A. (1975) 'The optimum growth rate for population', *International Economic Review* 16, 3: 531–8.

—— (1977) 'Resolving a historical confusion in population analysis', in D. Smith and N. Keyfitz (eds) *Mathematical Demography: Selected Papers*, Berlin: Springer, ch. 15.

—— (1985) 'Models of thought in economics and biology', *American Economic Review* 75, 2: 166–72.

Schumpeter, J.A. (1954) *History of Economic Analysis*, New York: Oxford University Press.

Sidgwick, H. (1907 [1874]) *The Methods of Ethics*, 7th edn, London: Macmillan.

Smith, A. (1976 [1776]) *An Inquiry into the Nature and Causes of the Wealth of Nations*, Oxford: Oxford University Press.

Smith, D. and Keyfitz, N. (1977) *Mathematical Demography: Selected Papers*, Berlin: Springer.

Spengler, J. (1944) 'Pareto on population', *Quarterly Journal of Economics* 58 (Aug): 571–601; 59 (Nov): 107–33.

—— (1955) 'Marshall on the population question', *Population Studies* 8 (Mar): 264–87; 9 (July): 56–66.

—— (1969) 'Cassel on population', *History of Political Economy* 1, 1: 150–72.

—— (1983) 'Knut Wicksell, father of the optimum', *Atlantic Economic Journal* 11, 4: 1–5.

Sumner, L. (1978) 'Classical utilitarianism and the population optimum', in R. Sikora and B. Barry (eds) *Obligations to Future Generations*, Philadelphia: Temple University Press.

Sundbärg, G. (1900) 'Sur la répartion de la population par âge et sur les taux de mortalité', *Bulletin de l'Institut International de Statistique* 12: 89–94.

—— (1902) 'Befolkningsläran', in *Det Ekonomiska Samhällslifvet*, Stockholm: Fahlcrantz, ch. xi.

Vance, R. (1959) 'The development and status of American demography', in P. Hauser and O. Duncan (eds) *The Study of Population: An Inventory and Appraisal*, Chicago: University of Chicago Press, ch. 14.

Walker, D. (1974) 'Marshall and the long-run supply of labour', *Zeitschrift für die Gesamte Staatswissenschaft* 130, 4: 691–705.

Walras, L. (1954 [1874–7]) *Elements of Pure Economics*, London: Allen and Unwin.

Westergaard, H. (1932) *Contributions to the History of Statistics*, London: P.S. King.

Wicksell, K. (1882) *Om Utvandringen, dess Betydelse och Orsaker* [On Emigration, its Significance and Causes], Stockholm: Bonnier.

—— (1891) *La Population, les Causes de ses Progrès et les Obstacles qui en Arrêtent l'Essor*, unpublished manuscript, Lund: Wicksell Archives.

—— (1901a) *Föreläsningar i Nationalekonomi*, Vol. 1, Lund: Berlingska.

—— (1910c) 'The optimum of population', *Malthusian*: 83–5.

—— (1910d) *The Laws of Increasing and Diminishing Returns*, unpublished manuscript, Lund: Wicksell Archives.

—— (1913 [1901b]) *Vorlesungen über Nationalökonomie*, Vol. 1, Jena: Fischer.

—— (1916a) 'La guerre, la paix et l'accroissement de la population', *Scientia* 19: 457–66.

—— (1922) 'The crux of Malthusianism', in *Proceedings of the Fifth International Neo-Malthusian and Birth-Control Conference*, London, 11–14 July: 64–9.

—— (1924) 'Befolkningsfragans nuvarande läge', *Tiden* 16: 193–208.

—— (1926) *Läran om Befolkningen, dess Sammanättning och Förändringar*, 2nd edn, revised by Sven Wicksell, Stockholm: Bonniers.

—— (1934 [1901c]) *Lectures on Political Economy*, Vol. 1. London: Routledge and Kegan Paul.

—— (1954 [1893]) *Value, Capital and Rent*, London: Allen and Unwin.

—— (1958 [1897]) [Review of Pareto's *Cours d'Économie Politique*], in E. Lindahl (ed.) *Knut Wicksell: Selected Papers on Economic Theory*, London: Allen and Unwin, 141–58.

—— (1958 [1902]) 'On the problem of distribution', in E. Lindahl (ed.) *Knut Wicksell: Selected Papers on Economic Theory*, London: Allen and Unwin, 121–30.

—— (1958 [1916b]) 'The "critical point" in the law of decreasing agricultural productivity', in E. Lindahl (ed.), *Knut Wicksell: Selected Papers on Economic Theory*, London: Allen and Unwin.

—— (1979 [1910a]) 'The theory of population, its composition and changes', in S. Strom and B. Thalberg (eds) *The Theoretical Contributions of Knut Wicksell*, London: Macmillan, 123–51.

—— (1997 [1900]) 'In defence of the theory of marginal utility', in B. Sandelin (ed.), *Knut Wicksell: Selected Essays in Economics*, London: Routledge, vol. 1, ch. 1.

—— (1999 [1910b]) 'Emigrationsutredningen, bilaga 18' (trans. T. Chamberlain as 'From *The Emigration Enquiry*, appendix 18: statements by Swedish men of science'), in B. Sandelin (ed.) *Knut Wicksell: Selected Essays in Economics*, London: Routledge, vol. 2, ch. 25.

—— (1999 [1914a] 'Kan ett land få för lite folk?' (trans. T. Chamberlain as 'Can a country become underpopulated?'). in B. Sandelin (ed.) *Knut Wicksell: Selected Essays in Economics*, London: Routledge, vol. 2, ch. 24.

—— (1914b) 'Professurer i statistik' *Ekonomisk Tidskrift* 16: 58–62.

—— (1997 [1914c]) 'Lexis and Böhm-Bawerk', in B. Sandelin (ed.) *Knut Wicksell: Selected Essays in Economics*, London: Routledge, vol. 1, ch. 3.

Wicksell, S. (1977 [1931]) 'Nuptiality, fertility and reproduction', in D. Smith and N. Keyfitz (eds) *Mathematical Demography: Selected Papers*, Berlin: Springer, ch. 35.

6 Competition and economic temperature

The entropy law in Emanuele Sella's work

Claudia Rotondi

Introduction

The historiographical problem of the interdisciplinary relationships between economic theory and the other fields of science opens a wide perspective not always considered with particular attention in the history of economics. In the last decades, Mirowski (1989), Martinez Alier (1987), Georgescu-Roegen (1971) and some other authors have undoubtedly contributed to fill this gap partly, sketching out significant interpretative lines. Thanks to these works it is nowadays possible to stress the importance of some loose pieces so far excluded from the view of a 'coherent' reconstruction of the history of economic analysis. Could it not be that the ideas of persons often unknown to historians themselves, or at least labelled as strange, odd, insubstantial and fruitless expressions of cultural contamination, find a sort of legitimisation, if not revaluation? Among these strangers we may include Emanuele Sella.

Sella's life and work

Emanuele Sella was born on 3 February 1879 in Valle Mosso (Biella). He went to school in Turin. He left school in 1897 before obtaining his final diploma in order to take an active part in the electoral campaign; he supported socialism and contributed to Turati's magazine *La Critica Sociale*. Following the 1898 upheavals he took refuge in Geneva, where he went to the university for three semesters between 1898 and 1899, regularly attending the courses of Maffeo Pantaleoni. He returned to Italy and obtained his final high school diploma and then enrolled in the Faculty of Law in Turin where he obtained his degree in 1902 with a thesis entitled *Il Libero Scambio è Favorevole all'Economia della Nazione, al suo Sviluppo Industriale e nella Fattispecie al Progresso dell'Industria Laniera* ['Free Trade is Favourable to the Economy of a Nation, to its Industrial Development and, in this case, to the Progress of the Wool Industry'].

Between 1901 and 1902, Emanuele Sella went to London where he attended the *Economic School* and the *Royal Statistical Society*. When he was a

student he began to attend the *Laboratorio di Economia Politica* of Turin, at which he became assistant lecturer in 1903. He taught Statistics and Political Economy at the *Università Commerciale* of Turin in 1902–3. In 1905 he became a professor. In 1903 he started to teach in Perugia at the *Reale Istituto Superiore Agrario*, teaching political economy applied to agriculture. From 1909 he also taught political economy at the *University of Perugia* where he obtained the chair of Professor in 1911 and became Rector in 1911 and in 1912. Over the next few years he taught for short periods of time in Sassari, Cagliari, Messina, Parma and finally, for many years, in Genoa, where he was appointed Rector after the fall of Fascism, and again from 1945 until 1946, the year of his death.

I believe that in relation to the subject of this paper, first of all it is important to emphasise how, from his youth, alongside his interest in economic studies, Emanuele Sella also had a passion for poetry and for history. This is something which can help us to understand Sella's special style of structuring and writing his works of an economic nature. In 1899 Emanuele Sella wrote his first economic treatise: *L'Emigrazione Italiana in Svizzera*. In the same period he also wrote his first volume of poetry – *Questo è Sogno* (1900) – and his first historical work, the critical edition of *Memorie di Biella di G.T. Mullatera* (1902).

His many and varied interests are the key to understanding his scientific method. Emanuele Sella is a personality who in some ways is a 'nineteenth-century man' because of the extensiveness and heterogeneity of his culture. He had a remarkable 'encyclopaedic knowledge', which already in his time was difficult, if not impossible, to find in any other scholar because of the need for specialisation.

His intellectual work is in a certain sense marked by a paradox. A poet in style and imagination, he dedicated much of his work to economic analysis. He wrote poetry, but was an economist.

Sella was a liberal at a time when economic liberalism was viewed as a consequence of political liberalism, and in 1917 he wrote a socialist reform programme (Sella 1917). He was respectful of classic orthodoxy but, nevertheless, he was a convinced heterodoxian. Sella coined more neologisms than any other economist of his time, he used many words coming from other sciences which were normally unknown to economists, and yet he wrote an essay on the need for a uniform economic terminology (Sella 1907). In the first twenty years of the twentieth century he contributed to an economic theory which anticipated certain key issues of the corporative economy, although he declared himself an enemy of corporativism.

Emanuele Sella is almost unknown, not only to non-Italian historians of economic thought but also to Italians themselves. In his *Reminiscenze*, Luigi Einaudi dedicated a few affectionate pages to Emanuele Sella; he wrote: 'Everybody knows the titles of his works: *La Vita della Ricchezza*, *La Concorrenza*, *La Dottrina dei Tre Principii*' (Einaudi 1980 [1950]: 113–4).[1] Einaudi lamented the fact that sometimes the work of certain scholars is

prematurely forgotten, perhaps because they are guilty of not having 'given to those in the future the full measure of themselves': he included among these Emanuele Sella whom he defined as 'the brotherly friend of my youth ... whom I knew and loved when he was still a high school student'. The historical memory of this author now appears to have disappeared completely, and with him not only the content of his works but probably even their very titles.[2]

In this respect I would like to describe briefly the practical experience of reading one of his works, the material-physical approach to his books. To read one of Emanuele Sella's books means reading not only its text but also the long and very important notes (which are almost preponderant with respect to the text); it means being faced with hundreds and hundreds of bibliographical references. Emanuele Sella's archives include a file with materials for the third volume of *Competition* – announced but never published – upon which he noted in May 1915:

> These notes must not and cannot be published; but they must be kept in storage and given to a Library (if possible to the *Laboratorio di Economia* of Turin). So that economists – who have studied my system – can use them, bearing in mind that I work according to schemes, plans and notes which can be interpreted only by me, when I am writing my manuscript.
>
> (Sella archives)

Inside the file there are hundreds and hundreds of hand-written and typed sheets, letters to scholars in various disciplines (see Vaudano 1997, 1999), newspaper cuttings, sketches, short notes, and polemic notes, which apparently do not have any given order.

Why this very complicated approach, this interweaving of issues and disciplines rather than the simplification which was the norm in economic science and which in the mind of economists meant even greater rigour, greater scientific quality?

Sella's main ideas on what remains to be studied

It is common knowledge that between 1870 and 1920 the Western world's economic culture was dominated by the marginalist theory, which found its full formal expression in the general economic equilibrium model studied by Walras and Pareto, and in the partial equilibria model put forward by Marshall. The central problem faced by the theory is the efficient allocation of given, scarce resources which can be used in alternative ways. Efficiency is measured in terms of maximum consumer satisfaction. The model, formulated in mathematical terms, is complete and self-contained. It can provide precise answers within the framework of the hypotheses upon which it is constructed: perfect foresight, perfect competition, prices and cost flexi-

bility, perfect divisibility and substitutability of productive inputs, absence of externalities, neutrality of money. Within this framework, the contributors to the marginal utility school agree that the equilibrium – which coincides with the optimum allocation, characterised by the full employment of resources, and with prices which tend to be the same as average long run costs – tends to be spontaneously reached through the free interplay of market forces.

The dynamics

Pareto, therefore, appears to have ended a period in the history of economic science: the static theory had finally found a satisfactory settlement. What was left to be done by the new generation of economists including Sella? They could reprocess the general economic equilibrium equations or develop Marshall's partial equilibria; but they could also try to go along new paths. The path which was indicated but not entirely taken by scholars like Pareto and Pantaleoni was that of dynamics. Pareto himself had stated that the problem could not be solved by means of the static equations. To Sella the static theory appears insufficient because of its very nature; he writes in the first volume of *Competition*:

> If the static theory had not already been constructed, I would not hesitate to say that it could not be constructed in a more genial way. But I cannot say the same when, on the basis of the theoretical results attained, these economists presume that they can condemn facts, tendencies, economic institutions: here they are something like astronomers who, equipped with a powerful telescope, want to give advice to the inhabitants of the planet Mars. ... Supposing in fact that men are prima facie the same, supposing that every man contains a pleasure machine ... the notion of economic and social functions is almost entirely sacrificed; economic and social organisms lose their logical independent consistency ... the model ... is insufficient, like a system of pipes full of water, even though it may be very well designed, is insufficient to specifically represent the circulation of blood; and the excitations and processes which it causes and activates with the products it transports.
>
> (Sella 1915: 499)

So it was necessary to go beyond and to exit from the strict forms of statics. And Sella, from his early years, had this important objective: to seek a unitary theory or at least a single connecting thread.

His initial assumption was that economists cannot use the very powerful research tool of physicists and chemists: experimentation. They cannot examine economic phenomena in the laboratory nor can they reproduce them in known and preconstituted environmental conditions, isolate them

in order to ascertain their uniformity. And the direct observation of reality is not sufficient to identify regularity. The only means available is therefore abstraction.[3]

The biological analogy

Pareto had followed the model of mechanical analogy. After years of research, starting from the idea of establishing the weight of non-measurable forces acting in real economic life, he ended up by conceiving economic equilibrium as a part of a wider social equilibrium and thus he arrived at sociology.

The path chosen by Sella is different. Starting from the teaching received when he attended the political economy laboratory of Turin, he was certainly influenced, through Cognetti de Martiis, by Darwin's and Spencer's theories. Then an ever increasing enthusiasm for the biological analogy grew in him. He chose the biological analogy, fully aware of what the value of an analogy was. In his words:

> An analogy is often only an imperfect generalisation. ... Up to a certain point, the physicist, the chemist, the economist must not demonstrate but understand instinctively. The prediction of the truth is the duty of scholars who proceed by intuition; in the same way that demonstration is the duty of the logician who checks the results previously obtained. What we call a law is nothing other than the fruit of generalised experience. And our guide, in this obscure labyrinth, is only analogy.
>
> (Sella 1912: 12)

On this analogical basis, well aware of the difficulties and the probabilistic value of the results that can be obtained, he constructs his attempt to draw up a theory of dynamic phenomena.

Sella on competition

The fundamental text for the historical reconstruction of Emanuele Sella's economic theory was published in two volumes between 1915 and 1916. The title of the publication is important: *La Concorrenza: Sistema e Critica dei Sistemi* [*Competition: System and Criticism of Systems*]. In the introduction to this work on competition, Emanuele Sella indicates as the purpose of his work that of providing a first extensive and ordered treatment of competition viewed as 'the background of economic life' (Sella 1915: xv), and, at the same time, that of providing a basic theory for those economists who were investigating more specific issues, such as monopolies, trusts and associations, but always linked to this 'background'.

The starting point is that the theories of economic-static competition tend to consider all economic quantities alike, and to use a very high degree

of abstract conditions, neglecting many of the features of reality. In his opinion, (a) if we assume the utilitarian principle (i.e. maximisation of individual utility) and ignore any variation in the utility maximising subject, we will obtain a static equilibrium, which has a dynamic feature embodied in it – due to the ongoing production and consumption of goods – which, however, does not prevent the equilibrium from reproducing in exactly the same way; (b) if instead it is supposed that the hedonistic criterion varies and these variations are elevated to a premise, and if we suppose that the utilitarian principle is insufficient or indeed that it can be ignored, then we will move to what he calls the *morphologic economy*, that is to say to dynamics.

Static economics takes account only of the universal characteristics over time and space, of the common features of men and women, of what makes them homogeneous; but empirical evidence puts an economist before an ever-changing society, a society in which differences in characteristics increase in importance (in comparison to uniformity of characteristics). It would be 'scientifically wrong (since economics is a science of *facts*)' not to take into account dynamic economics, Sella maintains, 'since it is not the facts which are missing, it is instead their processing which is missing' (Sella 1915: x).

Economic-functional competition

These are the general considerations which, according to Sella, made it necessary to introduce a new competition hypothesis, which he calls economic-functional competition. It is an hypothesis which, in his intentions, makes room for progress in economic theory, since it allows definition of an equilibrium – the so-called functional equilibrium – which takes account of a greater number of characteristics of real life than the neoclassical definition since it is no longer obtained from individualism but from an organic conception of society. According to him:

> This hypothesis is aimed at representing the elementary and total variability. It is not antithetical but supplementary to the static-economic paradigm. The theory of variability is not an anti-hedonistic theory, with the exception of some minor features omitted by hedonism; but rather an hyper-hedonistic one.
>
> (Sella 1915: x)

By means of this hypothesis, it must be possible to interpret the antagonism between competitors, of which they are only partially aware, and any other evolutionary conflict.

Sella compares the hypothesis of economic-functional competition to the concepts of action and reaction utilised in mechanics, physics, chemistry and biology. The subjective hedonistic content of an action is not denied, but is seen as a *symptom* – 'sometimes empty, sometimes insufficient, sometimes subjectively paralogical, always extremely precious' (Sella 1915: xii) – of an

action. Reaction is instead represented by a system of conditions which tend to re-establish an equilibrium when it has been disturbed by external agents. It is supposed that each organism goes along a 'variability' line of its own, which is transformed by the intervention of other organisms. From this simple passage, multiplying and diversifying the organisms, the same competition hypothesis is complicated and, simultaneously, it is rendered increasingly apt to interpret economic reality: through subsequent specifications Sella intended to arrive at an explanation of the full variability which characterises society.

In relation to the variability of society, Sella wrote that the concepts of action and reaction inspire us

> to consider competitors as exciters, inhibitors or co-ordinators of specific functions. Therefore the theory of exchange presents itself as theory of excitations which sometimes generate – a functional equilibrium, other times one of its aspects; – and the move from prior states to later states (economic hormonology).
>
> (Sella 1915: xiii)

The consideration of these characteristics of economic reality is clearly difficult to reconcile with the assumption of *homo oeconomicus*; and in fact Sella introduces, as we will see, the character of the 'functional man', an individual 'who is largely a product of society' (Sella 1915: xiii).[4]

The economic-biological aspects of competition: 'economic hormonology'

Sella's attempts to interpret the conflicts which occur in an economy in the light of biological conflicts. He tries to establish the biological nature of economic phenomena.[5]

At the centre of his analysis is the idea that in exchanges, economic goods can be considered as agents in an analogous way to hormones, that is like exciters or inhibitors of functions. He emphasises the importance of the introduction of this analogy in the construction of his system:

> In order to overcome any possible objection of economists, I would say the following: that economic goods can be considered as functional exciters may appear a useless fact to establish. But this is not so when we try to deduce the behaviour of organs of economic life from a specific functional equilibrium (which should not be confused with static-hedonistic economic equilibrium).
>
> (Sella 1915: 284)

The importance of hormonology is linked to the fact that it appears to offer a new interpretation of the correlation of individual elements within a

complex whole: this would in fact be the main mechanism through which the conservation of the functions is assured. Translating this concept into economic terms, Sella, for example, considers 'inferior' societies, historically less evolved, to be comparable with systems in which each complex produces alone its own excitations/inhibitions. He considers more advanced economic societies to be characterised by the growing importance taken by the value of exchange with respect to the value of use; in these societies the stimuli reach each individual complex from other complexes, and the correlation becomes of fundamental importance in determining functional equilibrium.

Hormonology is, for Sella, above all an important meeting point between the static and the dynamic, an element of a theory of variability within which it no longer makes sense to distinguish between pure economics and applied economics.[6]

Towards 'economic energetics'

Sella, first of all, defines and analyses the essential elements of competition in order to render the concept of economic-functional competition scientifically rigorous, so that it can be used as a new theoretical instrument for economic analysis. This step is, in its turn, preliminary to the construction of a dynamic theory in terms of competition and economic potential.

The basic idea is that if one wishes to make use of the hedonistic concept outside the realm of the static, one cannot leave aside 'differentiation', without which it is no longer even possible to conceive society or study it. By stressing the concept of differentiation, Sella stands in contrast with the mainstream of economic theory, which tends more and more to 'indifferentiate' economic quantities by imposing conditions that do not really exist and by neglecting a great deal of those that do exist.

This very idea is at the centre of Emanuele Sella's work entitled *La Vita della Ricchezza* [*The Life of Wealth*] (1910c). In this work Sella emphasises that, alongside a mechanical investigation of economic life (which studies production, exchanges, savings, speculation), there is the possibility of conducting an energetic investigation which studies the psychological and physiological forces that cause the economic phenomena considered in mechanical analysis. He takes the opportunity to introduce the hypothesis of 'economic mesophilia', which defines the hedonism of economic society.

We find here the idea – taken up again in *Concorrenza* (1915, 1916) – that society may be considered as a complex of correlated elements, in which every organism is a complex of other lower order organisms. According to Sella, every organism develops an egoism of its own which is 'mesophiliacally' correlated with that of the higher order organisms; mesophilia in fact means 'love of the higher' and is translated into an action which is favourable to the biological complex of a higher order. Mesophiliac behaviour is the instrument of correlation between the active elements and society, and is what ensures that the complex does not disintegrate.[7]

Beyond utility: analysis of the purpose, the real object of competition

The existence of a common objective or purpose, the achievement of which excludes other objectives, is an indispensable element of all competition processes according to Sella. The purpose, however, is more than simply the *conscious purpose*, in contrast with widespread opinion; Sella points out that: 'The purpose should be considered as the relationship between the structure and that at which it is aimed; and therefore the "purpose" is ultimately represented by the need to assimilate a *quid*, to attain a state of conservation, development, reproduction or, in any case, behaviour of the organism' (Sella 1915: 118). Besides the conscious purposes there are also the *unconscious purposes*, and competition must therefore be linked not only to the concept of utility but also to that of *function*, which for Sella is 'something which is wider and more profound' (Sella 1915: 119).

Behind the idea of function and functional purposes there is, once again, the need to identify the *direction* towards which competitors are moving. All the terms and concepts used by Sella are meant to denote economic phenomena in relation to their dynamic aspects. For this aim, the term 'utility' appears to Sella to be too generic. The kind of purpose which interests the economist is not, according to Sella, to be conceived of philosophically as internal to the individual, à la Hegel, but *economically* as objectivation of a relationship between structure and function. The awareness of the purpose is important

> inasmuch as it represents, for those who want to pursue it, the localisation of a function of their own; or, for those who are outside the competition, the localisation of a representation of another person's function, which is in its turn, a stimulus to another function of their own.
>
> (Sella 1915: 120–1)

This perspective places the concept of purpose at the core of an analysis of all economic phenomena: 'All political economy can be considered as a doctrine of purposes needing ... the actions of men: and therefore the exchanges as a clash of purposes' (Sella 1915: 127).[8] Better than on the basis of the hedonistic postulate, the dynamism of economic organisms can be interpreted on the basis of the concepts of *means*, *willingness* and *purpose*, which Sella analyses by analogy with the physical concepts of respectively mass, potential and centre of gravity.

The simple declaration of utility says nothing about the means available to attain a purpose and says very little about the individual's wish to pursue it. The concept of utility leads to evaluating the purpose hedonistically, and solely from a subjective point of view; the combined consideration of means, intent and purpose instead allow it to be objectified.

Turning from a hedonistic conception to a functional one, Sella under-

lines that situations which appear to be identical from the point of view of utility can have very different effects. He writes:

> Economics is therefore a science aimed at establishing morphological connections which go beyond the reaches of subjective foreseeability and which can be analysed – established – from the outside, as phenomena inherent to external causes, and that is to say naturalistically, whatever the absolute subjective psychic content of the operating individuals.
>
> (Sella 1915: 138–9)

If economics wishes to investigate these connections, it must necessarily extend the horizon delineated by the static theory of equilibrium and the theory of utility. Hedonism which characterises the individual is not limited, in fact, to the consideration only of the immediate effects of his action; instead it refers to purposes and functions which are ever more complex, which can be translated into a functional line or 'morphological purposes direction' (Sella 1915: 140) of the organism.

The functionality hypothesis that Sella wants to introduce serves to endow each organism with particular characteristics according to which 'it is not (morphologically, dynamically) indifferent choosing one of the many combinations which constitute the series (statics) of indifference' (Sella 1915: 143).

Economic-functional competition and variability

In his theory of economic transformations, where the equilibrium conditions did not vary, Pareto had already recognised that there is a continuous 'adaptation motion' (in Sella's language) because time and again new needs arise which cause new consumptions. The elaboration of the variation in the equilibrium conditions leads Sella to identify a new type of dynamic competition, close to the notion of 'progress', which he defines as *variability*.[9] When we consider that not only the conditions of equilibrium vary but also the forms and laws of equilibrium, the scope of the competition hypothesis as adaptation motion is further extended until it includes social and economic evolution: it is in this respect that Sella speaks of *total variability*. The objective of Sella is therefore that of constructing a theory which includes and explains these three adaptation motions – competition, progress or variability, and total variability – and which therefore provides a unitary representation of the evolutionary processes which characterise the economy.

A first step in the construction of the variability theory is an examination of the interactions between the organism and the environment. The investigation of the relationship between the states of functionality and of variability cannot be effected by making a reference to *homines oeconomici*, of which the tastes and requirements are considered to be all the same by the

person who is studying them. At this point Sella introduces the concept of the *functional man*, no longer an undifferentiated individual but a *social individual*, modified by society and changing alongside with it. In terms of the hormonology of exchanges, the functional man 'is a product of functional excitations deriving from internal society, a product which in its turn *reacts* on the social complex' (Sella 1915: 347). A fundamental characteristic of the functional man is that his evaluations are not exclusively quantitative and utilitarian but can also be qualitative.

Sella on entropy: competition and economic temperature

In his research on the effects of the spreading of competition, Sella wishes to leave aside the identification of a generic measure of 'economic conditions' and of 'value', and therefore all the associated units of measurement – money, work, grain, land, utility – commonly used by economists. Instead he adopts 'an ideal measurement, in terms of "economic temperature" ' (Sella 1915: 433).[10]

Sella links two postulates to this measurement unit:

1 Each organism has *its own thermoeconomic degree* comparable to that of any other organism in time and in space; this property of the organism is defined as its economic temperature.
2 The economic temperature of an organism depends:

on the means which it possesses (or, in a certain sense, on its 'wealth');
on its capacity to absorb these means (that is to say, in a certain sense, on its 'need for wealth').[11]

By adopting these postulates, Sella intends to logically supersede the problem of the measurement of value: 'It is clear ... that one can appreciate the economic temperature of an organism *also* as a specific *value* of this organism. But ... I believe it advisable not to utilise the term *value*, which is too closely linked to statics' (Sella 1915: 435).

Another concept which Sella introduces into his theory is linked to that of economic temperature. He takes the concept of entropy from thermodynamics, as a model which can be used to represent the essential characteristics of an economic process: a model which Sella is aware of utilising in a way which is still rather immature and intuitive, but which he believes is precious because of the research lines which it can suggest.[12] The concept of entropy had already been used by Emanuele Sella in *Vita della Ricchezza* (1910c) as a model for the analogy between the process of hereditary transmission and the mechanism of reproduction:

> If we consider men as generators of wealth who absorb and radiate, and if we consider wealth as a specific form of energy which we could call

> economic energy, having established that the diffusion of it *tends* to its maximum, we can see here also a corollary of the law of CLAUSIUS, which is the synthesis of human knowledge of a recent phase in the history of science: the energy of the universe is constant, entropy tends to its maximum. Heat moves from bodies having a higher temperature to those having a lower temperature. Therefore entropy tends to grow: the universe, according to CLAUSIUS, tends towards a heat equilibrium. (Sella 1910c: 67–8).[13]

Starting from the authoritative opinion of Clausius, who introduced the entropy law, Sella agrees with those who – from Maxwell to Spencer to Arrhenius – perceived that alongside the energy degradation process there exists an opposite one, on the basis of which energy is conserved, changing however form or place in space.[14]

On the basis of the consideration that within each organism of which society is composed wealth is distributed so as to benefit all of its elements, Sella arrives at formulating the concept of *elementary economic entropy* ('oicoentropia'). His theory contains the idea of the existence of a *specific economicity* which corresponds to the capacity which an organism has to use the things which surround it. Thus, technical progress is viewed as a transformation of material which causes variations in the specific heat of bodies.

The specific economicity of each organism will be defined by the economic temperature that will allow it to carry out its function. For each organism there is an interval included between two temperatures: a minimum and a maximum; beyond this interval the function is atrophied or altered, and because of this the organism is transformed. This causes the diversity in economic functions of the different social classes, which present themselves as functionally differentiated. Thus, the fight for the conquest of wealth is also a fight for a functional transformation.

Specific economicity includes a positive or negative increase in consumption of an organism as a function of a transformation in the environment which has repercussions upon the organism itself. From the idea that a specific economicity corresponds to each individual phase of human life, the need emerges for a new order of political economy complementary investigations. These investigations would lead to a discipline which is in certain respects independent, but not yet existent, with the exception of certain fragmentary researches.[15]

From the entropy law it can be deduced that *inside each organism* the economic temperature – which can be read therefore as wealth and the capacity to absorb it – is distributed uniformly. *Between different organisms*, however, a thermoeconomic diversity is created. For each organism we observe a *thermoeconomic differentiation* process, insofar as that organism is considered independently, and a *thermoeconomic levelling* process if we consider the organism as an element of a higher degree organism. Hence, the

elementary economic entropy of an organism will be total economic entropy for another organism of a lower degree that is part of it.

If each organism has a certain degree of economic entropy, society has a *total economic entropy*, 'a limit situation to which the competition process tends as a result of the diffusion of the economic temperature through the organic series' (Sella 1915: 440). Given this property of the organism, competition can be considered as the motive force of a thermoelectric temperature diffusion process:

> It could be said that each organism is *competing* inasmuch as it is trying to assure for itself that degree of economic temperature which is necessary for it to carry out its functions independently. If the temperature instead of remaining constant increases or is lowered, new functions will be acquired or pre-existing functions will disappear; in other words, one organism will be transformed into another ... . The competition process which takes place in society acts ... so as to preserve the *form* of the organic whole (functional equilibrium); or by altering the economic temperature of the individual elements, so as to determine the passage – both for quality and for quantity aspects – from one functional equilibrium to another.
>
> (Sella 1915: 441–2)

According to Sella, competition has the function of shaping the organism and of determining the order which is established between the various parts of society, as it can *preserve* the shape when the structure is given and *modify* it following a structural change in the elements of the organism: 'Given the structure, competition intervenes as a force of order. Given the external environment, as a force which correlates the entire organism to the requirements of the external environment' (Sella 1915: 454).

This is the definition of economic-functional competition which Emanuele Sella traces in the light of the following considerations:

> Given a social complex of any degree; given a class of possible orders of its elements; given therefore the possibility of alternative variations in that complex; we call 'competition' the phenomenological process according to which only one of the possible orders will end up by prevailing.
>
> (Sella 1915: 454)

At any moment in time there exists therefore one single prevalent configuration of competition, which represents that single instance of reality. For this situation to remain unchanged and economic society to reproduce it continuously, it is necessary that competition operating among organisms and the structural reactions consequent to it, allow it.

A summary of Sella's theory of competition

We have seen that the point of departure of Emanuele Sella's theory is the awareness of the interpretative insufficiency of the static economic equilibrium theory. He believed that theory to be 'genial' but nevertheless insufficient because of its simplifying hypotheses – *homo oeconomicus*, transformability, replaceability – in which economic and social subjects (in Sella's terms: organisms) lose their 'logical independent consistency' (Sella 1915: 499). With respect to this theoretical model, Sella emphasises the need to establish different premises.

First of all, he states the need to *classify the subjects on the basis of their functions* and to check what relationships are established among these functions: the subjects are distinguished, from an economic-biological point of view, as different *organisms* acting on the basis of the mechanisms of action and reaction and therefore as exciters/inhibitors of certain specific functions.

After the description of the relationships between economic subjects as an action and reaction system, Sella identifies *economic competition* as the real determining factor of the form taken by the economic structure, and of its stability and dynamism. In fact, he first of all considers a functional equilibrium which remains constant over time and in which stability is guaranteed by a complex of actions and reactions, by a form of competition which preserves its structure: it can be seen here how Sella treats the static economic competition hypothesis as a special case, an instance of a more general mechanism. After that, Sella analyses the move from one functional equilibrium to another, both for an individual organism and for society. He considers an organism of the maximum degree (i.e. a society) and the connections between a previous economic order and a subsequent one.

Sella's investigation of the reasons for the move from one functional equilibrium to another is built upon the static conception of Gossen, Menger and Pantaleoni in an attempt to harmonise this conception with the theoretical results of his system. The Austrian school hypothesised the co-presence of different needs. An individual distributes his wealth in order to maximise the satisfaction of those needs. In this way the needs are also made subjectively comparable because they refer to a single evaluation criterion, the hedonistic one. Sella's line of thought is different; he considers 'hedonistic states and systems of subsequent needs, each of which *arises* at a given time in the satisfaction of the previous one, even if it does not form part of the initial subjective hedonistic calculation' (Sella 1915: 481). Sella's hypothesis is that at a certain stage in the satisfaction of a need, another need (or group of needs) arises.

In Figure 6.1 below, point T is seen as having the property of generating a need B which can even be extraneous to the initial hedonism of the individual. In terms of dynamic analysis, if point T refers to a single need, this will lead to the statement that

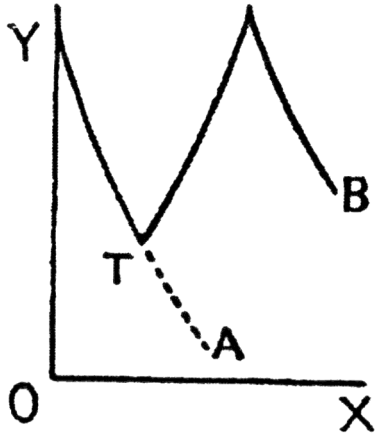

Figure 6.1 The critical point
Source: Sella (1915: 483)

> the increase in consumption can generate a modification in individual hedonistic diathesis [= predisposition for certain needs] as a result of which the curve, which is supposed to be *ab initio* ... statically (and that is to say from a single evaluation) decreasing, becomes dynamically (i.e. given a subsequent evaluation) increasing when there are no interruptions in consumption.
>
> (Sella 1915: 483)

'Point T is correlated to a different economic temperature of the organism considered: that is to say to the one which can give rise to the qualitative differentiation considered herein' (Sella 1915: 484). The properties of point T therefore represent the characteristics of the hedonistic evolution of an organism and the complex of its functional evolution and, because of the extension of the effects of the latter, of its total variability.[16]

If consumption does not arrive at the critical point T, the organism will be static. Then, according to Sella, the residual of the factor given by the difference between the quantity necessary for the consumption to arrive at T and the existing quantity, will constitute the *dynamic dosage* of the need system. This dosage may in his opinion be determined in many ways: with an increase in the use of the labour factor, an invention, a conquest, a war, and so forth. Point T has, according to Sella, the significance of the limit of intermediate or end variability within the organism.

The critical point T constitutes the limit to which the organism tends. When this limit is reached, a new organism is generated, until consumption

again reaches a critical point. Sella extends this interpretation also to the great historical *époques*, seen as critical points T. If a historical moment is preserved, competition is the force which will keep the social organism away from point T; if it is instead replaced by another one, competition is the force which will push the organism towards superseding the critical point T (Sella 1915: 488 ff.).

'Without the concept of the critical point, any logical connection between two subsequent system of needs fails' (Sella 1916: 490). Also, in this case it is the particular form taken by competition – or by the excitations, inhibitions and co-ordinations which are established among the organisms – that determines the evolution of the system. While analysing the move from one functional equilibrium to another, Sella describes the general mechanism as depending upon a structural evolution started by competition which allows to reach, as we have seen, a critical point around which a new complex of needs is created. This process – and here lies the role of entropy – is then spread and tends to generalise itself to all social organisms until it causes a new functional equilibrium in which competition returns to exercising the role of preserver of the form.

With his concept of a critical point T, Sella states the impossibility, in a certain sense, to construct a general theory:

> Even in our theory we have something general, but it does not refer anymore to society in general, as if a *generic* social order could be deduced from individuals; instead it refers to specific (historical or possible) social systems, as individuals, single firms, single categories of prices, are deduced from this *specific* social order.
>
> (Sella 1915: 501)

Conclusion: a morphological and morphogenetic system

In an annotation found among the papers of the unpublished, but announced, third volume of his work on competition, Sella wrote:

> One of the fundamental concepts which inspire this work is the translation of the hedonistic theory into an energetic theory ... . Utility can be defined as an aspect or subjective symptom of the economic energy which an organism has in order to pursue a specific purpose. The term utility is not in itself even necessary ... . Society is like a mechanism which endlessly supplies to the individual organisms and therefore also to the individuals, a specific *charge* (which they colour hedonistically, i.e. translate in terms of utility). This *charge* makes them act in specific ways: it is therefore a process of functional differentiation ... . The individual energies are (therefore), at a specific time, partly caused by and qualified (or differentiated) by society.
>
> (Sella archives)

Sella's ambition was that of laying the ground for a new general theory that includes cinematic aspects relative to the movement of organisms and dynamic aspects which describe the changes in the structure.[17] Because of this, Sella introduced the theory of mesophilia, economic entropy and economic hormonology. Both at the beginning and at the end of his imposing treaty, Sella stated that he wished to continue the classical and neoclassical economic traditions, about which he noted:

> Their followers ... have limited themselves to theorising *only one* of the logical properties of economic life (individual egoism). This theorisation (we repeat) cannot be refuted; it must indeed be accepted. But everything which reality includes and which is to be found *outside* this processing was chaos. In this chaos we have tried to find an order. Those who, before us, stated the existence of this order were not able, in our opinion, to emphasise its connections with the theories already established. They were therefore deemed heterodoxical. We have defined these links. This is therefore a work of orientation in scientific thought.
>
> (Sella 1916: 578)

A further paradox should be noted in this statement which leads the conclusion back to the paradoxes mentioned at the beginning of this paper. He writes about the passage from chaos to order, while with entropy we refer to the move from order to disorder. And this perhaps is the main limit of Emanuele Sella's works, which is, in a certain sense, emphasised in Luigi Einaudi's sincere remembrance when he referred to Sella's work as

> a grandiose river, boiling over, sometimes very clear and sometimes murky, which carries sand, stones and lime to the sea. But here and there marvellous green islands emerge and on the sandy banks, where the water plays calmly, miners wash gold-bearing sand of a high grade.
>
> (Einaudi 1980 [1950]: 114)

'The historical regime of competition is dead and will never return' (Sella 1916: 568–9). Sella wrote this in a period when in economic writings a statement of this kind certainly sounded like heresy, contradicted by a theory which had been endorsed by many generations of economists.[18]

The issue of dynamics was in his time, and in the years immediately afterwards, the most important issue of economic science and Sella faced it with considerable independence of thought. In a certain sense, his attempt is also a defeat, at least if we consider the fact that the results of his research remained and still remain unknown, almost like 'hieroglyphics which are very difficult to interpret' (Fasiani 1946). However, that was above all a defeat of the method, perhaps also of the system of exposition, but maybe not a defeat of his thought.

Notes

This paper has been written at the Centre of Research in Economic Analysis (Cranec) of the Faculty of Political Sciences of the Catholic University of Milan, within the National Research Council (Cnr) Project 'Ambiente, Istituzioni e Mercati'.

1 All quotations from Italian texts have been translated by the author.

2 See the bibliography for his main publications of an economic nature.

3 Sella emphasises how, from an examination of the state of the theory, it can be seen that the economic-static hypothesis is itself subject to internal transformations. In particular he recognises a tendency to classify competition among the forms of biological antagonism, which reconducts economics to biology. This tendency, represented overall by social Darwinism, allows the use of a competition concept which is no longer only linked to the theory of value, but however is not 'able to discover any essential link between this interplay of phenomena and the theoretics of value, which remains isolated and which appears entirely extraneous and irrelevant to this debate' (Sella 1915: viii).

4 Immediately the problem emerges of defining the concepts which can characterise this different approach to economic theory. In fact we will see that Sella dedicated much of his work to the specification of the terminology introduced by him.

5 We have already seen how Emanuele Sella connected his theories on variability to biological concepts, in the conviction that

> the most advanced sciences have always given a push to those which are less so. Economics is today only static, as regards its general theorisation, while instead biology has achieved a considerable morphological development. ... it is intuitive that this may help to develop the theory of the variability of social organisms, and in particular economic morphology.
>
> (Sella 1915: 309)

6 Emanuele Sella believed that Maffeo Pantaleoni was the author who most profoundly perceived the potential of this line of research:

> Pantaleoni is perhaps the last and most distinguished of hedonistic economists. We must, in the history of contemporary economic thought, take account of this fact: that he, who like no one else was able to draw up and to put order into this representation of economic phenomenology, has demonstrated in his Writings and in his Treatises a continuous unceasing aspiration, a disposition – sometimes vague, sometimes filled with doubts, often ripe with problems, always containing new theories – towards a discipline which is now growing as economic morphology.
>
> (Sella 1915: 289)

7 With respect to the organic conception of society, used in particular by the historical school, V. Tarascio emphasises the difference in interpretations of the term 'organicism':

> It was used merely as a kind of analogy between the social body and the physical body. It was also used to mean that the 'total is something greater than the sum of its parts', so that the whole analysis cannot be split up into individual parts for analysis without loss of 'reality'. Another use of the term stressed the close mutual dependency of different categories of

> social phenomena, although recognising their 'independence' for specialised studies.
>
> (Tarascio 1968: 21)

The third meaning appears to us to be typical for Sella's perspective.

8 Sella thinks that economists, in order to fulfil their duty properly, must limit themselves to the objective consideration of the social organisms to which they belong: the term *purposes*, from the point of view of the economist, means for Sella only the existence of lines of functional variability, which indicate the tendency of each organism towards a limit state of variability. Sella describes the variability line of an organism as given by: (*Aa*, *Ab*, *Ac*, *Ad*, ..., *An*). As far as economics is concerned, a purpose would be a state to which an organism tends; the *final purpose* would instead be the variability limit (*An*). Sella therefore appears to recognise that the organism has an intrinsic capacity to take action and to transform itself according to a given line of variability, irrespective of the intervention of external conditions.

9 Sella explains that he prefers the term 'variability' because it includes both the notion of *progress* and that of *regression*, irrespective therefore of value judgements.

10 As Sella writes in a note: 'The term adopted of "economic temperature" is justified as a particular case of 'mathematical reasoning without numerical data' ... the need for such a term was first pointed out by scholars of natural justice, even before the economists' (Sella 1915: 434). The quotation 'mathematical reasoning without numerical data' is from the Preface of Edgeworth's *Mathematical Psychics* (Edgeworth 1881: v).

11 Also, in this case, Sella's reference to the theories explained by him in 1910 in *La Vita della Ricchezza* is clear. In that book he analyses the process of transmission of wealth considering the human species as a single organism which lives for a very long time.

12 The most immediate reference is to the work of Nicholas Georgescu-Roegen. In his book *The Entropy Law and the Economic Process* (1971) he considers the entropy law as the pillar of the evolutionary law in his scientific view. In contrast with the economic theory based on the laws of mechanics (in which the economic process is characterised by circularity and infinite reproducibility), the entropy law treats this process as one having in itself an evolutionary dynamic, irreversible, that Georgescu-Roegen considers more suitable to interpret biological and social phenomena. Besides Georgescu-Roegen (1971), see Agnati (1975), Zamagni (1979), and Molesti (1988).

13 It can be argued that the introduction of the concept of entropy into Emanuele Sella's economic theory was in some way favoured by his participation in the Turin cultural environment, where Clausius's theories were particularly well-received. It appears that Pareto, too, considered the advance of thermodynamics as an important example of the possibility of development of scientific knowledge. See, in this respect, Ingrao and Israel (1987: 109).

14 Even Martinez Alier underlines that it seems appropriate to start such a perspective at a time when the laws of thermodynamics have been established: 'The physiocrats, Smith, Malthus and Ricardo, should not therefore be blamed for disregarding the use of energy in the economy' (Martinez Alier 1987: 2). Martinez Alier recalls also that Patrick Geddes was 'one of the first authors who tried to interpret the course of human history in terms of changes in the use of energy' (Martinez Alier 1987: 8).

15 In this respect Sella cites the research lines followed by Cognetti, Bücher, Roscher.

16 On the critical point T as a conceptual anticipation of the *Laffer Curve*, see Magliulo (1998: 109).

17 An interesting remark on Sella is given by Bellanca who underlines that

> it appears to us that the peculiar feature of Sella's work lies in the importation of functionalism in economics. ... But this approach immediately reveals an ambivalence that circulates unsolved in Sella's pages. On one side it [the functional approach] wants to examine mainly the stability requirements of a system and its foreseeable trajectories. On the other side it can be used for a theory of the dynamic of systems. In one case it studies a given functional equilibrium, giving rise to morphological economics. In the other case it analyses the passage from one functional equilibrium to another, producing morphogenetic economics.
>
> (Bellanca 2000: 43–4).

18 And was its logic and method indispensable to reach the destination? 'The history of the organic doctrine is so to say, until now, the history of its defeats' (Sella 1910c: 6). That is what Sella wrote in 1910.

Bibliography

Agnati, A. (1975) 'Una categoria assente nella teorizzazione economica tradizionale: l'energia', in *Economia ed Ecologia*, ed. by the Società italiana degli economisti. Milan: Giuffrè, 210–24.

Bellanca, N. (2000) *Aspetti dell'Economia Italiana tra Ottocento e Novecento*, Milano: Angeli.

Demaria, G. (1977) 'I teoremi del punto fisso nella analisi e nella sintesi economica', *Rivista Internazionale di Scienze Economiche e Commerciali* 12: 1073–93.

Edgeworth, F.Y. (1881) *Mathematical Psychics: An Essay on the Application of Mathematics to Moral Sciences*, London: Kegan Paul.

Einaudi, L. (1977) *Lezioni di politica sociale*, Torino: Einaudi.

—— (1980 [1950]) 'La scienza economica. Reminiscenze', in M. Finoia (ed.) *Il Pensiero Economico Italiano*, Bologna: Cappelli, 93–115.

Fasiani, M. (1946) *Emanuele Sella's Commemoration* (typescript), Università di Genova: Genova.

Georgescu-Roegen, N. (1971) *The Entropy Law and the Economic Process*, Cambridge, Mass.: Harvard University Press.

—— (1998) *Energia e Miti Economici*, Torino: Bollati Boringhieri.

Gossen, H.H. (1983 [1854]) *The Laws of Human Relations*, trans. R.C. Blitz, Cambridge, Mass.: MIT Press.

Ingrao, B. and Israel, G. (1987) *La Mano Invisibile: L'Equilibrio Economico nella Storia della Scienza*, Bari: Laterza.

Magliulo, A. (1998) *Marco Fanno e la Cultura Economica Italiana del Novecento*, Firenze: Polistampa.

Martinez Alier, J. (1987) *Ecological Economics: Energy, Environment and Society*, Oxford: Basil Blackwell.

Mirowski, P. (1989) *More Heat than Light. Economics as Social Physics: Physics as Nature's Economics*, Cambridge: Cambridge University Press.

Molesti, R. (1988) *Economia dell'Ambiente. Per una Nuova Impostazione*, Pisa: Ipem.

Pantaleoni, M. (1909a) *Scritti Vari di Economia*, Serie II, Palermo: Sandron.

—— (1909b) 'Di alcuni fenomeni di dinamica economica', *Giornale degli Economisti*, settembre, 211–54.
—— (1909c) 'Di alcuni fenomeni di dinamica', draft kept by Biblioteca comunale Mozzi-Brogetti of Macerata.
Sella, E. (1899) *L'Emigrazione Italiana in Svizzera*, Torino: Roux e Frassati.
—— (1900) *Questo è Sogno*, Roma: Loescher.
—— (1902) *Memorie di Biella di G.T. Mullatera*, (critical edn), Torino: Streglio.
—— (1904a) *Studi sugli Effetti della Speculazione Cerealicola*, Torino: Bocca.
—— (1904b) 'Della natura logica dei problemi terminale dell'economia politica', *Giornale degli Economisti*, novembre, 401–26.
—— (1907) 'Della necessità di uniformare la terminologia economica', *Giornale degli Economisti*, novembre, 1015–7.
—— (1910a) 'L'"Entropia" economica elementare', *Giornale degli Economisti*, agosto, 153–68.
—— (1910b) 'Il prezzo come strumento di lotta fra Organismi', *Giornale degli Economisti*, febbraio, 171–205.
—— (1910c) *La Vita della Ricchezza*, Torino: Bocca.
—— (1912) *Der Wandel des Besitzes: Versuch einer Theorie des Reichtums als Organismus*, München and Leipzig: Duncker und Humblot.
—— (1914) *Titoli Didattici e Scientifici*, Biella: Amosso.
—— (1915) *La Concorrenza. Sistema e Critica dei Sistemi*, Vol. I, Torino: Bocca.
—— (1916) *La Concorrenza. Sistema e Critica dei Sistemi*, Vol. II, Torino: Bocca.
—— (1917) *Il Socialismo di Domani*, Roma: Agave.
—— (1930) *La Dottrina dei Tre Principi*, Padova: CEDAM.
—— (1931) *La Dottrina dell'Economia Ipostatica*, Padova: CEDAM.
Tarascio, V.J. (1968) *Pareto's Methodological Approach to Economics: A Study in the History of some Scientific Aspects of Economic Thought*, Chapel Hill: University of North Carolina Press.
Vaudano, M. (ed.) (1997) *Emanuele Sella. Bibliografia, Corrispondenza, Iconografia*, Biella: Sella di Monteluce Foundation, Docbi – Centro Studi biellesi.
—— (ed.) (1999) *La Figura e l'Opera di Emanuele Sella. Atti del Convegno (Sella di Mosso, 13.9.1997)*, Biella: Sella di Monteluce Foundation, Docbi – Centro Studi biellesi.
Zamagni, S. (1979) *Georgescu-Roegen. I Fondamenti della Teoria del Consumatore*, Milano: Etas Libri.

7 Particles or humans?

Econometric quarrels on Newtonian mechanics and the social realm

Francisco Louçã

Introduction

The introduction and development of neoclassical economics was in the last decade studied from the point of view of the widespread incorporation of metaphors from physics. As Mirowski (1989) argued thoroughly, the metaphors drawn from nineteenth-century energetics and based on the First Law of Thermodynamics were decisive for the formal extension of the general equilibrium models and for the acceptance of the heuristic relevance of the maximisation principle, as well as all its paraphernalia of concepts and postulates. Yet, the following combination of neoclassical economics and the new generation of econometric models and research, which provided the decisive step towards the contemporarily dominant form of economic theorising, were not studied in the same depth, although many scholars provided valuable insights on the topic.

This chapter provides complementary information and discussion on that period, arguing that the powerful drive towards the incorporation of a new wave of mechanical analogies met with considerable resistance from some of the more relevant members of the econometric group, and that the implications of these analogies imposed a lively discussion. As the arguments crossed borders of nationality and professional origins, the chapter provides a case for the irrelevance of local traditions in the determination of the scientific project.

Nevertheless, since the chapter is based on a single episode, it does not present a general overview of the work of the econometric group during the 1930s, and no general conclusions can be drawn from it. The source for this story is yet unpublished correspondence between Frisch, Roos, Creedy, Schumpeter, Marschak, Divisia, Amoroso and others.

The Creedy episode

On 20 March 1934, the second year of publication of *Econometrica*, Harold Hotelling suggested that the journal would be the appropriate destination for a paper he had received from one of the members of the *Econometric*

Society, F. Creedy, a professor at Lehigh University, Bethlehem, Pennsylvania (apparently, by 1937 he had moved to North Carolina). Rather unconventionally, Hotelling sent a copy of this letter simultaneously to Frisch, the editor of *Econometrica*. On 1 April, Frisch answered Hotelling, stating that 'I am glad you suggested to him to present this paper to *Econometrica*. I have just received the manuscript and find it highly interesting. It will appear in one of the early issues' (Frisch to Hotelling, 1 April 1934). Very shortly afterwards – indeed, four days later, on 5 April, not to be compared with the current delays in the same business – Frisch communicated to Creedy the acceptance of his paper 'On Equations of Motion of Business Activity', suggesting just minor modifications. It is quite obvious that he considered the paper to be in line with his major preoccupations and project for the development of econometrics as a body of formal research and modelling according to the standards of physics.

Yet the paper (Creedy 1934), which will be discussed later in this chapter, was not well accepted by other econometricians. On 26 September Tinbergen told Frisch that he did not rate the paper very highly, and that in general he was quite suspicious of mechanical analogies:

> My opinion of Creedy's paper is that I am rather sceptical of its value; so I am in general concerning analogies between physics and economics. I never saw one that did not, more or less, force economic phenomena into a form that is not characteristic to them. I still must see the first important result from these analogies. But I may be wrong; and as there may be suggestions in this treatment, I do not quite make objections to accepting it for *Econometrica*.
>
> (Tinbergen to Frisch, 26 September 1934)

The final phrase was enough for Frisch and, for the time being, he was content to register the attitude of his close friend and collaborator: 'I notice that you are somewhat sceptical about Creedy's paper, but that you do not quite make objections to accepting it for *Econometrica*' (Frisch to Tinbergen, 24 October 1934). Nothing more was written on the same subject in that letter.

But this difference of opinion was rapidly challenged again by a second paper submitted by Creedy, which was indeed a second instalment of the same project – to base economics on Newtonian dynamics. Probably due to the previous experience, Frisch was much more prudent in his reaction to the paper, and indicated to the author that a referee was 'not vastly enthusiastic' (Frisch to Creedy, 30 October 1934). But the text was not plainly rejected: Frisch suggested that Creedy should find some means of partially financing its publication in *Econometrica*, through a grant from some Canadian university.

Simultaneously, and considering Tinbergen's remarks, Frisch sent the paper for comments to two other influential members of the *Econometric*

Society, Le Corbeiller and Charles Roos. Le Corbeiller was a French physicist who participated in the first meeting of the society, in Lausanne in 1931, where he presented a paper on relaxation oscillations, to be published in the first issue of *Econometrica*. Although, he later lost interest in the workings of the society, by 1934 he was certainly considered to be one of its authorities in mathematics and, in particular, in physical analogies. Charles Roos, an American economist who originally trained as an engineer, was one of the founding members of the society and one of its main drivers in the 1930s, together with Fisher, Schumpeter, Frisch and Divisia.

Although the first pieces of this correspondence with Le Corbeiller about the paper are not available, there is indirect evidence that Frisch received a letter from his colleague on 10 November praising Creedy's paper. The letter Frisch wrote to Le Corbeiller on 19 November states that:

> I am glad you find Creedy's paper of interest. This is some encouragement to me because from some other important member of our Society [Tinbergen] I have had the reaction that mechanical analogies are not very useful for application to economics. On the other hand, you know that Divisia is a great believer in the usefulness of mechanical analogies. If I remember correctly Divisia even said once that it is more important to teach the young theorists *mechanics* than to teach them pure mathematics.
>
> (Frisch to Le Corbeiller, 19 November 1934)

The reference to Divisia was important in this framework, not only because he was closely related to Le Corbeiller, but also because Divisia was one of the voices in the *Society* arguing for the widespread incorporation of physical analogies.

But the reaction of the second referee, Roos, was quite the opposite and, since Roos was much more involved in the management of the society – he was its secretary at that time – and much more concerned with economics proper, he was certainly more influential. Frisch had sent him the paper on 16 December indicating that Tinbergen was not enthusiastic about the publication, but that 'On the other hand, my impression is that Creedy is a man who knows what he is talking about' (Frisch to Roos, 16 December 1934).

Contrary to the previous referees and commentators, Roos took some time to answer. His reply was dated 6 May 1935, and challenged Frisch's opinion:

> I am afraid I share Tinbergen's view on the inadvisability of publishing Creedy's paper in *Econometrica*. Indeed all the paper does is to set up a series of analogies between economic and physical situations. One can do this *ad infinitum* without getting anywhere in particular. (... example of a book on hydraulic flows, Dahlberg, A., 'Jobs, Machines and

> Capitalism', 1930). In general, I feel strongly that we should not encourage mathematical exercises of this nature.
>
> (Roos to Frisch, 6 May 1935)

And the letter goes on with more critical remarks, concluding that: 'Finally, the paper is decidedly wordy. You might tell Creedy that he should explore the possibility of writing a monograph which would have as its purpose a determination of useful theorems resulting from his analogies' (Roos to Frisch, 6 May 1935).

Certainly surprised by the long period waiting for a decision on publication, as compared to what had happened to the first part of his essay, Creedy wrote to Frisch on 24 May 1935 explaining the purpose of his paper: to apply the Principle of Least Action and to discuss the use of Gibbs's statistical mechanics to economics. This was certainly much more ambitious than the first article on Newtonian mechanics, and the author hoped it could be published in *Econometrica*, although he had not found any complementary funding as suggested by Frisch eight months before.

At the end of June 1935, Frisch finally answered Creedy quoting a non-cited referee (Roos) who rejected the paper and stated that 'Indeed all the paper does is to set up a series of analogies between economic and physical situations. One can do this *ad infinitum* without getting anywhere in particular' (Frisch to Creedy, 27 June 1935). Frisch went on to quote Roos's example of hydraulic flows, as well as his conclusion that 'In general, I feel strongly that we should not encourage mathematical exercises of this nature'. Consequently, the paper was rejected, in spite of Le Corbeiller's acceptance and Frisch's initial enthusiasm.

During this exchange, Frisch also had proof that Tinbergen was indeed quite suspicious of all efforts to develop economics on the basis of simple analogical reasoning. Commenting on another paper, this time proposed by Bolza under the title 'A Generalization of the Conservation of Energy Law', Tinbergen concluded that 'I cannot see it is very useful for economics until better examples, giving really new insight, are given by him' (Tinbergen to Frisch, 24 December 1934).

Frisch accepted that the divergence was related to the consideration of the role of mechanical analogies for economics: 'For instance, with regard to the application of the mechanical analogies, I think I believe a little more in them than you do. But of course there must not be any "mechanical" application of mechanical analogies' (Frisch to Tinbergen, 11 January 1935).

The epilogue of this story was also written by Creedy, who proposed a new paper four years later, on 3 January 1939: 'The Mathematical Theory of Society'. Having got no answer, he insisted on 2 May. Frisch rejected the paper on 25 May, offering no explanation for his decision, in contrast to the previous long correspondence back and forth on the two parts of the initial paper submitted to *Econometrica*.

Newton in the province of economics

Although the paper published by Creedy did not deserve too much attention – either then or later on – some recent authors (Dimand 1988: 159; Boianovsky and Tarascio 1998: 20n) have noticed that it had an original feature: unlike most of the then current work based on maximisation principles, Creedy proposed Newton's laws as the basis for the analogy economics should incorporate from physics.

Creedy's objectives were indeed clearly outlined in the paper:

> The present investigation aims at basing the subject of Economic Dynamics on clear mathematical foundations as rigorous as those employed in any other branch of dynamics. It is shown that it may be based on postulates in complete formal analogy to those of ordinary dynamics. Economic Inertia and Economic Resilience (and Storage) are then defined and illustrated by examples. Differential equations involving these are next formulated for simple cases corresponding to the ordinary Dynamics of a Particle and it is shown how they enable us to plot curves of economic behavior as functions of time.
>
> (Creedy 1934: 363)

The paper takes the analogy very far: economic 'force' is defined as the rate of acceleration of an economic action, economic 'inertia' is defined by the finiteness of increments in economic variables, money deposits in a bank are equated to storage of energy in a spring or of electricity in a condenser and oscillations are defined for the case of radiation as well as for economics (ibid.: 363–4, 372, 380). Furthermore, the analogues for the three Newtonian laws of motion are defined as well: the first law is redescribed as the permanence of economic actions unless the circumstances change, the second law is translated into 'the books must balance' and the third law, $F = ma$, force equals mass times acceleration, is translated into 'effective persuasive force = rate of acceleration of economic actions times a constant' (ibid.: 363–4).

Although the author recognised that economics lacked the means for mimicking physics in all rigour, he argued that there are also some phenomena in dynamics for which we do not have the full knowledge of the relevant equations. In spite of that, dynamics could provide important information on these systems, and the same should be done in economics. For Creedy, this was a supplementary reason for a literal metaphorisation:

> We have no such convenient instrument as the spectroscope (although mechanical harmonic analysers might serve the same purpose) to resolve our periodic phenomena into its component simple harmonic oscillations, but our problem is essentially the same. 'Given a jumble of periodic phenomena, to find an interconnected dynamical system which will parallel the observed phenomena without departing at any point

> from what we can observe in other manners.' This is a statement of the problem which *is applicable without changing a word to either the physical or the economic case.*
>
> (Creedy 1934: 380; italics added)

Quarrels on mechanics

Although all – or most of – the econometricians shared an immense curiosity towards the mathematical and formal developments of physics, and considered this to be the paradigm for sciences, the discussion on the editorial policy of *Econometrica* suggests that the group was not absolutely homogeneous in relation either to the forms of that incorporation or to its uncritical acceptance.

In a paper presented to the joint meeting held in Chicago on 30 June 1930 of the recently formed *Econometric Society*, with the *American Society of Mechanical Engineers*, the *American Society for Testing Materials* and the *American Institute of Electrical Engineers*, Henry Schultz presented a paper summarising quite conveniently the mood in the group. Under the title 'Engineering and Economics',[1] this paper is one of the large cohort of essays dealing with the conditions for establishing the connection between economics and mechanics. And although Schultz recognised the difficulties of the endeavour, just as many of his colleagues did at the time, that did not prevent him from working hard in that direction.

Schultz assumed that the condition for the metaphorical redescription of economics (Louçã 1997: 49 ff.), was to equate human agents with particles, just as Irving Fisher had done in 1892, when submitting his own dissertation. Consequently, Schultz argued that:

> The dynamic problem of a physical system may be stated as follows: I know that I have a set of bodies (whether atoms, billiard balls or planets) placed in such and such places, and moving in such and such ways now; where will they be and how moving at any later time? The dynamic problem of demand may be stated in similar terms [footnote by Schultz: 'Economic equilibrium is probably more akin to chemical or biological than to mechanical equilibrium. But the latter is simpler and its laws have been more fully worked out. That is why it is generally used as a basis of comparison']: We have a number of individuals with such and such desires (utility functions), subject to such and such obstacles, and consuming and producing and saving at such and such rates now. What will be their consumption, and how will their demand curves be moving at any later time?
>
> (Schultz 1930: 3)

The answer, according to Schultz, may be given by the equations of motion and conservation of energy. Yet this created a new problem, since we do not dispose of the analogue for such laws in economics:

> But what equations of motion, and what laws of conservation of comparable scope do we have in economics? To ask the question is to answer it. There are none that have the definiteness and universal demonstrability of the corresponding physical laws. Thus our economic laws of change are simply empirical extrapolations of the present situation; they do not enable us to determine with certainty what, for example, the demand and supply situation will be in the next instant of time.
>
> (Schultz 1930: 3)

In spite of the difficulty, which was widely accepted as a major shortcoming for the project of the development of the new mathematical economics, Schultz argued that the resemblances would eventually dominate. Proof was the dedication to economics of a number of engineers – he quoted Walras, Pareto, Dupuit, and Charles Roos, but Tinbergen could also be added to the more general list of trained engineers and physicists gained to economics.

> Certainly it is not an accident that some of the greatest economists had also studied engineering ... . It is not by chance that these engineers have been attracted to economics, because both engineering and economics must deal with the problem of how to combine limited resources to achieve a given end, and must consequently make use of the principle of economy.
>
> (Schultz 1930: 5)

But the econometric generation meant much more than merely an analogy between the definitions of the two sciences, as implied in the last phrase. Physics and mechanics in particular represented a standard for establishing the legitimacy of the argument, a model of representation and demonstration, an archetype of scientific communication. Consequently, economics itself should be redefined accordingly, so that the analogy may hold: agents were described as atoms, markets as close fields, and the economic action as the maximisation under conservation of energy. The examples abound: according to the report printed in *Econometrica* on one of these first meetings, the Econometric Society meeting at the Hotel Syracuse in New York, 20–23 June 1932, and prepared by H. Hotelling, H. Kantor, S. Wilks and F. Crawford, a paper by H.T. Davis from Indiana University 'showed how the problem of perturbation in economic series has all the essentials of the problem of explaining the methane spectrum by means of the perturbations of the 'atoms' (*Econometrica* 1933).

The atomic metaphor was quite convenient, on several grounds. First, it allowed for the use of Hamiltonian mathematics and all the methods derived

from the dynamics of conservative systems. Second, it matched with the postulates of rationality and the over-simplified description of the *homo economicus*. And third, and not least, it paved the way for the introduction of probabilistic concepts into economics, as it provided the rationale for the use of the Law of Large Numbers and the Central Limit Theorem. But its shortcomings were equally imposing: it was not easy at the time – and it is as difficult now as it was then – to accept that the structure of human choice was equivalent to that of the gas particles, or furthermore that the social structure and social behaviour would not be more complex than the wandering of these particles.

Consequently, the econometricians were divided into three contradictory trends of opinion. A first group accepted and argued for the analogy all the way – and those were essentially the economists accepting and defending the neoclassical postulates. A second group did not dispense with the mechanical analogy and thoroughly explored its mathematical implications, although remaining quite suspicious of the behavioural implications and of the semantic value of the metaphor. And, finally, a third group openly challenged the metaphor, and in general deducted a rather sceptical implication in relation to the use of mathematics in economics.

Fisher, Schultz, Marschak,[2] and many others, belonged to the first group, whereas Frisch was a representative of the second grouping. Tinbergen and Roos can also be included in the latter eventually, although they argued for a much more restrictive application of mechanical metaphors.[3] The last group was certainly important at the time of the foundation of the *Econometric Society*, and several skirmishes on the role of mathematics highlight the internal differences of opinion on this subject, which was later marginalised and increasingly ignored.

In these founding years, this sceptical group had two main apostles: Amoroso and Schumpeter. Schumpeter, who happened to be the chair of the assembly that created the society in December 1930, had a long argument with Frisch on the role of mechanical illustrations and demonstrations for the explanation of economic oscillations, and remained quite unconvinced of the usefulness of these tools until his death (Louçã 1997: 222 ff.; 2000).[4] Amoroso, on the other hand, was convinced that the physics the economists were looking at was already out of fashion and that the crucial problem for economics was to abandon the ill-defined concept of equilibrium. In a letter to Frisch, of 21 December 1931, Amoroso told him:

> Nous n'en sommes certes plus aujourd'hui à l'idéal de la représentation des faits économiques d'après le modèle – essentiellement statique – de la physique classique. La physique elle-même a abandonné ce modèle et ses conceptions déterministes; que doit donc faire l'économetrie? Sa vraie raison d'être en tant que science, est de représenter la dynamique économique d'après un modèle qui permette de tenir compte de l'élément 'volonté' dont l'importance dans les faits économiques est capitale

et ne doit point être sousestimé. Tel étant mon point de vue, je suis porté naturellement à considérer depassées, et pas du tout à fait à leur place dans la Revue d'une Société créée pour exciter le progrès de l'économie mathématique, des études se rattachant à certains concepts directement liés a la théorie de l'équilibre économique; ces concepts, minutieusement elaborés, ont donné déjà tout ce qu'ils pouvaient donner; en surplus, l'idéal et le but de notre science s'étant déplacés, ils ont perdu désormais beaucoup de leur importance.

Today, we are truly beyond the ideal of the representation of the economic facts following the essentially static model of classical physics. Physics itself abandoned this model and its deterministic concepts. What should econometrics do? Its true raison d'etre as a science is to represent the economic dynamics following a model allowing for an element of 'will', whose importance for the economic facts is crucial and cannot be understated. As this is my point of view, I consequently feel inadequate, and out of the scope of the journal of a society created for the development of mathematical economics, all these studies related to some concepts directly linked to the theory of economic equilibrium; these concepts, carefully elaborated, gave already all they could; furthermore, as the ideal and purpose of our science evolved, they have lost much of their importance.

(Amoroso to Frisch, 21 December 1931)

But this could not be accepted at the time. Equilibrium – be it defined either as a metaphysical entity in the social realm or as a close analogy to mechanics – was irreplaceable in econometrics, and that is why even those suspecting the physical analogy could not dispense with the mechanical methods. Some of them, as seen in this paper, were quite outspoken in their distrust of trivial applications and of the increasing returns of the industry of mechanical analogies. Yet it prevailed, under one form or another. Humans were particles, behaved like particles and organised like particles – and that conclusion did not depend upon the regional origin, national tradition or professional inclination of the theorist: the mechanical consensus was imposed upon the dissidents, and the econometric revolution went on its way.

Notes

1 The paper may be found in the Frisch Archive of the Oslo University. Alfred Cowles sent a copy of it to Frisch. The other unpublished papers and letters are also deposited at the Frisch Archive, Oslo University.

2 Marschak wrote to Schumpeter: 'I am anxious to know what you think of my suggestion that someone should tell us of so-called statistical physics or astronomy, and its analogies in economics' (Marschak to Schumpeter, 5 August 1946).

3 On Tinbergen's 'limited transfer' from physics into economics, see Boumans (1992). On Roos, see the previous example. On the divisions among this group, see Louçã (1999).

4 Another illustration is the letter Schumpeter sent to Domar, commenting on his paper on capital expansion, rate of growth and employment:

> In particular, your paper is the first symptom I have found in the literature of model building of an awareness of the fact that variation in output *never means* simply variation in the output of a homogenous quantity or else a process that can be dealt with *according to the schema of a kinetic theory of gases*, but also and inevitably means structural change with some of the molecules eating up the others. So far I have in vain looked for a method of expressing this in any exact form. I do not know whether I am making myself quite clear, but I hope, in any case, for further discussion with you.
>
> (Schumpeter to Domar, 21 March 1946; emphasis added).

Bibliography

Boianovsky, M. and Tarascio, V. (1998) 'Mechanical inertia and economic dynamics: Pareto on business cycles', *Journal of the History of Economic Thought* 20(1): 5–23.

Boumans, M. (1992) *A Case of Limited Physics Transfer: Jan Tinbergen's Resources for Reshaping Economics*, Amsterdam: Thesis Publishers.

Creedy, F. (1934) 'On equations of motion of business activity', *Econometrica* 2: 363–80.

Dimand, R. (1988) 'Early mathematical theories of business cycles', in D.E. Moggridge (ed.) *Perspectives on the History of Economic Thought*, 4, Aldershot: Edward Elgar.

Louçã, F. (1997) *Turbulence in Economics*, Cheltenham: Edward Elgar.

—— (1999) 'The econometric challenge to Keynes: Arguments and contradictions in the early debates about a late issue', *European Journal of the History of Economic Thought* 6(3): 404–38.

—— (2001) 'Intriguing pendula', *Cambridge Journal of Economics* 25(1): 25–55.

Mirowski, Ph. (1989) *More Heat than Light: Economics as Social Physics, Physics as Nature's Economics*, Cambridge: Cambridge University Press.

Schultz, H. (1930) 'Engineering and Economics', paper presented to joint meeting of Econometric Society, *American Society of Mechanical Engineers*, *American Society for Testing Materials* and *American Institute of Electrical Engineers*, Chicago, 30 June 1930.

8 Disciplinary developments in Dutch economics and the emergence of the Dutch welfare state (1930–1960)

Arnold Wilts

Introduction

Between 1930 and 1960 stable disciplinary boundaries of the field of Dutch economics emerged. The process in which these boundaries grew stronger, relatively impermeable and ever more visible, was one of cognitive standardisation in economic thinking combined with the academisation of teaching and research in economics. In Dutch economic thinking a macroeconomic outlook together with the extensive use of mathematical and quantitative techniques became the principal approach to economic theorising. As a result, sociologically and philosophically oriented approaches lost much of their intellectual appeal. Before the Second World War these approaches had still found support among Dutch economists, but this adherence quickly dwindled after 1945. Work in Dutch economics rapidly developed into a very specialised form of academic research, yielding ever more esoteric forms of knowledge. The general acceptance of macroeconomic and mathematically articulated forms of theorising meant an important change in the cognitive structures of economics in the Netherlands. The dynamics of the field's intellectual development changed in a number of important respects. The range of feasible approaches to economic theorising narrowed considerably, but, within the cognitive frameworks that were thus emerging, the options and opportunities for contributing to the development of the field became more clearly visible. As a result, individual contributions to economic theorising got an increasingly exclusive character, understandable only to well-trained specialists.

This chapter argues that developments in the intellectual organisation of Dutch economics and changes in its cognitive structures did not take place independently from fundamental social and political changes in Dutch society. The decades after 1945 witnessed the emergence of new welfare arrangements, the early foundations of which were laid by the government's response to the economic problems of the 1930s. The construction of the Dutch welfare state after 1945 had important consequences for both the social status of the field of economics and the professional identity of the community of economists in the Netherlands. The change and extension of

the government's responsibilities on social and economic terrains led to the emergence of new forms of work organisation in the government bureaucracy. The new socio-economic arrangements that were built up after the war thereby offered economists unprecedented opportunities for establishing a professional identity as experts on policy issues. The involvement of the profession in political decision-making institutionalised in the form of bureaucratically organised practices, in which economic knowledge was routinely brought to bear on a wide range of practical problems. As the profession got more closely involved in the management of the Dutch welfare state, economic science became indispensable for practical policy-making, thereby greatly enhancing the social status of the field.

The process of political change in which Dutch economists became institutionally involved in decision-making was intricately connected with changes in the intellectual organisation of their science. Economists' policy work outside academia was founded on the economic theory and methods which were elaborated within the discipline and which served as the basis for the development of applicable concepts and policy instruments. Changes in the organisation of professional practices of economists outside academia between 1930 and 1960, therefore, had profound and direct consequences for the intellectual dynamic in Dutch economic thinking – that is, for the process in which new theoretical insights and methodological techniques were developed. Changes in the dynamics of cognitive development and intellectual innovation in Dutch economic thinking led to the emergence of stable disciplinary boundaries of the field; in their turn, these boundaries enabled further specialisation in Dutch economic thinking.

This process of professionalisation, discipline formation and intellectual change was part of a general development of Dutch society that took place at the time, and draws attention to the societal embeddedness of changes in the institutional and intellectual organisation of economics in the Netherlands. More in particular, changes in the intellectual dynamic in Dutch economic thinking between 1930 and 1960, and the development of the field's academic organisation in this period, can be linked to fundamental changes of the policy process in the Netherlands: that is, to the construction of the policy arrangements that were typical for the emerging Dutch welfare state.

Changes in the intellectual organisation of the field

The economic problems of the 1930s led Dutch economists to reflect on the causes and dynamics of the economic crisis, and many theoretical ideas that before had been generally accepted now got criticised. In particular early neoclassical approaches came under attack from a number of different angles. The main critique aimed at the prevailing emphasis on the economic optimality of free market functioning. In theory, the efficient co-ordination of economic life and the optimal allocation of goods, money and people would be brought about spontaneously through the undisturbed working of the

free market. This basic axiom of economic thinking was, however, increasingly rejected as a theoretical abstraction with only very limited use for understanding the actual and very urgent problems that were experienced throughout the 1930s. During the crisis it became apparent that markets could fail dramatically and that, at least under certain circumstances, some form of direct state intervention in the economy was necessary to prevent total economic collapse. The acknowledgement of the practical necessity of interventionist policies, however, almost forced economists to accept the idea not only that it was practically possible to deliberately interfere with the economic process without causing further economic decline, but also that it was theoretically possible to show the necessity of such interference. If the empirical reality of actual market functioning showed to lead to an obvious loss of welfare, then economic theory should be able to account for that eventuality. And if state intervention in the economy proved to be imperative to correct the functioning of the market, then economic theory should be able to explain why this was necessary in the first place.

The economic difficulties of the 1930s thus raised serious problems for economic theory. These problems also made themselves felt in economic thinking in the Netherlands. Among Dutch economists the early neoclassical theory of the Austrian School had found broad adherence from the late nineteenth century onwards. A leading scholar in this tradition was C.A. Verrijn Stuart, who played a prominent and influential role in the small community of Dutch economists in the first decades of this century.[1] According to Verrijn Stuart, basic theoretical insights into the fundamental laws governing the economic process were the result of long and meticulous study of the phenomena of economic life. Through disciplined observation and by logical reasoning of generations of economists, a theoretical understanding of economic laws had slowly emerged. This understanding clearly showed, according to Verrijn Stuart, that any deliberate interference with the economy would necessarily reduce the optimality of the outcome of the economic process. Any plea for specific forms of economic ordering through government intervention could therefore only be dictated by political motives and – by definition – could not be said to be rational in economic terms.

The practical implication of these ideas was that government interference with the economy in order to solve the problems of the crisis would only lead to additional economic difficulties. Economics, according to Verrijn Stuart, could never be used to help solve political problems and hence did not have the responsibility to do so. The theoretical assessment of the self-organising properties of the economic process, therefore, was founded on a clear distinction between practical problems of economic politics and relevant questions of independent economic theory. Verrijn Stuart thereby insisted on the scientific merit of ideas which had long been subject to general consensus among Dutch economists. From the early 1930s onwards, however, the question of how an economically efficient balance between free

market functioning and government intervention could be theoretically accounted for, got ever more priority in Dutch economic thinking. This is particularly exemplified by the work of the Rotterdam economist F. de Vries, a student of C.A. Verrijn Stuart and one of the most eminent Dutch economists in the 1930s.

At first, de Vries had rejected any form of market regulation as a disturbance of the self-organising properties of the economic process. He had based this standpoint on theoretical assumptions about the optimality of spontaneous economic order – very much in line with ideas such as developed by Verrijn Stuart. The aim of economic theory, according to de Vries, was the causal explanation of economic phenomena. For such an explanation it was necessary that economic theory abstracted from empirical reality so as to identify the truly economic aspects of the phenomena under study. Only through systematic abstraction, de Vries argued, economic theory could learn to see the law-like regularities in economic life and to distinguish those from cultural, social and for instance geographical factors determining the actual manifestation of empirical phenomena. These regularities manifested themselves particularly in the formation of prices and de Vries argued that the theoretical analysis of the price mechanism was therefore fundamental to the science of economics.[2] Economic analysis revealed, according to de Vries, that on theoretical grounds only the undisturbed working of the price mechanism in a free and competitive market could be said to lead to an optimal production and distribution of economic welfare.

Under the pressure of the problems of the 1930s, however, de Vries was forced to modify much of this basic idea and to reassess its theoretical priority. According to this prominent scholar, structural changes in the country's economy had led to a situation in which free competition was increasingly being replaced by forms of regulated competition, either through organisation and concentration in particular markets, or through protectionism and government intervention in the economy. As a result, it became more and more difficult to recognise the price mechanism as the pre-eminent economic regulator. Halfway through the 1930s it had become clear, according to de Vries, that an economic order was developing in which maximal welfare could be warranted only if a pragmatic equilibrium between free market functioning and state control of the economy were found. The problem of finding this balance of course had profoundly practical aspects, but also gave rise to important questions of fundamental and meta-theoretical importance. The main question of course was how to organise a mixed economy in such a way that its functioning could be said to lead to an optimal outcome in economic-theoretical terms without forcing the evaluating economist into a normative and hence political role.

The search for new concepts and for a new theoretical understanding of the actual manifestations of the economic process was characteristic for changes in Dutch economic thinking at the time. The traditional emphasis on the analysis of universally valid equilibrium laws governing economic life

had clearly set the theoretical project of economic science apart from its practical application. In fact, for many economists the theoretical specification of economic laws was something very much, if not completely, different from the compilation of practical knowledge about the actual functioning of the economy. Unavoidably, however, the appeal during the 1930s on the insights of economic science to help solve the problems of the crisis, brought along the introduction of problems and questions into economic theorising which before would have been regarded by many economists as non-scientific or at least as not being of central theoretical relevance. Consequently, the need made itself felt to redefine what exactly distinguished economic theory from its practical application or, more broadly, what distinguished economic science from economic policy. As a result the question of where the boundaries of the science of economics had to be drawn occupied many economists in the Netherlands in the 1930s.[3]

At the Roman Catholic School of Commerce in Tilburg, the professor and ordained priest M.J.H. Cobbenhagen – a student of F. de Vries – worked on a multidisciplinary approach to economic theorising which entailed an alternative answer to the question of how fundamental and applied economic knowledge were to be distinguished.[4] Cobbenhagen incorporated both the sociological aspects of the object of economic study and their philosophical ramifications in his analysis of economic phenomena. The economic act, according to Cobbenhagen, not only concerned the production and consumption of material goods, but also had an essential cultural meaning that could not be grasped by analytical theoretical concepts. Fundamental to the approach of Cobbenhagen was the assumption that material subsistence was a necessary prerequisite of life fulfilment more generally. To act economically was therefore understood by Cobbenhagen as an integral part of man's striving towards self-realisation *in* society – that is, within the social relations only in which the individual could achieve a meaningful existence.

On the basis of his ideas about the social and cultural embeddedness of economic life, Cobbenhagen tried to develop a multidisciplinary and distinctive position in the ongoing discussion in the field of Dutch economics. For instance, he tried to develop a notion of the just price which connected ideas on economic equilibrium with ideas on social balance and cultural progress. Thus, Cobbenhagen consciously tried to synthesise economic, philosophical and sociological notions on market functioning and economic order. Consequently, economic concepts as such should not be used instrumentally to solve practical economic problems, according to Cobbenhagen. Economic theory and methods alone would not suffice to understand the true meaning of economic phenomena since, by their very nature, these phenomena could only become manifest in the intricate web of culturally integrated social relations that Cobbenhagen thought to be characteristic of modern society. Yet, Cobbenhagen argued, for any understanding of that society economic insights were indispensable, and

economic science was therefore of central importance to learn about the fundamental conditions of modern life.

For an economist such as F. de Vries, the recognition of the interrelatedness between economic, cultural and social aspects of the phenomena of economic life was a reason to argue for a more restrictive domain for analytical economic science. This science would admit only the narrowly defined economic aspects of empirical phenomena as its object of study. In fact, for de Vries, to distinguish the economic aspect of action analytically as a separate dimension was a first and necessary step in the production of reliable knowledge about the economic order, and hence was constitutive of the very science of economics. For Cobbenhagen, on the other hand, who stood in an intellectual tradition much different from that of his teacher F. de Vries, the recognition of the interrelatedness of economic, cultural and social aspects of economic life was a compelling reason to argue for an encompassing and comprehensive economic science which would ultimately recognise all aspects of empirical phenomena as its true object of study. Cobbenhagen's preference for a multidisciplinary approach to economic theorising thus led him to be critical of approaches to economic theorising that he judged to be too analytical. Moreover, in particular, Cobbenhagen was critical about the growing use of mathematics in economic thinking throughout the 1930s.

The application of mathematics to economic analysis was strongly advocated in the 1930s by Jan Tinbergen, who was originally trained in physics but who became the leading Dutch economist of his generation.[5] Tinbergen conceived the economy as an economic system governed by its own operative laws. Economic developments, according to Tinbergen, showed a systematic trend as well as cyclical deviations from that trend. Consequently, economic phenomena could be thought of as correlated fluctuations in various economic entities and thus as the result of different and possibly contradictory causes. The actual dynamics of economic developments could therefore be visualised, and subsequently explained, only in an encompassing and comprehensive analysis. In such an analysis, however, just a limited number of connections in the economic system needed to be taken into account if the most important macro-relations in the economy could be identified. Such a macroeconomic analysis, Tinbergen argued, would be possible only if a new, concise method were developed, and for this he thought mathematics to be the only conceivable tool. This was demonstrated by Tinbergen in 1936 when he published the first mathematically formulated and statistically tested model of the Dutch economy – an intellectual innovation that became widely recognised.

In Tinbergen's model of the Dutch economy both the systematic and the cyclical components of the movement of the economic system could be logically ordered with the help of mathematical methods and statistical techniques. Thereby, complicated economic developments became relatively easy to survey. Tinbergen argued that economic models in this respect had

an undeniable advantage over traditional economic reasoning. The equations of the models described the relations between economic entities for which in principle quantitative data were available. Mathematical models of the economy, therefore, could be tested statistically and would thus produce veritable scientific knowledge about the economy, instead of mere insights based on theoretical assumptions and necessarily limited practical experience. Although the knowledge produced with such models would be based on highly abstract theoretical assumptions, its quantitative nature would allow its direct application in answering practical questions – the kind of questions, to be more precise, that formed the core of policy-making. Tinbergen's mathematical-quantitative models of the national economy therefore entailed – and explicitly claimed to do so – a new way of thinking about the basic principles of economic science and its practical usefulness in economic politics.

Tinbergen's pioneering efforts at constructing mathematically formulated and quantitatively substantiated economic models were greatly enabled by the organisation of the field of Dutch economics at the time. Both in institutional and in intellectual terms stable boundaries of the field had not yet emerged. This is particularly illustrated by the fact that Tinbergen constructed his first models – generally considered to be a major intellectual innovation or even a scientific breakthrough – outside the academic organisation of the field.[6] Although Tinbergen taught mathematical economics and statistics at the Municipal University in Amsterdam and, later, at the Netherlands Economic School in Rotterdam, he developed his models while working in the division for business cycle research of the Central Bureau for Statistics. It was there that Tinbergen had access to the statistical material and the computing facilities that were necessary for estimating the equations in his models. These vital resources at the time could not be found within Dutch universities – a point that will be elaborated below, when changes in the institutional organisation of the field of Dutch economics are discussed.

New theoretical and methodological frameworks

The Second World War caused Dutch economics to be cut off from the ongoing intellectual discussion in the international field for several years. After 1945, however, Dutch economists quickly caught up and a macroeconomic outlook, combined with a quantitative orientation and the extensive use of mathematical techniques, rapidly became a generally accepted approach to economic theorising. The new quantitative and mathematical approaches in Dutch economic thinking were largely inspired by the work on economic modelling that had been done by Tinbergen during the 1930s.

In the early 1950s much work was done on the development of new estimation techniques for the construction of economic models. The mathematical economist Henri Theil was the main driving force of work in this direction in the Netherlands. Theil worked closely together with

Tinbergen at the Central Planning Bureau in The Hague and was 'Extraordinary Professor' in Econometrics at the institute where Tinbergen held his professorship, namely the Netherlands Economic School in Rotterdam. According to Theil the economic models developed by Tinbergen were very useful, but necessarily unreliable instruments for economic analysis. The limited reliability of the existing economic models was caused by the unavoidable deviation of mathematical schematisations – in terms of equations with only a restricted number of interdependent variables – from the so much more complicated empirical reality of economic phenomena.

Although economic models could be used to prognosticate developments in relevant economic entities, according to Theil the outcomes of the calculations based on these models were always surrounded with uncertainty. The question, then, was how to reduce that uncertainty so as to augment the empirical reliability and hence the practical usefulness of economic models. According to Theil the answer to this question could only be found in a mathematical refinement of the kind of models that had been pioneered by Tinbergen. Theil therefore devoted much of his research work at the Central Planning Bureau and at the Netherlands Economic School in Rotterdam to the development of new and mathematically advanced estimation techniques, such as the two-stage least-squares technique for estimation in regression analysis. The development of these analytical tools was important for a number of reasons, the most important of which being the practical applicability of mathematical-quantitative economic models. For a mathematical economist such as Theil, however, this could be achieved only through an improvement of the scientific quality of those models. In comparison with the early modelling work of Tinbergen, the economic research work of Theil was therefore driven by a more strictly scientific ambition and was oriented primarily towards theoretically specified goals and priorities, which were defined mathematically and worked out quantitatively.[7]

The change in the character of economic theorising is further illustrated by the work of another leading economist in the Netherlands in the 1950s, namely, D.B.J. Schouten at the Roman Catholic Economic School in Tilburg, the institute where Cobbenhagen had long been the leading theoretician. Schouten had studied in Tilburg, but had acquainted himself with economic model building while working for Tinbergen at the Central Planning Bureau in The Hague. In 1954 he succeeded Cobbenhagen as Professor in General Economics in Tilburg. Already, in his dissertation of 1950, Schouten had elaborated his economic views in terms of a macroeconomic and mathematical-quantitative approach.[8] His appointment in Tilburg exemplifies that Cobbenhagen's sociologically and philosophically oriented approach to economic theorising was no longer tenable in the intellectual context of the 1950s.

Schouten argued that mathematical concepts and quantitative techniques

were indispensable for rigorous scientific analysis of the actual dynamics of economic developments. Such an analysis would be possible with the help of economic models, such as those developed by Tinbergen at the Central Planning Bureau. In addition, Schouten argued that these models could perform an important theoretical task as well. Reliable mathematical-quantitative schematisations of the relations between the most important economic entities would provide economists with a tool for the comparison of different theoretical positions, and would thus represent an objective basis for the assessment of the scientific merit of different theoretical accounts of macroeconomic developments.

The practical relevance of the prognoses made by means of economic models remained the most important reason for applying mathematical-statistical analysis to economic thinking. The theoretical meaning of the models, however, was in the 1950s increasingly recognised by Dutch economists as a relevant goal in its own right. Economic models were thus able to overcome much of the theoretical uncertainties that the economic crisis of the 1930s had confronted economists with. By describing the economy in terms of mathematical relations between dependent and independent variables – or goals and instruments of economic policy, in the vocabulary of Tinbergen – these models were able to account for the efficiency of government interventions in the economy. These interventions could be modelled in terms of exogenous changes in certain variables that subsequently could be related to relatively autonomous economic developments. Political preferences, therefore, did not need to be theoretically justified, but could be understood as boundary conditions in the equations of the models. This provided a seemingly objective, scientific basis for government action in the economic field, and thus illustrated the practical usefulness of basic assumptions of economic theory. Moreover, the equations of the economic models could be related directly to actual economic phenomena through the systematic use of statistical information. It was the combination of the abstract properties of mathematically formulated models with the empirically grounded character of their quantitative contents which gave work on economic modelling its particular cognitive strength in the intellectual context of the field of Dutch economics in the 1950s.

Newly emerging theoretical and methodological frameworks provided Dutch economists with new opportunities and rationales for constructing original contributions to economic theorising and enabled them to identify new and promising directions for the development of their science. Yet, these new frameworks also, and necessarily so, put a constraint on the kind of opportunities for intellectual innovation, and limited the number of possible directions in which viable individual contributions to economic theorising could be worked out. As the intellectual integration of new and relatively specialised forms of theorising advanced, the external differentiation between economics and neighbouring disciplines therefore became ever more durable. That is, changes in the dynamic of intellectual developments

in Dutch economic thinking led to – and, increasingly, were enabled by – the emergence of stable disciplinary boundaries. These boundaries eventually shielded cognitive developments within the discipline off from direct external pressure and made it increasingly difficult for economists to pursue multidisciplinary approaches.

The question, then, is why the intellectual boundaries of the field of Dutch economics were drawn in terms of mathematical and quantitative approaches. Why was it that work on economic modelling could develop into a standard approach in Dutch economic thinking, considered to be of general scientific relevance, whereas other approaches towards economic theorising, notably those bordering on sociology and philosophy, could not be sustained and eventually disappeared from the core of the intellectual agenda of Dutch economists? Arguably, the emergence of intellectual boundaries between economics and other fields and intellectual traditions was connected to the institutionalisation of new and differently organised relations between the science of economics, on the one hand, and the application of its concepts and insights, more in particular its application in economic policy, on the other. The question of the emergence of stable disciplinary boundaries of the field of Dutch economics, therefore, refers to changes in both the institutional and professional organisation of the field – that is, to changes in the academic and political contexts in which developments in Dutch economic thinking materialised.

Changes in the institutional organisation of the field

The field of Dutch economics in the 1920s and 1930s was very small with not more than twenty professors in the entire country. Furthermore, Dutch economic thinking was nationally oriented – that is, relatively insulated from developments in the international field of economics. In the Netherlands the field did not exist as an independent academic discipline and was formally recognised as such only in 1938. During the nineteenth century, in Dutch universities economics and statistics had been taught mostly by a single professor in the law faculty.[9] In the early 1910s, however, it had become apparent to many that the subsidiary position of the subject of economics in the study of law and state administration could no longer meet the demands of modern commerce and industry. The idea took hold that the increasing complexities and international dependencies of the modern economy required a new type of business man, one thoroughly acquainted with the intricacies of economic life.

In 1913, business men in Rotterdam – one of the country's largest commercial centres – took the initiative to found an independent school of commerce, which became the first institute for higher education in economics in the country.[10] This was the Netherlands Trade School, later the Netherlands Economic School, the forerunner of the present Erasmus University in Rotterdam. At the outset this school was meant to prepare

students for a business career. The structure and contents of the teaching programme were therefore geared to the requirements of business and commerce rather than to those of independent academic study. For instance, during their two-year training students had to take classes in technical subjects and commercial correspondence besides commercial arithmetic and more strictly economic subjects. This, however, soon changed and at the beginning of the 1920s teaching in Rotterdam had already been extended to cover topics ranging from questions of commercial practice and business economics to general questions of macroeconomic theory and research techniques. The new educational institute long remained relatively small and employed only a limited number of economists. One of the most prominent among them in the first decades of the school's existence was F. de Vries, who was responsible for much of the economic-theoretical part of the teaching programme.

The successful private initiative in Rotterdam was soon followed elsewhere, as economic developments allowed the budget constraints imposed under the pressure of the economic consequences of the First World War to be loosened. In 1921 the first university faculty of economics, or rather faculty of commercial sciences as it was still called at the time, was founded at the Municipal University in Amsterdam.[11] This second local initiative led to debates on the place of economics within the Dutch university system. But a national statutory regulation of the organisation and contents of academic economics did not materialise yet, and the teaching programme in Amsterdam was cast on the practically oriented mould of the trade school in Rotterdam. At the Municipal University, however, the new faculty became part of an already existing academic organisation. In that organisation ideas about the value of academic science and about the independent study of man and nature were well established. The academic culture in which the new programme in commercial sciences had to be integrated, therefore, did not permit an all too overt orientation towards the practical requirements of business life, despite the fact that preparing students for a professional career in commerce and industry had originally been an important reason for the founding of the new faculty. This was illustrated by the contents of the teaching programme of the faculty of commercial sciences, in which practical subjects were never really integrated. The teaching programme in Amsterdam did, however, entail training in research techniques and statistics, taught from 1930 onwards by Tinbergen – who, in 1933, was also appointed 'Extra-ordinary' Professor in Statistics and Mathematics at the Netherlands Trade School in Rotterdam.

In 1927 a third independent institute for education in economic or commercial sciences was founded, namely, the Roman Catholic Trade School in Tilburg, the forerunner of the present Catholic University of Brabant in Tilburg.[12] The founding of this private institute for higher education, initiated by the church and prominent catholic citizens, had to ensure that the catholic viewpoint was represented in the new and rapidly growing field of

commercial sciences. The teaching programme of the school in Tilburg stood out in particular for its explicit foundation on catholic social thought, exemplified by the central position of subjects such as sociology, ethics and philosophy in its curriculum. This expressed a catholic, denominational identity, which, against the background of deep-seated ideological differences in Dutch public life, was of vital importance for finding the practical and financial support necessary for maintaining a private catholic institute for higher education. The leading economist in Tilburg was Cobbenhagen, who was appointed Professor in Economics in 1927 and whose work greatly contributed to the school's Roman Catholic identity.

Since there was no national regulation of higher education in economics until the end of the 1930s, the three institutes in Rotterdam, Amsterdam and Tilburg were dependent on their local environments for financial and practical support. The university faculty in Amsterdam, for instance, was the only institute that was financed from public means, provided, however, by the city of Amsterdam and not directly by the national government. The school in Rotterdam had received a small annual subsidy from the national government ever since its establishment in 1913. A similar subsidy was continuously denied to the school in Tilburg, the main argument being that its denominational identity did not allow financial support out of public means. Thus, the three institutes for higher education in economics were differently organised and were financed from different sources. These differences particularly found their expression in variations in the contents of the teaching programmes in which the formal training of new economists – and hence the socialisation of new members of the profession – was organised at the time.

The three separate institutes for higher education in economics provided Dutch economists with work environments that differed in a number of important respects. These environments were differently structured, both in terms of their material organisation and societal embeddedness and in terms of their cultural context – that is, the context of culturally determined ideas about the place in modern society of higher education in general and higher education in economics in particular. This is important, because these ideas underlay the local practical support that was necessary for the material organisation of teaching and research in economics at the time. After all, a national statutory regulation of higher education in economics did not exist then, nor at that time did the government acknowledge its formal responsibility for financially supporting the three economic institutes. This situation forced economists to look for local support and financiers. The lack of a national regulation of the curriculum in economics, therefore, forced the institutes in Rotterdam, Amsterdam and Tilburg to adjust the contents of their teaching programmes to ideas about the organisation of the economy held by relevant others in their local environments, notably by those financing the institutes. The local dependencies that the three institutes for higher education in economics were confronted with, to a large extent struc-

tured the intellectual climate within them. In general, practical and financial support was not given unconditionally and therefore the thematic profiles of the three institutes had to be in accordance with beliefs that held wide support in their local environments. This affected not only the contents of the teaching programmes, but also the character of the intellectual work of those affiliated to the three institutes.

Nevertheless, teaching in economics gradually evolved from occupational training, specifically geared to the demands of business and commerce, to academic education, more oriented towards the independent study of economic life. This development resulted in the formal specification of the curriculum of the study of economics in 1938. In that year the Academic Charter, which provided the legal basis for the organisation of higher education in the Netherlands at the time, was revised so as to include the discipline of economics. As a direct consequence, teaching programmes were standardised across the country. From then on the study of economics would be centred around subjects of general economic theory and business economics, supplemented with a limited range of optional subjects such as statistics or, for instance, sociology. The formal specification of the curriculum in economics in the Academic Charter was an important step in the academisation of the field and eventually formed the basis for the government to acknowledge, in 1948, its obligation to finance academic teaching and research in economics.

Academisation after 1945

In the two decades after the war the field witnessed an unprecedented growth in terms of budgets, size of staff, and number of students.[13] In 1948 the Higher Education Act was changed, whereby the government formally acknowledged its obligation to support the discipline financially. This allowed for teaching and education – and eventually research – in economics to be organised more independently than before. In 1948 two more university faculties in economics were founded, namely at the State University in Groningen and at the Free University in Amsterdam. Already, by the end of the 1940s, students could thus choose from among five institutes where they were able to prepare for a career in a strongly growing labour market, namely economic work in the government bureaucracy.

This development had a number of consequences. One was that it became increasingly difficult to set up a teaching programme in economics in which a local identity could be expressed. Unlike the situation in the 1920s and 1930s, it was no longer possible to organise the education of new economists in any way that diverged too much from the contents of the curriculum as specified in the Academic Charter – which, after all, was the basis for the government's acknowledgement of its financial obligations towards the academic organisation of the field. Thus, teaching in economics became organised as an academic discipline, with the core of the curriculum

consisting of subjects of economic theory, supplemented with statistics and mathematics.

The contents and structure of the curriculum in economics were laid down in formal legal arrangements that necessarily applied to all schools and university faculties in the country. The degree of freedom allowed in organising the formal training of new economists decreased considerably. Economic teaching and, subsequently, economic research became ever more clearly demarcated – both in intellectual and in organisational terms – from teaching and research in neighbouring disciplines such as sociology. Concomitant to these changes, a recognisable disciplinary style in Dutch economic thinking emerged, favouring a quantitatively oriented and mathematically articulated macroeconomics. In this development the institutional basis for the plurality of theoretical styles and methodological preferences that had characterised Dutch economic thinking before the war disappeared. Plurality was replaced by increasing specialisation within well-defined theoretical and methodological frameworks, supported by institutional changes in the academic organisation of the field. This is exemplified by yet another change of the Academic Charter in 1957, whereby the establishment of a separate quantitative specialisation in the study of economics was authorised. In that same year, too, a number of independent econometric research institutes were founded at various schools and universities. An example is the Econometric Institute in Rotterdam, directed by the mathematical economist Henri Theil, which gained a considerable international reputation.

In academia, from the end of the 1940s onwards, work on mathematical-statistical models rapidly developed into a very specialised form of scientific research, understandable only to the kind of experts that could increasingly be trained within the discipline itself. The process of cognitive change in Dutch economic thinking was enabled by changes in the institutional organisation of the field that had profound implications for its future development. The question, however, is why the institutional organisation of the field changed in a way that supported the ongoing specialisation in Dutch economic thinking along mathematical and quantitative lines. The answer to this question can be found in changes in the political context of work in Dutch economics between 1930 and 1960.

Economists and the welfare state

In the political context of the 1930s debates about the role of the state in economic life were fierce and intense and very much polarised. The political borderlines in the Netherlands in the 1930s ran along sharp ideological fissures, and political ideas were deeply entrenched in different ideological and religious belief systems. Dutch society in general, and Dutch politics in particular, was ideologically segmented and was characterised by deep-seated cleavages between Roman Catholic, Protestant, socialist and liberal

groups.[14] The ideological and religious differences and oppositions constituted a serious obstacle for effective decision-making, which required communication between the various groups – or pillars as they are traditionally referred to – no matter how difficult it seemed to bridge the gap between them. Although this necessity was widely recognised, ideological opposition and conflicts often led to stalemate debates about the organisation of economic policy during the crisis. Opposition and conflict thereby impaired a swift response of the government to the problems of the times. As a result, Dutch economic policy in the 1930s was conservative and marked by indecisiveness.

Within the various pillars, different ideas were formulated about the government's response to the economic problems of the 1930s. Ideas on demand management, for instance, were introduced into economic policy debates in the Netherlands as early as 1935, when the Social Democratic Workers Party published its much debated Labour Plan. This plan was meant to be a new basis for political discussion and integrated many ideas and proposals for a future social-economic order in the Netherlands. It contained a plea for the introduction of an economic policy based on centralised planning, which was to offset the erratic outcome of an otherwise uncontrolled economic development. One of the specific suggestions of the Labour Plan was that the government should try and stimulate economic recovery through extra expenditures on projects of public works. Thereby, funds would be injected into the economy that – via an accelerating principle – could lead to a general rise in purchasing power and effective demand, which was expected to be a first and necessary step towards structural economic recovery.[15]

After 1945 such ideas about demand management became more or less generally accepted. In the political climate in the Netherlands of the 1930s, however, the socialists' plans and proposals were highly controversial indeed. These plans and proposals entailed a plea for direct and lasting state intervention in the economy, which many feared would lead to further economic problems and to the restriction of the personal liberties that were thought to be characteristic of Dutch democracy. The Labour Plan therefore met with severe criticism. For instance, it was claimed that the implementation of the plan would lead to economic stagnation and to an uncontrollable bureaucratisation of political decision-making which would destroy any flexibility left in the economic system. Obviously, this critique came mainly from liberal directions. According to this critique the economy should be left to itself to restore equilibrium and full employment. Any deliberate government intervention beyond strict emergency measures would disturb the self-organising properties of the economic process and therefore contribute to the perpetuation of the massive problems that were experienced in the 1930s. This point of view, however, found less and less support as the intensity and the persistence of the economic problems of the crisis increased.

Confessional parties, the Roman Catholic Party in particular, also

strongly opposed the policy proposals of the Labour Plan. At the same time, however, these parties shared much of the socialists' critique of the liberal foundations on which Dutch economic policy since the end of the First World War had been based. Catholic ideas about the causes and remedies for the economic problems of the crisis were based on the Encyclical *Quadragesimo Anno*, issued by Pope Pius XI in 1931. On the basis of this authoritative text, the Roman Catholic Party – the largest party in the Dutch parliament throughout the 1930s with almost a third of the seats – argued for a reorganisation of political life and for the introduction of a corporatist economic order. This economic order was to be characterised by the principle of subsidiarity, discussed in *Quadragesimo Anno*. That is, specific political preferences of the very influential Roman Catholic Party were based on a fundamental principle of catholic social thought, namely, the assumption that the natural autonomy of organically evolving networks of social groups was not to be impaired by excessive centralised state powers. At the same time, some form of centralised government intervention in public life was considered indispensable as a safeguard against the disintegrating forces which were thought to be associated with an uncontrolled economic development. According to the Roman Catholic Party both problems could be overcome in a system of industrial organisation in which the state would delegate much of its administrative powers to lower level authorities.

Against this background the debate about the government's response to the problems of the 1930s was very much polarised. Time and again discussions in the Dutch parliament took the form of ideological disputes, which often obscured material conflicts of interest surrounding economic policy reforms. Positions in such conflicts were articulated in terms of ideological arguments, resulting in political positions that were often difficult to accommodate. These differences impeded the formation of the political consensus that was necessary for an effective response to the problems of the economic crisis by the subsequent coalition governments of the 1930s. A response, however, was necessary nevertheless. During the decade before the war, therefore, new ways of addressing policy issues were searched for and attempts were made at reorganising the actual decision-making process in such a way that a pragmatic solution to political differences could be found.

The introduction of special legislation to protect the country's economy made it necessary for the government to obtain reliable information on the actual economic situation and its expected future development. This led to a number of reorganisations in the government apparatus and had important consequences for the way in which statistical information about the Dutch economy was gathered and processed. Especially in the Central Bureau for Statistics in The Hague much work was done on business cycle research. On the basis of its research, at the end of the 1920s the Bureau had constructed an economic barometer, consisting of a number of indicators measuring the country's economic performance.[16] Work in this direction in the early 1930s was carried out under the leadership of Jan Tinbergen, who had been

working at the Central Bureau for Statistics since 1927. His work in the department for business cycle research at the statistical agency culminated in the very first mathematical-statistical model of the Dutch economy. This rudimentary model was the one published by Tinbergen in 1936. The model was discussed within the Central Bureau for Statistics on a number of occasions and prompted further research work on the quantitative schematisation of macroeconomic developments. Work in this direction included the development of a system of national accounts through which reliable time series of fluctuations in strategically important economic entities could eventually be constructed. Mathematical and quantitative scientific research thereby was instrumental in producing the kind of information that became increasingly important for government policy.

Additionally, a number of reorganisations of the government apparatus were carried out during the 1930s in order to facilitate a well-informed and more balanced decision-making process. An important example of organisational change was the foundation of the Economic Council in 1932. This council was composed of business men and representatives of academia and was meant to serve an important function in the centralisation of advice to the government on matters of economic policy of national importance. A number of eminent economists were members of the council – among them, for instance, the Rotterdam economist F. de Vries. These scholars were supposed to be impartial in terms of their material interests and ideological preferences. The insights of those members, therefore, were thought to be conducive to the reconciliation of the differences in Dutch political life, at least as far as matters of economic importance were concerned.

The economics professors in the Economic Council were expected to bring their professional knowledge and skill to bear on practical problems. The economic crisis, after all, affected every sector of society and virtually all aspects of public life. During the 1930s, economic problems were seen increasingly as intricately connected problems of the national economy. The economists in the Economic Council were supposed to possess the knowledge and the theoretical insight necessary to understand the causes of this national problem, its full meaning and above all the interdependence of its many particular manifestations. Institutional reorganisations of the policy process in the 1930s crystallised around the need to find a pragmatic and politically acceptable response to the economic difficulties of the crisis. Thereby, these reorganisations were an unintended but consequential step in the professionalisation of the policy work of Dutch economists which became particularly manifest after the Second World War.

New policy arrangements after 1945

The troubles of the 1930s and the wartime experience had prepared the ground for renewed political discussion in 1945 about the role of the state in economic life. After a period of some fifteen years of devastating problems,

both sides of the political spectrum agreed with one another on one thing: an unbalanced economic development that would cause unemployment at a pre-war level, with the associated danger of social disruption, should be avoided at all costs. The political climate had changed decisively in favour of a system of specific economic ordering, and the electoral programmes of all political parties now endorsed some form of direct state intervention in the economy. In 1945 such intervention no longer appeared to be subject to profound ideological disputes and many of the obstacles that before had hindered attempts to reform the decision-making process seemed to have disappeared.

One of the direct consequences of the new consensus about the necessity of reorganising the policy process was the founding of the Central Planning Bureau in September 1945.[17] Tinbergen, who by that time was already one of the leading economists in the Netherlands, was appointed director of the new government agency. This new research department within the Ministry of Economic Affairs soon became the single most influential organisation for the preparation of economic policy measures. The founders of the bureau had originally conceived it as a means to guide economic developments by applying scientific methods to problems of economic planning. The kind of centralised planning that was envisaged by those who had taken the initiative, however, did not prove to be a feasible option in the political climate shortly after the Second World War. By the time parliament had passed the necessary legislation for the formal founding of the Central Planning Bureau, its jurisdiction had been limited considerably. In spite of its name, the bureau would have to concern itself mainly with economic prognosis instead of planning. It was to provide its prognoses by regularly presenting a concise and quantitative forecast of expected developments in those economic entities that were thought to be of central relevance to strategic decision-making. Based on the economic forecasts of the new planning agency, policy measures on different terrains such as international trade, wages and public finance, were expected to be integrated in a general economic policy outline, whereby the necessary consistency of government action would be achieved.

The political compromise about the limits of the government's powers in the economic sphere, had several implications for the actual work of the Central Planning Bureau. The quantitative work of the Planning Bureau was expected to provide reliable empirical prognoses through the systematic use of statistics and was supposed to embody politically neutral economic forecasts through the application of strictly objective methods of economic science. In the annual reports – or plans – of the bureau, the state of the Dutch economy was described in terms of national accounts through which fluctuations in the size and distribution of national income and expenditure could be measured. This was a requirement for the economic forecasts that were drawn up by the Planning Bureau, because these accounts provided important data for the statistical specification of fundamental economic rela-

tions. In the early 1950s the quality of the available data and forecasting techniques was, however, considered to be problematic. Within the Central Planning Bureau, therefore, much work was done on the refinement of available statistics and on the development of new and more reliable methods for drawing up economic forecasts and prognoses. Work in this direction was based on the early economic models that had been constructed in the 1930s by the bureau's director, Jan Tinbergen.

In 1953 the Central Planning Bureau had developed its first relatively large mathematical-statistical model of the Dutch economy.[18] The results calculated with this model were directly applied to problems of economic policy in the annual reports published by the Central Planning Bureau, which were a major source of information on which the government based its economic policies. At the same time, the development of its models gave the *Bureau* a considerable international reputation as an innovative econometric research institute. It was in particular this combination of practical use and scientific relevance that made the Central Planning Bureau such an influential organisation in the context of the 1950s. The complicated questions of how to identify possible policy measures and how to assess their expected effectiveness, were in the mathematical-quantitative work of the Central Planning Bureau transformed into the solvable problems of finding the unknowns in a set of model equations. By describing the structure of the economy and the dynamics of its development in terms of mathematical relations between quantified economic entities, theoretical insights and methodological principles thereby became directly applicable in actual policy making in the 1950s.

The second important change in the policy process in the Netherlands after 1945 was the implementation of the 1950 Industrial Organisation Act, which included the founding of the Social Economic Council.[19] During the 1950s this council was the most influential advisory body to the government on matters of social-economic importance. Its influence is particularly exemplified by the reports of the council on the foundations of the government's controlled wage and price policy, which was the cornerstone of economic policy more generally until the early 1960s. Two-thirds of the members of the Social Economic Council were representatives of employers' organisations and labour unions. Another third was comprised of independent experts, mainly academic economists. Among those were such prominent economists as J. Tinbergen, in his capacity as director of the Central Planning Bureau, D.B.J. Schouten, the main protagonist of mathematical and quantitative economics at the Roman Catholic Economic School in Tilburg, and of course the council's first chairman, F. de Vries, formerly at Rotterdam and, since the end of the war, Professor of Economics at the Municipal University in Amsterdam.

Regular deliberations between the two interest groups and the independent experts in the council were considered essential in order to prevent economic confrontation and to avert the material conflicts of interest that

would undermine the effectiveness of the government's economic policy. Within the context of the meetings of the Social Economic Council and its subcommittees, political differences over the government's social and economic policies could be overcome more readily than in public debates in parliament. The government was legally obliged to seek the council's advice on matters of general social-economic importance, whereby a consensus found in the meetings of the council could play an influential role in the development of governmental policy. Actually finding such a consensus was greatly enabled by the quantitative economic observations and forecasts drawn up by the Central Planning Bureau, which was formally represented in the Social Economic Council by its director. With the help of the research results obtained by the Planning Bureau it turned out to be possible to find political agreement through economic calculation, which, most importantly, could be assessed by the many distinguished economics professors that were members of the council as independent experts. The Social Economic Council was thus the most important platform on which political and ideologically tainted problems could be transformed into manageable policy issues.

In the political climate of the Netherlands after 1945, effective decision-making was crucially dependent upon continuous compromising and consensus building. Against the background of recent experiences there was almost no disagreement about the need to reorganise the decision-making process in such a way that political conflict and ideological opposition would not make effective government action impossible. The neutralisation of ideas of centralised economic planning and the pacification of potentially disruptive labour conflicts through administrative reorganisations in the form of a system of industrial organisation, therefore marked a development towards greater pragmatism of state actions in the social and economic sphere. This development went together with the emergence of a new form of integration of economic knowledge in political debates, which was instrumental in finding a generally acceptable form of addressing questions and problems of social-economic importance.

It is this development in the organisation of economic decision-making that formed the background for the changes in the intellectual and institutional organisation of the field of Dutch economics, discussed in the previous paragraphs. Reorganisations of the government apparatus since the beginning of the 1930s offered economists unprecedented career opportunities to and from academia. Work in the government bureaucracy also offered extensive facilities for the application of economic knowledge, which could be brought to bear on a wide range of practical problems via the regular involvement in the policy process of newly founded organisations such as the Central Planning Bureau and the Social Economic Council. At the same time, however, the application of economic knowledge was necessarily bounded by political priorities and administrative parameters, which had to

be integrated in the research on which much professional work of economists in the government apparatus was based.

Reorganisations of the decision-making process, then, had major feedback effects on changes in Dutch economic thinking after the war. Contributions to the development of economic science now had to be fit to be combined with long established insights into market functioning, as well as with new methods and research techniques. Also, work in economics – as far as it was meant to be relevant to political decision-making – would now have to live up to the promise of practical usefulness in a policy-making process, based on a fragile political consensus about the limits and scope of state intervention in the economy. Arguably, in the context of the 1950s, it could do so only in terms of mathematical techniques and quantified economic reasoning.

Conclusion

Two developments, then, that fundamentally changed the work environment of Dutch economists took place at the same time. Work in academia got characterised by increasing specialisation within well-defined theoretical and methodological frameworks, exemplified by the articulation of macroeconomic research agendas and the development of advanced econometric methods. Outside academia, in the government bureaucracy, professional practices emerged in which tasks were set up and evaluated according to both theoretical considerations and administrative priorities, particularly exemplified by the development and use of mathematically formulated economic models.

The institutionalisation of the involvement of the profession in political decision-making had direct consequences for the emergence of stable disciplinary boundaries of the field of Dutch economics. The contacts between economists and policy-makers in the Netherlands took the form of organised collaboration, based on shared views on the nature of economic problems and the possible use of economics for solving those problems. The bureaucratisation of the contacts between economists and policy-makers went together with the emergence of a separate policy discourse – that is, with the development of typical ways to phrase relevant problems and acceptable problem solutions in the context of decision-making. This development directly affected the academic autonomy of the field of Dutch economics.

The new way of thinking about policy questions was based on the theoretical insights and methodological principles of economic science. Economic models were instrumental in finding the necessary political consensus by transforming the problem of having to choose between ideologically tainted political options into practically manageable policy issues. This was achieved through the mathematical form and quantitative contents of the models' equations. By their very nature, these equations could only be solved by technical experts, namely, trained economists. The theoretical

insights and methodological skills of these experts were able to overcome the ideological cleavages in Dutch politics. They did so by advancing the development of the pragmatic vocabulary that was indispensable for managing the policy arrangements of the new welfare state. Mathematically formulated and quantitatively substantiated economic models, therefore, also transformed the demarcation between politics and science by singling out a particular kind of economic science as indispensable to effective policy making.

The boundaries of the field of Dutch economics were thus defined by mathematical and quantitative approaches. These approaches were instrumental both in redefining the basic theoretical goals and priorities of Dutch economic science, and, at the same time, in successfully claiming practical relevance by producing the policy instruments that were applicable in the political context of the Netherlands in the 1950s. By developing economic models, quantitative and mathematical approaches were also able to overcome the theoretical uncertainties economists had been confronted with during the economic crisis of the 1930s. Economic models actually showed – or at least seemed to show in the context of the 1950s – the practical applicability of highly abstract theoretical assumptions.

This combination of theoretical and practical relevance made quantitative and mathematically formulated models of the economy extremely powerful tools, both in fundamental economic research and in the application of the insights resulting from that research. Within the academic context, it was these approaches, therefore, that eventually structured a new intellectual dynamic in Dutch economic thinking within ever more stable disciplinary boundaries. Both in terms of its organisation and in terms of its contents and subject-matter, the science of economics in the Netherlands changed in accordance with changes in its social and political environment. Practices in the government bureaucracy became organised around generally accepted ideas about the professional character of mathematically elaborated and quantified economic knowledge. It was this acceptance that legitimated the resources increasingly being made available to the academic organisation of the field in which that particular kind of knowledge was further developed.

This observation makes it possible to understand the apparent paradox described here. It was through its institutional involvement in the practice of political decision-making that the intellectual development of Dutch economic science could become organised around inner scientific criteria of theoretical consistency and methodological adequacy. These criteria structured the range of options that were available to individual economists for contributing to economic theorising and did so in terms of mathematical methods and quantified economic reasoning.

Notes

This paper summarises large parts of my doctoral dissertation. I owe very much to Rob Hagendijk and Stuart Blume and to the Department of Science and Technology Dynamics at the University of Amsterdam.

1 See Zuidema (1987), who describes C.A. Verrijn Stuart as a leading representative in Dutch economic thinking of the Austrian School; see also Elzas (1992) and Dullaart (1984) on Dutch economic thinking before the war. Verrijn Stuart (1934) argued that it was interventionist policies and economic protectionism which disturbed the economy's innate tendency to restore equilibrium and full employment.

2 From his early work in economics on, de Vries (1918) stressed the scientific value of independent economic theorising as clearly separated from the discussion of practical economic problems. Later, de Vries (1935) emphasised more than he had previously done that these practical problems had important consequences for economic theorising, although he continued to insist that independent theory was indispensable for any truly reliable assessment of practical economic developments (de Vries 1946).

3 The question of the demarcation between political ideas about economic order and theoretical accounts of it occupied many prominent Dutch economists, particularly in their public lectures: examples are van Embden (1930), Blom (1934), Bordewijk (1934) and Frijda (1938); cf. Dullaart (1984, 1992).

4 Cobbenhagen (1936) founded his approach to economic theorising on basic principles of catholic social thought. Classical economics and scholastic philosophy were also important sources of ideas for him (1933), on the basis of which he (1938) was particularly critical towards the marginal utility theory of the early Austrian School. For an overview of Cobbenhagen's work, see Smulders (1987), Kolnaar and Meulendijks (1995) and Dullaart (1984) .

5 See Kol and de Wolff (1993) for a survey of Tinbergen's intellectual work, Magnus and Morgan (1987) for an overview of his scientific career and political commitment, Boumans (1992) for a study of the cognitive sources for Tinbergen's pioneering work in economic modelling, Morgan (1990) on Tinbergen's contribution to econometrics, and van den Bogaard (1998) on the influence of the new modelling approach on the organisation of statistical work and economic decision-making. See also van Dalen and Klamer (1997) on Tinbergen's influence on the science of economics in the Netherlands.

6 Tinbergen's first model of the Dutch economy was originally published as Tinbergen (1936). After the war Tinbergen (1952, 1956) published his models in the form of two monographs on the applied theory of economic policy.

7 See the introduction by Raj (1992) in Theil's collected works for an assessment of the influence and scientific meaning of the econometric work of Theil. See also Barten (1988) on economic modelling in the Netherlands and Hughes Hallett (1989) on the work of Theil.

8 Only with the help of mathematical techniques and quantitative information, Schouten (1950) had argued, could the interdependency of relevant economic developments be visualised and explained. Schouten not only developed economic models, but also sought to put his ideas to practice. For instance, for almost forty years he was a member of the Social Economic Council, the most important advisory body to the government on matters of social-economic importance (cf. Klamer 1990).

9 Hasenberg-Butter (1969) provides a study of nineteenth-century Dutch economics.

10 van Stuijvenberg (1963) gives a detailed account of the history of this first institute for higher education in economics in the Netherlands.

11 Vanthoor (1992) has sketched the history of the economics faculty at the Municipal University in Amsterdam, which later became the University of Amsterdam.
12 See Bornewasser (1978) for an overview of the history of the Roman Catholic School in Tilburg.
13 See Bemelmans-Videc (1984), who provides an extensive quantitative overview of the growth of the field of Dutch economics.
14 A classic study of Dutch political culture and organisation is that by Lijphart (1968).
15 The basis of the sometimes detailed policy proposals in the Labour Plan was an analysis of the country's economic position of which Tinbergen was an influential author. Cf. Magnus and Morgan (1987) on Tinbergen's scientific work and political commitment.
16 See, in particular, van den Bogaard (1998) on the research work of the Central Bureau for Statistics in the Netherlands and the way in which its work on a barometer of economic indicators before the Second World War prepared the ground for the construction of the first relatively large-scale economic models of the Dutch economy by the Central Planning Bureau in the early 1950s.
17 Passenier (1994) describes the history of the bureau in great detail.
18 The first relatively large-scale economic model of the Central Planning Bureau was published as an appendix to the Central Economic Plan of 1955. The model consisted of twenty-seven equations and was necessarily only of relatively limited use for forecasting economic developments. See Abert (1969), Hughes Hallett (1989) and Jolink (1993) on the model building of the Central Planning Bureau in the 1950s.
19 See Klamer (1990) on the function and role of economists within the Social Economic Council.

Bibliography

Abert, J.G. (1969) *Economic Policy and Planning in the Netherlands 1950–1965*, New Haven: Yale University Press.

Barten, A.P. (1988) 'The history of Dutch macro economic modelling', in W. Driehuis, M.M.G. Fase and H. den Hartog (eds) *Challenges for Macroeconomic Modelling*, Amsterdam: North-Holland.

Bemelmans-Videc, M.L. (1984) *Economen in Overheidsdienst: Bijdragen van Nederlandse Economen aan de Vorming van het Sociaal-Economisch Beleid, 1945–1975*, unpublished D.Phil. thesis, Rotterdam: Erasmus University.

Blom, D. van (1934) *Economie en Samenleving, Rede van den Rector-Magnificus Mr. D. van Blom op den Driehonderdnegenenvijftigsten Dies Natalis der Leidsche universiteit, 8 Februari 1934*, Leiden: Stenfert Kroese.

Bogaard, A.A. van den (1998) *Configuring the Economy: The Emergence of a Modelling Practice in the Netherlands, 1920–1955*, Amsterdam: Thela Thesis.

Bordewijk, H.W.C. (1934) *Grensvragen van Economie en Ethiek, Rede Uitgesproken op Maandag 17 September 1934 bij de Overdracht van het Rectoraat van de Rijksuniversiteit te Groningen*, Groningen: Wolters.

Bornewasser, J.A. (1978) *Katholieke Hogeschool Tilburg: Economie, Ethiek en Maatschappij, Deel 1, 1927–1954*, Baarn: Ambo.

Boumans, M. (1992) *A Case of Limited Physics Transfer: Jan Tinbergen's Resources for Re-Shaping Economics*, Amsterdam: Thesis Publishers.

Cobbenhagen, M.J.H. (1933) 'Economische wetmatigheid, economische mogelijkheid en zedelijke eischen', *De Economist* 82, 3: 3–19.

—— (1936) 'Beschouwingen over den prijs I-V', *Maandschrift Economie* 1, 1–12: 23–30, 142–9, 338–46, 505–16, 613–22.

—— (1938) 'Enkele beschouwingen over samenhang en evenwicht in het economisch leven', *Maandschrift Economie* 3, 6: 270–95.

Dalen, H. van and Klamer, A. (1997) 'Blood is thicker than water: economists and the Tinbergen legacy', in P.A.G. van Bergeijk, A.L. Bovenberg, E.E.C. van Damme and J. van Sinderen (eds) *Economic Science and Practice: The Roles of Academic Economists and Policy-Makers*, Cheltenham and Lyme: Edward Elgar.

Dullaart, M.H.J. (1984) *Regeling of Vrijheid: Nederlands Economisch Denken tussen de Wereldoorlogen*, unpublished D.Phil. thesis, Rotterdam: Erasmus University.

—— (1992) 'The embarassment of freedom', in J. van Daal and A. Heertje (eds) *Economic Thought in the Netherlands: 1650–1950*, Aldershot: Avebury.

Elzas, B.D. (1992) 'Growing away from provincialism', in J. van Daal and A. Heertje (eds), *Economic Thought in the Netherlands: 1650–1950*, Aldershot: Avebury.

Embden, D. van (1930) *De Overschatting van den Staat in de Welvaartssfeer. Rede Uitgesproken bij de Herdenking van de Dies Natalis der Universiteit van Amsterdam, 8 januari 1930 door den Rector-Magnificus Dr. D.van Embden*, Amsterdam: Stadsdrukkerij.

Frijda, H. (1938) *De Evenwichtsgedachte en de Werkelijkheid, Rede Uitgesproken ter Herdenking van den 306en Verjaardag der Instelling van Hooger Onderwijs te Amsterdam, op 14 Februari 1938*, Amsterdam: Becht.

Hasenberg-Butter, I. (1969) *Academic Economics in Holland, 1800–1870*, Den Haag: Martinus Nijhoff.

Hughes Hallett, A.J. (1989) 'Econometrics and the theory of economic policy: the Tinbergen-Theil contributions 40 years on', *Oxford Economic Papers* 41, 1: 189–214.

Jolink, A. (1993) 'De mechanisering van het wereldbeeld II: de ontwikkeling van de centraal economische plangedachte in Nederland', *Economisch-Sociaal Historisch Jaarboek* 56: 81–93.

Klamer, A. (1990) *Verzuilde Dromen: 40 jaar S.E.R.*, Amsterdam: Balans.

Kol, J. and Wolff, P. de (1993) 'Tinbergen's work: change and continuity', *De Economist* 141, 1: 1–28.

Kolnaar, A.H.J.J. and Meulendijks, P.J.F.G. (1995) 'De priester-econoom Cobbenhagen', *Maandschrift Economie* 59, 5: 342–69.

Lijphart, A. (1968) *The Politics of Accommodation: Pluralism and Democracy in the Netherlands*, Berkeley: University of California Press.

Magnus, J.R. and Morgan, M.S. (1987) 'The E.T. interview: Professor J.Tinbergen', *Econometric Theory* 3, 1: 117–42.

Morgan, M.S. (1990) *The History of Econometric Ideas*, Cambridge: Cambridge University Press.

Passenier, J. (1994) *Van Planning naar Scanning: Een Halve Eeuw Planbureau in Nederland*, Groningen: Wolters-Noordhoff.

Raj, B. (1992) 'Henri Theil's biography and his contribution to economics and econometrics', in B. Raj and J. Koerts (eds) *Henri Theil's Contribution to Economics and Econometrics*, Dordrecht: Kluwer.

Schouten, D.B.J. (1950) *De Overheidsfinanciën in de Volkshuishouding, Een Macro-Economische Studie over de Betekenis van de Openbare Financiën op Lange Termijn voor de*

Omvang, de Verdeling en de Besteding van het Nationaal Inkomen, Leiden: Stenfert Kroese.

Smulders, A.A.J. (1987) 'Cobbenhagen en de Waardevrijheidsdiscussie', in A.J. Vermaat, J.J. Klant and J.R. Zuidema (eds) *Van Liberalisten tot Instrumentalisten: Anderhalve Eeuw Economisch Denken in Nederland*, Leiden and Antwerpen: Stenfert Kroese.

Stuijvenberg, J.H. van (1963) *De Nederlandsche Economische Hoogeschool, 1913–1963*, Rotterdam: Nijgh and Van Ditmar.

Tinbergen, J. (1936) 'Kan hier te lande, al dan niet na overheidsingrijpen, een verbetering van de binnenlandse conjunctuur intreden, ook zonder verbetering van onze exportpositie?', *Prae-adviezen van de Vereeniging voor de Staathuishoudkunde en de Statistiek*, Den Haag: Nijhoff.

—— (1952) *On the Theory of Economic Policy*, Amsterdam: North-Holland.

—— (1956) *Economic Policy, Principles and Design*, Amsterdam: North-Holland.

Vanthoor, W.F.V. (1992) 'Zeventig jaar economische faculteit binnen de Universiteit van Amsterdam, 1922–1992', in M.M.G. Fase and I. van der Zijpp (eds) *Samenleving en Economie in de Twintigste Eeuw*, Leiden and Antwerpen: Stenfert Kroese.

Verrijn Stuart, C.A. (1934) 'Theorie en praktijk', *De Economist* 83, 8: 605–23.

Vries, F. de (1918) *De Ontwikkeling der Theoretische Economie, Rede Uitgesproken bij de Aanvaarding van het Ambt van Hoogleeraar aan de Nederlandsche Handels-Hoogeschool te Rotterdam, op den 14 Juni 1918*, Haarlem: Bohn.

—— (1935) *Regeling of Vrijheid, Rede Uitgesproken ter Gelegenheid van de 22ste Herdenking van de Stichting der Nederlandsche Handels-Hoogeschool op 15 november 1935*, Rotterdam.

—— (1946) 'De taak der theoretische economie', *De Economist* 94, 1: 1–23.

Wilts, A.S. (1997) *Economie als Maatschappijwetenschap: Een Sociologische Geschiedenis van de Economische Wetenschap in Nederland (ca. 1930–1960)*, unpublished D.Phil. thesis, Amsterdam: University of Amsterdam.

Zuidema, J.R. (1987) 'C.A. Verrijn Stuart, vertegenwoordiger van de Oostenrijkse School in Nederland', in A.J. Vermaat, J.J. Klant and J.R. Zuidema (eds) *Van Liberalisten tot Instrumentalisten: Anderhalve Eeuw Economisch Denken in Nederland*, Leiden and Antwerpen: Stenfert Kroese.

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