

# Preface

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Can economics be reconstructed as an empirical science?

Wassily Leontief<sup>1</sup>

The purpose of this book is to show how essential ideas from the economics of innovation can help us to fulfil Leontief's wish: to reconstruct economics as an empirical science.

For most of my career, my main research interest has been the economics of innovation. But from time to time, I have also been preoccupied with a second question: have we yet found the best way to study empirical economics? By this I mean the best way to study, *rerum cognoscere causas* – understanding the causes of things.<sup>2</sup>

In this book, my objective is to use what I have learned about the first in order to answer the second. To date, I have tended to treat these two interests as separate activities. But I hope the reader, who perseveres to the end of this book, will agree with me that the first does actually offer some very interesting insights into the second.

A common and popular definition of innovation, used by academics and practitioners alike, is this: 'the successful application of new ideas', where success is defined in economic terms. For example, many mainstream economists would say that innovation is successful if it increases productivity growth. Others are perhaps more interested in the use of innovation to achieve high quality products and services. In this book, indeed, I am concerned with what the economics of innovation can tell us about the best way to achieve a high-quality understanding of the empirical economy.

One of the most important lessons from the economics of innovation is that there are two fundamentally different approaches to innovation. One is the idea that the division of labour creates such exceptional understanding of production processes, that operatives involved can find a variety of ways to enhance productivity. The second is the idea that some innovations are made by those with an exceptional talent for, 'combining together' disparate and dissimilar knowledge.<sup>3</sup>

Can we say which is 'the right' approach? The true answer to that is, 'both', and probably in roughly equal proportions. One of the great constants

of the economics of innovation, as I see it, is that really valuable innovation requires that both of these processes should flourish. In the context of the market economy, that means that the ideal combination is a mix of: (a) innovations from organisations with a highly developed division of labour; and (b) innovations from organisations with a strong ability to combine diverse knowledge.

Moreover, the sorts of innovations generated by these two processes are different. Group (a) consists mainly of *incremental* innovations: the use of this adjective need not mean that they are small, but it does mean that they involve successive improvements in achieving a specific objective. Group (b), on the other hand, contains many *radical* innovations: the use of this adjective need not mean that they involve 'rocket science', nor that they are controversial, but it does mean that they involve going back to the 'roots', and doing some things in a different way.

When we get closer to the management literature on why firms innovate, a common argument is that firms sometimes innovate to solve problems that they face. This is certainly not the case with all innovations: many are about taking advantage of opportunities rather than solving problems as such. But it is fair to say that many business problems can be solved by innovations – for example, those that improve business processes, those that improve the quality of products and services, and so on. One of the main assertions that underpins this book is that these arguments about innovation are relevant to the academic discipline of economics, just as they are to the strategies of companies.

It is reasonable to assume that anyone reading this book is aware that mainstream academic economics has received quite a lot of criticism in recent years. This criticism comes from two different sources: firstly, from economists outside the mainstream, who have comparable expertise in economics to the mainstream economists, who feel that something is seriously wrong, and feel entitled to say so; and secondly, from those outside academic economics, who use, or depend on economics, who feel that economics is (or should be) bound by a social contract to deliver an understanding of a wide variety of economic problems, and who believe that what we offer falls short of what they need.

At the same time, most mainstream economists are adamant, and quite sincerely so, that there is nothing wrong with mainstream economics. Whether we agree with the critics that there are problems to be solved, or we agree with the mainstream economists that there are no such problems, I believe it is still useful to consider priorities for research and teaching in economics as a question of innovation.

In this book, I shall carry out a thought experiment: would it be helpful if economics were to become more like medicine?<sup>4</sup> In this context, the terms,

'economics' and 'medicine' refer to the academic disciplines of those names, rather than economic practitioners and medical practitioners. Indeed, I was tempted to give the book the title, *Economics as Medicine*, but decided against that because the title contains too much ambiguity.<sup>5</sup> Instead, I chose the title, *Economics as Anatomy*, because that is the specific area of medicine from which economics has most to learn, in my view. And indeed, I believe that this route offers the best hope of answering the critics.

This is hardly a new idea. Keynes (1930/1963) suggested that, "if economists could manage to get themselves thought of as humble, competent people, on a level with dentists, that would be splendid!" Harberger (1993) wrote that, when he thought about economics as a discipline that also has practitioners, "The analogy I like best is with medicine ... a profession with one foot planted in medical science, the other in what we know as the practice of medicine." If the analogy with dentistry and medicine was good enough for Keynes and Harberger, then it is good enough for me.

On the other hand, to call this book, *Economics as Anatomy*, carries an element of risk. There are some fundamental differences between economics and medicine, and indeed between economics and anatomy. Like all analogies, therefore, it must not be taken too far. What I propose involves emulating some – and I stress, only some – of the methods and approaches used in the academic discipline of medicine, and in the medical profession.

At the start of Chapter 12, I list the six main ideas that economics can usefully learn from medicine, and anatomy in particular. Two of these deserve a mention from the start. One is the observation that medicine is not really a single, or unitary discipline, but a federation of semi-autonomous sub-disciplines. Indeed, many other academic disciplines are federations, in this sense. The second is the recognition that at the heart of the medical federation lie three essential sub-disciplines: anatomy, physiology and pathology. These are predominantly empirical and involve a great deal of detailed descriptive work.

In my view, it is unlikely that mainstream economists will want to embrace such descriptive empirical work. But therein lies the beauty of the federation. It is not necessary to change the behaviour of any particular 'player' within the federation. Rather, the strategy involves the creation of several essential sub-disciplines to plug the gaps. Some of these exist already in embryonic form but need further development. Within a federation, we can hope to develop a wide variety of essential specialist work that does not appeal to the current mainstream, and thereby respond in a constructive way to our critics.

The need for this sort of detailed descriptive work was recognised by Keynes in his correspondence with Harrod. Firstly: "good economists are scarce because the gift for using 'vigilant observation' to choose good models, although it does not require a highly specialised intellectual

technique, appears to be a very rare one” (Keynes, 1938a). Not for the first time, I am moved to comment that in this remark, Keynes sounds very like the famous, if fictional, detective, Sherlock Holmes. This is a theme that I shall revisit several times in this book – especially in Chapter 13. Secondly: “the specialist in the manufacture of models will not be successful unless he is constantly correcting his judgement by intimate and messy acquaintance with the facts to which his model has to be applied” (Keynes, 1938b). Certainly, the single most important addition to the economic federation, economic anatomy, is all about, “intimate and messy acquaintance with the facts.”

This book is a sequel to my earlier book – *Putting Econometrics in its Place* (Swann, 2006). In that, I argued that it is a great pity that econometrics has displaced most other methods of empirical research, because to develop a deep understanding of empirical economics, we need to use a wide variety of techniques. That book was really about ‘what and why’: what other methods should be used and why? This sequel is about the best way of organising the economics discipline to ensure that it does indeed pursue this wide variety of techniques.

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I am indebted to Don Lamberton (1927–2014),<sup>6</sup> who persuaded me that Charles Babbage’s pioneering work on the economy of machinery and manufactures (1832) was not just a great and neglected work in the history of economic thought, but an illustration of the anatomical foundations on which to reconstruct economics as a true empirical science.<sup>7</sup> I am grateful to David Colander, Richard Hawkins, Neil Robinson and Jenny Swann for helpful discussions about various parts of this manuscript. And finally, I am grateful to all the team at Edward Elgar Publishing for their help in turning this manuscript into a book.

## NOTES

<sup>1</sup> Leontief (1993, p. 2)

- <sup>2</sup> In saying this, I certainly do not imply that the collection of data on  $x$  and  $y$  is of secondary interest, but just that my greatest interest is to explore new ways in which to understand how  $x$  causes  $y$ .
- <sup>3</sup> Both ideas, indeed, are recognised in the *Wealth of Nations* (Smith, 1776/1904a, p. 11–12).
- <sup>4</sup> It is quite a common thought experiment to consider if economics sometimes emulates other disciplines. Many would argue that Samuelson's great achievement was to see economics as physics (Nelson, 2014, p.51). Nelson and Winter (1982) and Boulding (1981), building on earlier work by Veblen (1898), created a vision of economics as evolutionary biology. Szostak (1999) interprets economics as art, while Nelson (2014) interprets economics as religion.
- <sup>5</sup> Several others have suggested that medicine has been an inspiration for their quite different approach to economics research. For example, I understand that some of the econometricians who developed the application of randomised control trials in economics were inspired by the use of that technique in medicine and, specifically, in pharmacology. This is an important development, certainly, but a very different way forward from the one described in this book.
- <sup>6</sup> Prometheus (2015) devoted a special issue to the memory of Don Lamberton.
- <sup>7</sup> In Swann (2006, p. 219), I wrote of Babbage (1832): "It is a great pity that the formal revolution in economics has driven out that sort of study. I hope that the present book may encourage a new generation of economists to rediscover such approaches to research, and just how much we have to learn from them." Don Lamberton told me that he also felt that Babbage's approach was enormously important, and that we could go much further if it were used to provide a foundation for empirical economics. Lamberton touches on this idea in an interview with Lodewijks (2007, p. 18). I don't recall Lamberton using the word 'anatomy' or 'anatomical' in our discussion, but it is a good word to describe what he was thinking about.

