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Technical Change and Economic Theory

Edited by
Giovanni Dosi
Christopher Freeman
Richard Nelson
Gerald Silverberg
Luc Soete

Pinter Publishers, London and New York
Contents

Preface 1

PART I Introduction
1. Introduction 1
   C. Freeman

PART II Evolution, technology and institutions:
a wider framework for economic analysis
Preface 9
   C. Freeman
2. Coordination and transformation: an overview of structures, behaviours and change in evolutionary environments
   G. Dosi and L. Orsenigo 13
3. Structural crises of adjustment: business cycles and investment behaviour
   C. Freeman and C. Perez 38
4. Technical change and the theory of ‘régulation’ 67
   R. Boyer
5. Evolution, innovation and economics 95
   P.M. Allen

PART III How well does established theory work?
Preface 120
   G. Dosi
6. Coordination and order in economic change and the interpretative power of economic theory 124
   F. Coricelli and G. Dosi
7. Imperfect decisions and routinized production: implications for evolutionary modelling and inertial technical change 147
   R. Heiner
8. On the dynamics of aggregate macroequations: from simple microbehaviour to complex macrorelationships 170
   M. Lippi
9. Evolutionary theories in economic thought 197
   N. Clark and C. Juma
## CONTENTS

### PART IV  Innovation and the evolution of firms

<table>
<thead>
<tr>
<th>Preface</th>
<th>219</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. Nelson</td>
<td></td>
</tr>
</tbody>
</table>
10. The nature of the innovative process | 221 |
| G. Dosi |  
11. Towards the economics of information-intensive production systems: the case of advanced materials | 239 |
| M. Wittlinger and L. Zasovitch |  
12. Technological change and the nature of the firm | 256 |
| D. Teece |  
13. The R and D function: corporate strategy and structure | 282 |
| N. Kay |  
14. Technological opportunities and industrial organisation | 295 |
| R. Coombs |  

### PART V  National systems of innovation

<table>
<thead>
<tr>
<th>Preface</th>
<th>309</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. Nelson</td>
<td></td>
</tr>
</tbody>
</table>
15. Institutions supporting technical change in the United States | 312 |
| R. Nelson |  
| C. Freeman |  
17. Innovation as an interactive process: from user-producer interaction to the national system of innovation | 349 |
| B.A. Lundvall |  
18. Can the innovation system of capitalism be outperformed? | 370 |
| P. Pelikan |  

### PART VI  International diffusion of technology and international trade competition

<table>
<thead>
<tr>
<th>Preface</th>
<th>399</th>
</tr>
</thead>
<tbody>
<tr>
<td>L. Soete</td>
<td></td>
</tr>
</tbody>
</table>
19. Technical change and international trade | 401 |
| G. Dosi and L. Soete |  
20. Why growth rates differ | 432 |
| J. Fagerberg |  
21. Catching up in technology: entry barriers and windows of opportunity | 458 |
| C. Perez and L. Soete |  
22. Industrial structure, technical change and microeconomic behaviour in LDCs | 480 |
| K. Unger |  

### PART VII  Formal models

<table>
<thead>
<tr>
<th>Preface</th>
<th>528</th>
</tr>
</thead>
<tbody>
<tr>
<td>G. Silverberg</td>
<td></td>
</tr>
</tbody>
</table>
23. Multinational enterprises and the international diffusion of technology | 496 |
| F. Chesnais |  
24. Modelling economic dynamics and technical change: mathematical approaches to self-organisation and evolution | 531 |
| G. Silverberg |  
25. The diffusion of innovations: an interpretative survey | 560 |
| J. Metcalfe |  
26. Competing technologies: an overview | 590 |
| W.B. Arthur |  
27. Formalizing growth regimes | 608 |
| R. Boyer |  

### PART VIII  Conclusions

<table>
<thead>
<tr>
<th>Preface</th>
<th>631</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. Nelson and L. Soete</td>
<td></td>
</tr>
</tbody>
</table>
28. Policy Conclusions |  

Index | 636 |
Preface

This book emerged out of the growing dissatisfaction felt by a number of economists and non-economists alike with the way technical change has been and continues to be treated in mainstream economics. Each one of us, in his own way, had been involved in critical assessments of the way orthodox economic theory deals with 'change'. Each one of us had come to the conclusion that any analysis of change which ignored the fundamental role and special character of technical change, even in the very short run, could not be valid. The time seemed ripe to bring together in a coherent framework a number of authors working in related directions to formulate a systematic critique of orthodox economic theory and to sketch out the common elements of a first, alternative theory of the role of technical change in microeconomic behaviour, processes of structural change and macroeconomic transformation of the economic system. This book presents such a first attempt.

This ambitious aim received a major boost when the International Federation of Institutes for Advanced Study (IFIAS) decided to support our proposal within the framework of their project 'Rethinking Economic Theory'. With the support of Henryk Kierzkowski, the proposal was given further shape and the list of contributors enlarged. We are particularly grateful to him for his early involvement and support. The active support of IFIAS during the whole project is gratefully acknowledged. With IFIAS, we wish to express appreciation for financial support to the Salen and Wallenberg Foundations, Stockholm, to the Rockefeller Brothers Fund, New York, to the MacArthur Foundation, Chicago and to the Exxon Educational Foundation, New York. Financial support in the final phases of the project was also provided by the newly created Maastricht Economic Research Institute on Innovation and Technology (MERIT) and a grant from the Dutch Ministry of Economic Affairs.

The writing of this book itself was a long undertaking, as a glance at its length and the number of contributors and editors will confirm. The project began with an informal meeting of potential authors in Venice in March 1986. First drafts of most of the final contributions were discussed by the authors at a workshop in Lewes, England, in October 1986. We are very grateful to the Science Policy Research Unit of the University of Sussex, and in particular to Linda Gardiner for her organisational support. In May 1987 a second conference was organised in Maastricht, where a somewhat enlarged circle of authors presented revised versions of their contributions. The final painstaking process of editing the various chapters
also took place in Maastricht, thanks to the organisational support of MERIT.

We are grateful to the participants at these various meetings for their comments, advice and criticism. In particular, we would like to thank Tibor Barna, Luigi Pasinetti, Keith Pavitt, Christopher Saunders and Nick von Tunzelmann for their willingness to contribute from outside the immediate circle of authors to the formative process leading to this book.

Last but not least, we wish to express our gratitude and admiration to Wilma Coenegrachts who typed, edited, converted, re-edited and re-converted with infatigable good spirits these 650 pages.

The Editors,
Maastricht, 7 March 1988

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Part I Introduction

1 Introduction*

Christopher Freeman
Science Policy Research Unit, University of Sussex, Brighton and MERIT, State University of Limburg, Maastricht

Main objectives and epistemological considerations

When Jewkes, Sawers and Stillerman (1956) wrote their classic (though still controversial) study, The Sources of Invention, they commented on the neglect of technical change by most of the economics profession and suggested three reasons for this neglect. Firstly, they suggested that economists were generally unfamiliar with the science and technology and felt unprepared to venture into this unknown territory. Secondly, there were very few statistics to guide them. Finally, ever since the Great Depression of the 1930s they had been mainly preoccupied with problems of cyclical fluctuations in the economy and of the unemployment associated with these fluctuations. They were simply too busy with other things to pay much attention to technical change.

In this book we attempt to show that the first two problems can be at least partially overcome and indeed Jewkes and his colleagues already demonstrated this in their own work. What is of extraordinary interest here is the third explanation given by Jewkes et al. It is particularly revealing because, quite unconsciously, they show that even some of those economists who were prepared to make a considerable effort to do theoretical and empirical work in the area of technical change regarded this as something totally separate from the study of cyclical fluctuations in the economy.

We have only to turn to Schumpeter’s (1939) Business Cycles to see the gulf which separates his work from this view. For Schumpeter, as for us, technical innovation is not a separate phenomenon, but is on the contrary a crucial factor in the explanation of business cycles and the dynamics of economic growth generally (Chapter 3).

This book is an exploration of a new approach to economic theory, capable of incorporating technical and institutional change into the mainstream of economic analysis and policy-making, rather than treating it as part of the rag-bag of ‘residual’ or ‘exogenous’ factors. This leads us not just to a critique of mainstream economic theory, but also to an attempt at an alternative formulation of some of the main issues. It is not more than a first attempt but the somewhat ambitious aim is to analyse in depth the role

* I am grateful to my co-authors for helpful suggestions and particularly to Giovanni Dosi and Norman Clark.