
Education and the Industrial Revolution



E. G. West

Education and the Industrial Revolution

Second Edition, Revised and Expanded

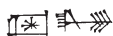
E. G. West



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Foreword to the Liberty Fund Edition, Revised and Extended

This volume was first published in 1975 by B. T. Batsford Ltd. And thanks are due them for permission to produce this second edition. As indicated in the first preface, the book originally focused exclusively on education in the nineteenth century, the main reason being lack of systematic evidence for the period immediately prior to 1800. Since writing the first edition, however, important sample data has been published relating to literacy changes in the late eighteenth century. The availability of this material has now made it possible to extend the discussion to the whole of the Industrial Revolution period, conventionally taken to refer to the years 1760–1840. Analysis of literacy in the early part of the Industrial Revolution now appears as Chapter 5, which reproduces our article “Literacy and the Industrial Revolution” published in 1978.

As explained in the original edition, the title of the book allows two major interpretations. The first is an investigation of the significance of education as an ingredient of economic growth. The second is its place in the debate about changes in the standard of living. Several versions of hypotheses relating to the growth theme are discussed in Chapter 19. As emphasized there, it is important to avoid dogmatic and untested assertions to the effect that education is the exclusive key to economic growth. It is not surprising that subsequent literature has pursued the same cautionary approach (see especially Blaug, 1970; Mitch, 1990 and 1992; Coulson, 1999).

The first simple question is whether or not the unprecedented surge

in economic output during the Industrial Revolution was accompanied by a significant expansion of informal as well as formal education of workers. If some positive correlation is established it will then be appropriate to enquire into possible causal connections. It will also be useful to return to the early suggestion of Bowman and Anderson that a “threshold” level of literacy has to be reached prior to significant economic “takeoff.” This hypothesis, which is discussed in Chapter 3, has since come in for vigorous criticism especially on the theoretical side (see Blaug, 1987; Mitch, 1990; Nicholas, 1990). There seems nothing wrong, nevertheless, in attempting to look for empirical regularities in the history of this subject. Indeed, it is interesting that, despite their theoretical objections, none of the above critics have produced empirical findings that would seriously conflict with the particular magnitude mentioned in Bowman and Anderson’s argument: that a literacy rate of 30–40 per cent is a necessary condition for economic “breakthrough.”

Using all sources of evidence presently available, the indications are not only that the Bowman/Anderson condition was met in Britain, but also that literacy rates were higher at the end of the Industrial Revolution period than they were at the beginning. It is true that Nicholas (1990) finds that there were downward as well as upward movements in literacy levels within the period, and concludes that there was no significant improvement in literacy between 1790 and 1830. Yet the conventional timing of the Industrial Revolution has always been 1760 to 1840. Nicholas did not demonstrate that there was a failure to improve from the beginning to the very end of this whole time-span.

One might account for the possibility of fluctuations in some years between 1760 and 1840 by reference to the influence of unique negative circumstances that could explain temporary setbacks. Two possible examples relating to Nicholas’s 1790–1830 period are (a) the unprecedented increase in Britain’s population (including fairly large-scale immigration of relatively poor individuals—see Chapter 5 below) and (b) the Napoleonic Wars, from which there were deleterious economic after-effects lasting well after 1815. Nicholas suggests as an alternative example, the “deskilling” of the workforce, that is, the destruction of old skills and the substitution of unskilled factory work where literacy is not a job prereq-

uisite. Mathias (1969), however, concludes that industrialization bred the need for new skills much faster than it destroyed the old ones.

Returning to the critics of the threshold theory, emphasis is placed by them on the possibility of substituting for formal education such things as a wide variety of nonformal education agencies, entrepreneurial skills, adaptability to change and geographic mobility. Informal education via such institutions as Sunday Schools, adult night schools, factory schools, apprenticeships, mechanics institutes, etc., receives full attention in this present book. The focus, in other words, is upon the relationship between education in general and the Industrial Revolution. There is every reason to believe that most of the informal agencies just mentioned contributed significantly to increased literacy (see Blaug, 1978).

As for geographic mobility, Nicholas (1990) brings out graphically the fact that migration made literate workers available where they were most needed. Literacy reduced the real costs of information, "allowing lower job search costs and a greater scope of adapting to a wide range of jobs." The fact is that the act of migration itself has long been regarded in the economics literature as a human capital type of investment. For a recent piece of research, moreover, that finds formal education to have positive effects on migration, see Greenwood and McDowell (1986). In this way formal education (private or public), which the above-mentioned critics tend to downplay, returns to the central stage as an important influence on the economy. But perhaps it is better to suggest that the main interest of all writers, including the present author, is the relationship between human capital growth (rather than simply formal education) and the Industrial Revolution.

Consider now the second and additional intended interpretation of this book: a study of the trend of education between 1760 and 1840 in terms of the famous standard of living debate. This includes (a) the idea that, as well as an investment good, education is also a consumer good, the demand for which increases with income, (b) the study of data on changes in the quantity of the consumer good of education as evidence of changes in real income over time.

Kiesling (1983) attributes to us an attempt to show that private purchase of education prior to substantial government intervention reached

levels that were exactly optimal for the time. We make no such claim, however. Indeed to some extent the book is an examination of the work of others (such as Kiesling himself) who implicitly or explicitly argue that social optimality was reached only after intervention, or that education levels were substantially suboptimal before. In contrast, our book's general finding is that, down to the mid-1970s at least, the typical historian of education had seriously underestimated the extent of nongovernment education in the *laissez-faire* period.

By all standard measures used today, Britain was an underdeveloped or developing country right down to the later part of the nineteenth century. In the light of this it is relevant to compare three prominent findings concerning developing countries today. They are as follows:

- The growth of education combats the Malthusian spectre of overpopulation—that the population would grow (geometrically) faster than production (arithmetically).
- Education growth leads to increases in *per capita* incomes which, in turn, improve health and lower mortality; and since these improvements enhance the pay-off to human capital investment, the growth in education becomes cumulative or, at least, self-enforcing.
- As *per capita* incomes increase, parents voluntarily spend more on education.

These findings pertain to a systematic study of the records of over 100 developing countries since 1960 (Becker, 1995).

Consider now the presently developed countries England and Wales in their developing years. With a population of nearly twelve million in 1818, and no “public” (government) schools, about one in seventeen were attending private schools paid for largely by working parents. There were no government subsidies to private schools and no laws for compulsory schooling. By 1858 the proportion of the population found in fee-paid schools had increased dramatically (almost doubled) to approximately one in eight. And by this time the percentage annual growth rate of population had fallen to 1.21 from 1.40 in 1818. This relationship between population and education is consistent with the first of the three “modern” findings concerning the twentieth-century developing coun-

tries reported above: the growth of education combats the threat of overpopulation. And at that time it was education without the state.

Next, we have seen that the annual growth of *per capita* income in the years 1801–71 was just over 1 per cent while the annual average growth rate of day scholars was well over 2 per cent. This combination of circumstances is consistent with the second of the three findings from twentieth-century developing countries: education growth is associated with, or leads to, increases in *per capita* incomes. Moreover, it is pertinent that in Britain the years 1801–71 witnessed a drop in mortality rates, a factor that increased the yield from human capital investment.

Finally, since in Britain's case it was education largely without laws of compulsory education, we have the strongest possible support for the third finding from today's developing countries: parents voluntarily spend more (directly, from their own pockets) on education as their incomes rise. Indeed, the nineteenth-century figures for England and Wales show that the income elasticity of demand was particularly high: or, in other words, the desire for private education rose much faster than incomes.

This is not to deny, of course, a potential role for government. Furthermore, the book emphasizes the important distinction between two types of intervention that were eventually provided in nineteenth-century Britain. The first was the allocation of subsidies (after 1833) to non-government schools and in proportion to enrolment. The second type, introduced after 1870, was the provision of government schools, referred to in the U.S.A. as "public schools." The comparison made in the book happens to be very pertinent to the debate about educational choice at the beginning of the twenty-first century. The 1833 method of allocating subsidies according to enrolment, in fact, had similar consequences to those intended by modern education voucher advocates. Just as in the case of today's formal education voucher, under the nineteenth-century subsidy mechanism the parent triggered an incremental portion of the school grant whenever he or she chose one school over others. Government funds followed the child just as they do today where vouchers exist. And for this reason we can expect vigorous competition as a consequence.

This is not the place, however, to rehearse the whole modern debate about vouchers versus other forms of government provision. The main

point being advanced is simply the fact that the period of history studied in this book offers pertinent material to modern scholars who are genuinely seeking real-world evidence about the effects of alternative government policy instruments.

One final word needs to be offered concerning data sources. Critics who find themselves surprised at the extent of nineteenth-century education provision reported in this book, are tempted to question the quality of the data. The extreme version of data criticism, however, is nihilistic. It denies that anything useful can be concluded from the available evidence since it is asserted to be unreliable. But if this is true then no proposition at all can be entertained from any quarter. This means that all the histories of education that have argued retrospectively, for example, about the urgent need for nineteenth-century government intervention, must all be disqualified on the grounds of inadequate evidence. For this reason most writers do not want to go so far as to dismiss the data sources outright. But apart from some rare exceptions the sources they rely on are the same as those investigated in this book. The main controversy, therefore, comes to focus on data interpretations. And the interpretations herein have attempted to be balanced, reasonable and consistent.

The debate continues on what remains to be a fascinating subject. It is hoped that this new edition will provide a further contribution.

Edwin G. West
September 2000

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Preface to the First Edition

The primary aim of this volume is a study of the relationship between education and the process of industrialization during the nineteenth century. Our use of the term Industrial Revolution does not coincide with—although it overlaps—the conventional period. The book relates to industrialization in the nineteenth century exclusively. The term “education” is used in the special sense of popular or “mass” education. Whilst the modern economics of education has produced several hypotheses about education’s role in underdeveloped countries, there has been little previous attempt to test them in the context of Britain’s nineteenth-century relatively underdeveloped economy. The present book contributes to this field primarily by searching and establishing the relevant facts. In addition there is a preliminary attempt to arrange the facts in the conventional perspectives of the modern quantitative approach. One main example of this is our attempt to estimate the proportion of national income devoted to education in 1833, 1858, and 1882 and to compare it with other countries.

Questions about the role of education in nineteenth-century economic growth are treated directly in Parts 1 and 2 and in the concluding chapter. Parts 3 and 4 can be regarded in one sense as an indirect approach to the same problem. They are concerned with the increase of government intervention and the difference in the growth of education that resulted. These parts of the book bring us into contact with other types of “revolution” that occurred. In these sections, the phrase “Industrial

Revolution” in our title acts as a broad surrogate for many other rapid changes or revolutions that were occurring. We discuss, for instance, the nineteenth-century political “revolution” associated with the extension of the franchise in the Reform Act of 1832, and more especially the Act of 1867. Although we do not concentrate upon the issue of educational method, we do make some substantial study of the educational “revolution.” We thus examine changes in educational techniques that involved the monitorial methods of the 1820s and 1830s, the pupil-teacher training system, the Sunday School as a new agency for mass literacy, the various forms of apprenticeships, industrial schools, mechanics institutes and the literary and philosophic societies. Finally we examine the “literacy revolution”—the great surge in literacy that began between 1790 and 1800 and reached full strength in the 1830s and 1840s.

In an investigation of the changing methods of government intervention we focus upon the administrative “revolution”—the growth of an official inspectorate of schools, and the evolution of a central department of education that was only weakly accountable to Parliament. Our approach here attempts an application of one of the newest branches of economics—the “economics of bureaucracy.”

Part 4 examines the “public finance revolution”—the striking changes in the method of public finance especially after 1870. It demonstrates the crucial economic significance of the special type of public finance of the new board schools that were introduced by the 1870 Act to “fill up gaps” in the voluntary system. The ability of these new types of schools eventually to capture the main part of the growing educational “market” will be demonstrated in the context of the political “revolution” in education in late Victorian Britain. Our analysis here includes some retrospective application to the nineteenth-century data of the type of “economics of politics” that has developed in the last fifteen years. From such criteria we examine anew the precise arguments of the various campaigners of the period—those who consciously wanted and welcomed the new changes—and those who did not. The debate will be shown to have centred upon arguments about the need for what they called “national systems” of education or what contemporaries now call the need for “social cohesion.”

In some ways this book is an extension of our earlier *Education and*

the State (1965, second edition 1970, third, Liberty Fund edition, 1994). This was an exploration of the basic political economy principles of state intervention in education. In the course of writing this earlier volume, we developed a growing interest in the history of the subject. The two or three historical chapters in it indeed foretell the present work. Thanks are due to the Institute of Economic Affairs, London, for allowing reproduction of some parts of the historical chapters in *Education and the State* as points of departure. We wish also to thank the editors of the *Economic History Review* for permission to draw upon two of our recent articles published in the early 1970s and the editor of *Explorations In Economic History* for a similar privilege.

Helpful assistance was provided by the following libraries: The British Museum (State Papers Room), the library of the University of London, the Goldsmith Library, the Bodlean Library of Oxford, the University of Newcastle-upon-Tyne Library, Carleton University Library, the library of the University of Kent, the library of the St. Osyth's Teacher Training College, Clacton-on-Sea, and the libraries of the University of California at Berkeley.

We also express gratitude for the valuable comments of numerous students and the stimulating discussion in seminars presented at the Colloquium in Economic History at the University of California Berkeley, in 1974, and the Graduate History Workshop at Carleton University in 1973. We have benefited considerably from discussion with Mark Blaug, William Niskanen, Albert Fishlow, Max Hartwell, Carlo Cipolla, Michael Bordo, from correspondence with W. G. Armytage and A. C. F. Beales, and from contributions from Karen King, Research Assistant at the London Institute of Education. Acknowledgements are due to the Canada Council for a research grant in the summer of 1972 and for facilities provided by the University of California Law School (Childhood and Government Project) during a sabbatical leave there in 1974.

Finally this volume would not have been completed had it not been for my wife, Ann, who not only patiently typed and retyped several versions of many chapters, but also offered much sound editorial comment.

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Part 1 · The Statistical Framework
and Basic Hypotheses
