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UNDERSTANDING THE INDUSTRIAL REVOLUTION¹

British Economic Growth during the Industrial Revolution. By N. F. R. Crafts. Oxford: Clarendon Press, 1985. Pp. 193. £19.50 (paperback £7.95).

The Economics of the Industrial Revolution. Edited by Joel Mokyr. London: George Allen and Unwin, 1985. Pp. xi + 267. £18.50 (paperback £7.95).

The History of the British Coal Industry. Volume 2: 1700–1830: The Industrial Revolution. By Michael W. Flinn. Oxford: Clarendon Press, 1984. Pp. xxi + 491. £35.

The First Industrialists: the Problem of Origins. By François Crouzet. Cambridge: Cambridge University Press, 1985. Pp. ix + 229. £22.50.

Manufacture in Town and Country before the Factory. Edited by Maxine Berg, Pat Hudson and Michael Sonenscher. Cambridge: Cambridge University Press, 1983. Pp. ix + 213. £25.

The Age of Manufactures. By Maxine Berg. London: Fontana, 1985. Pp. 378. £4.95.

Since Toynbee in 1884, historian after historian has struggled to unravel the Gordian knot of the British Industrial Revolution. Some have tried to unpick it, others to cut through it. But if the knot has been loosened here or there it remains largely secure. Synoptic views of the Industrial Revolution have rarely had a long life. As details of the economy have increased it has proved difficult to link them together in an explanatory framework. To undergraduates, the Industrial Revolution remains easiest to consider as a series of only loosely related problems such as demand, technical change, capital formation and business enterprise. To them, understanding the Industrial Revolution is not a challenge but a headache.

Not the least of the problems has been one of definition: what was the Industrial Revolution? To Cameron the term 'has no scientific standing' and Professor Davis has complained that 'Nowhere... is the term defined in an operational manner' and 'Since the term is undefined, it can be caused by anything'.² Such disquiet is far from novel. In 1933 Herbert Heaton noted that 'As a label it is admittedly unsatisfactory'. Others felt the same.³ Historians have used the term very freely, causing much confusion in the process. It has been used so often, and in such different ways, that it has come to mean all things to all men. It has become an assumption rather than a reasonably precise term. Donald Coleman described three ways historians have used it: industrial revolutions of particular industries, of particular sectors or of national economies.⁴ And

¹ Many thanks to Joanna Innes for her comments on a draft of this review.

² R. Cameron, 'The industrial revolution, a misnomer', in J. Schneider (ed.), *Wirtschaftskräfte und Wirtschaftswege*, v (Stuttgart, 1981), 367. L. E. Davis, 'Specification, quantification and analysis in economic history', in G. R. Taylor and L. F. Ellsworth (eds.), *Approaches to American economic history* (Charlottesville, Virginia, 1971), p. 109.

³ 'The industrial revolution', reprinted in R. M. Hartwell (ed.), *The causes of the industrial revolution in England* (London, 1967), p. 31.

⁴ D. C. Coleman, 'Industrial growth and industrial revolutions', *Economica*, xxiii (1956), 2.

if some historians tend to 'isolate its essential economic characteristics' others take a broader view, stressing that it involved the transformation of society, politics and ideas as well as the economy.⁵ But by and large, the Industrial Revolution has become a playingthing of economic historians. They more than anyone have been responsible for what insights and misunderstandings we have. But, as David Cannadine pointed out recently, specifically economic histories of the Industrial Revolution have often been fickle and fashion-conscious.⁶ Technical change, structural realignment and macro-economic performance, the principal foci of the economic historians, have been approached by different routes and with different aims.⁷ Most often, they have been viewed not in their own terms but in relation to the framework of economic growth. This whiggishness is also evident in the importance of teleology to the economic history of the period. The appropriation of the Industrial Revolution by economic historians is a problem because of these particularities, but is also awkward because it reinforces the tendency to exaggerate the force of economic determinism – particularly in terms of the social, intellectual and political history of the period.

A lack of understanding has arisen from more than just this multiplicity of perspectives, concerns and definitions. Crucially, it has also centred on the descriptive outlines and chronological boundaries assigned to the Industrial Revolution. Historians still find it difficult to describe, not just because of the flow of new evidence but also because of continuing uncertainty with the implications of the word 'revolution'. Generally, historians have located the British Industrial Revolution in the century 1750–1850, most commonly in the years 1760–1830. But most agree that the rate of change was revolutionary in only a few areas of the economy and that, more generally, change was gradual by the standards of political revolutions. More than that however, uncertainty with the industrial 'revolution' has been created by differences in weight put on the study of either causes, courses or consequences by historians. Economic historians have tended to concentrate on the first and second, social historians on the second and third. Related to this is the conflict between the old view, – that the Industrial Revolution encapsulated change, – and the view that has developed since c. 1920 that it was an acceleration of change and therefore also involved elements of continuity.

Despite all these differences some common ground does exist which, in the light of the problems just raised, offers a way forward with the term. Historians, as Crafts shows, will continue to use the term, and the problem therefore is to construct a meaningful definition.⁸ All historians agree that it was a 'great discontinuity', the transition from one kind of society and economy to another – primarily the transition from agricultural to industrial primacy.⁹ It is widely recognized now that within Britain in the period 1750–1850 this transition was neither begun nor finished. Consequently, using the concept of the Industrial Revolution must involve the use of complementary, over-

⁵ R. M. Hartwell, 'Introduction', in Hartwell, *Causes of the industrial revolution*, p. 7. Also G. N. Clark, *The idea of the industrial revolution* (Glasgow, 1953), p. 33. T. S. Ashton, *The industrial revolution 1760–1830* (Oxford, 1977), pp. 1–2.

⁶ 'The present and the past in the English industrial revolution 1880–1980', *Past and Present*, cxxi (1984), 131–172.

⁷ Mokyr, 'The industrial revolution', in Mokyr, pp. 3–4. Crafts, pp. 6–7.

⁸ Crafts, p. 6.

⁹ A. Thompson, *The dynamics of the industrial revolution* (London, 1973), p. 29. R. M. Hartwell, 'The great discontinuity', in his *The industrial revolution and economic growth* (London, 1971), pp. 44–51. C. M. Cipolla, *The economic history of world population* (Harmondsworth, 1972), pp. 26–32.

lapping chronologies. The medium term concerns the period 1750–1850, where, for example, population grew rapidly and people moved swiftly from hamlets and villages to towns and cities. Under this notation the medium-term view might, as Coleman suggested, be called the ‘classic’ Industrial Revolution.¹⁰ The long term involves gradual economic evolution, social developments and other changes (and continuities) from the late sixteenth century, particularly in relation to agricultural development, overseas trade, the emergence of more consumer-orientated industries and market awareness. But the long-term Industrial Revolution will have to stretch beyond 1750, beyond 1850 in fact, to the ‘conclusion’ of the transition in the late nineteenth and early twentieth centuries. In this schema, the short term would involve brief moments of transition, like periods of parliamentary enclosure, the mechanization of various industries, the spread of turnpikes and the like. Altogether, by utilizing these various chronologies of transition, by recognizing that transition involved continuity and change and by admitting that transition was more than economic and not always economically determined, justice can be done to the complexity of the Industrial Revolution and a framework for its comprehension erected. But unless such a complex approach is adopted misunderstanding is likely to continue.

One of the latest assaults on the Gordian knot goes under the guise of the new economic history. The proponents of this approach come to study past economies from economics rather than history and ‘The methodological hallmarks... are its emphasis on measurement and its recognition of the intimate relationship between measurement and theory.’¹¹ Launched in the 1950s in the U.S.A., and first directed to problems in American economic history, the new economic history reached these shores in force in the early 1970s. It made a dramatic impact in the debate over the performance of the British economy and its businessmen between 1870 and 1914.¹² Since then it has sailed back in time to help in the study of the process of industrialization in Britain. Mokyr’s volume collects some of the products of this venture, and Crafts provides ‘a presentation of recent research on the overall growth of the British economy during industrialization’, which draws heavily on both his own and others’ new economic history.¹³

It is difficult to extract a consensus view of the new economic history of the British Industrial Revolution from Mokyr’s volume; the articles are similar more in method than in findings or concerns. But the message of Crafts’s excellent book could not be clearer. He produces a quantitative outline of the British economy between 1700 and 1831 and fruitfully pushes the study of the transitions beyond 1850. His central conclusion is that the British economy, far from experiencing some Rostovian ‘take-off’ in the late eighteenth century, grew modestly and slowly in the aggregate before the railway age.¹⁴ ‘In particular, it seems clear that the economy did not reach 3 per cent per year growth in real output before 1830.’¹⁵ Mental images of the economy during

¹⁰ ‘Industrial growth and industrial revolutions.’

¹¹ R. W. Fogel, ‘The new economic history’, *Economic History Review*, xxix (1966), 651. New economic history has also been called Cliometric or econometric history. ‘A cliometrician is an economist applying economic theory (usually simple) to historical facts (not always quantitative) in the interest of history (not economics)’. D. N. McCloskey, ‘The achievements of the Cliometric school’, *Journal of Economic History*, xxxviii (1978), 15.

¹² See, for example, D. N. McCloskey and L. G. Sandberg, ‘From damnation to redemption: judgments on the late Victorian entrepreneur’, *Explorations in Economic History*, ix (1971), 89–108.

¹³ Crafts, p. 1.

¹⁴ W. W. Rostow, *The stages of economic growth. A non-communist manifesto* (Cambridge, 1960).

¹⁵ Crafts, p. 47.

the classic Industrial Revolution as a period of rapid growth, factory production and steam-driven machinery are shown to be appropriate to just one or two unrepresentative sectors like cotton and iron. This conclusion assaults ideas both of 'take-off' and of 'leading sectors'. But its central attack is directed against the innovating work of Deane and Cole who, in 1959, produced the first major quantitative outline of the British economy during the Industrial Revolution.¹⁶ Crafts's work is formulated explicitly in terms of revising Deane and Cole. This is done by utilizing new data that have appeared in the last twenty years and by questioning the assumptions and methods that underlay their work.

Crafts suggests several clear reasons for the lack of marked discontinuity in the overall, quantitative performance of the economy between 1700 and 1830. First, productivity growth in agriculture was better before 1760 than after. The diffusion of new crops, rotations and private enclosure before the middle of the eighteenth century were concentrated on better, less marginal soils. Changes after 1760, like the spread of new breeds, the Rotherham plough or parliamentary enclosure, were not only less significant in themselves when compared to the new crops and rotations but often affected more marginal land. Agriculture was a diminishing returns industry between roughly 1760 and the era of high farming in the mid-nineteenth century.¹⁷ Secondly, rapid revolutionary industrial growth was achieved only in the cotton and iron industries. Traditional industries, such as wool, brewing, leather working, soap and candle production, experienced slow and sure change. And such industries accounted for the major share of total industrial activity. Thirdly, trade and transport, broadly defined, grew slowly. The impact of improved river navigation, coastal trade, canals and turnpikes, not to mention marketing facilities, was gradual rather than dramatic. Finally, Crafts draws his conclusion about slow growth during the Industrial Revolution both by using new data and by arguing that previous estimates, like those of Deane and Cole, rested on procedures which 'are seriously flawed and exaggerate growth'.¹⁸ Principally this relates to the price deflators others used and to their assumptions about and calculations of sectoral shares of total economic activity. For example, Lindert and Williamson's reworking of Gregory King's estimates of the size and structure of English society and incomes at the end of the seventeenth century has shown that King overestimated the importance of agriculture and underestimated the importance of industry at the time. Deane and Cole relied on King's estimates, Crafts relies on Lindert and Williamson's revisions.¹⁹

The picture Crafts paints of the British economy between 1700 and 1830 is one where important but undramatic changes took place before as well as after 1760. It accepts that the transition began before 1750 and finished after 1850, though his long-term perspective does not go back before 1700. In particular, he draws attention to the early and substantial dwindling of agricultural employment and the movement of labour into relatively low-productivity sectors. Labour went more from the fields to outwork or workshops than to factories. In Crafts's words, before 1830 the economy was not 'pervasively innovative... and the period of rapid productivity growth was a relatively

¹⁶ P. Deane and W. A. Cole, *British economic growth 1688-1959* (2nd edn, Cambridge, 1969).

¹⁷ See R. V. Jackson, 'Growth and deceleration in English agriculture, 1660-1790', *Economic History Review*, XXXVIII (1985), 333-51.

¹⁸ Crafts, p. 30.

¹⁹ P. H. Lindert and J. G. Williamson, 'Revising England's social tables, 1688-1812', *Explorations in Economic History*, XIX (1982), 385-408.

brief mid-nineteenth-century phenomenon'.²⁰ Such a picture might be thought to be novel more in terms of its quantitative detail and substance than its outline. As David Cannadine has pointed out, Clapham argued in the 1920s that the British Industrial Revolution was far from comprehensive or general. In Cannadine's words, Clapham 'showed how gradual and localized the Industrial Revolution was... [and] examined in great detail the predominant and non-mechanized industries, and noted how little change there had been by 1851'.²¹ In this light, Rostow led economic historians up a blind alley and Deane and Cole led them up a wrong road. It is a salutary lesson that they took us away from as well as towards an accurate portrayal of the Industrial Revolution.

In fact, Crafts has gone beyond the characterization offered by Clapham, mainly by concentrating on the nature of the profound structural transformation that was experienced by the economy. In his terms, if in 1750 some 55 per cent of the workforce was in agriculture but in 1850 only 22 per cent, and if in 1750 around 21 per cent of the population lived in towns but in 1850 around 54 per cent, then such changes can justly be called an Industrial Revolution.²² For Crafts, following Mathias, the Industrial Revolution can be defined as the 'fundamental redeployment of resources... by the 1840s'.²³ For him, that is what the classic Industrial Revolution involved. He also shows that substantial structural change in the balance of the economy was not matched by high growth rates, not least because 'the economy found it hard to maintain the growth of capital at a rate in excess of the labour force during the period 1760-1830'.²⁴ Productivity advance was held back by the dominance of relatively labour-intensive work. Crafts rightly puts considerable stress on the estimate that British agriculture released labour at an early stage of the process of industrialization. In fact, because agriculture was so efficient food imports were minimized, balance of payments problems avoided and the structural dominance of export industries like cotton not encouraged. 'Britain's structural transformation was heavily orientated towards the establishment of a high share of the labour force in manufacturing rather than high output per worker within industry'.²⁵ The highly productive export industries have to be set alongside other large industries, such as brewing and baking, which hardly exported any of their output at all.

To Crafts, the Industrial Revolution had as much to do with the balance of the economy as the novelty of productive techniques. Secondly, change 'had proceeded further than Gregory King perceived by the beginning of the eighteenth century... [and] the structural changes were accomplished at a stage when income per head had still not risen very much'.²⁶ He contests Wrigley's point that the central characteristic of the Industrial Revolution was 'the rise in real income per head'.²⁷ The economy struggled to cope with rapid population growth and as a result quantitative living standards failed to improve significantly before the 1820s. The 'radical break' in the

²⁰ Crafts, p. 87.

²¹ 'The present and the past', p. 139. J. H. Clapham, *An economic history of modern Britain*, 3 vols. (Cambridge, 1926-38).

²² Crafts, pp. 4, 65-9. E. A. Wrigley, 'Urban growth and agricultural change: England and the continent in the early modern period', *Journal of Interdisciplinary History*, xv (1985), 700. Deane and Cole, *British economic growth*, p. 142. P. J. Waller, *Town, city and nation: England 1850-1914* (Oxford, 1983), p. 7.

²³ Crafts, p. 69. P. Mathias, *The first industrial nation* (London, 1969), p. 2.

²⁴ Crafts, p. 76.

²⁵ Crafts, p. 152.

²⁶ Crafts, p. 7.

²⁷ E. A. Wrigley, 'The process of modernization and the Industrial Revolution in England', *Journal of Interdisciplinary History*, iii (1972), 227.

early nineteenth century discerned by Wrigley and Schofield, when population and real wages began to rise together in a sustained fashion for the first time, came in the midst of significant structural change and was only consolidated and made permanent by the rapid productivity advance experienced during the railway age (c. 1830–70).²⁸

It is not just the information and ideas that make Crafts's book so valuable and compelling, but also his modesty, common sense and self-criticism. There are no exaggerated claims because evidence and method are always presented in a way that allows the reader to contest the point. Despite the occasional algebraic formulation, moreover, the book is literary rather than mathematical, though it is a study that is constantly supported and encouraged by economic theory. It is likely to remain the most important contribution of new economic history to the study of the Industrial Revolution for some years.

According to Mokyr, the new economic history 'has used existing statistics in new and imaginative ways and has added significantly to the body of quantitative information concerning England during the Industrial Revolution. But most important, the New Economic History has imposed certain standards of economic logic upon the field'.²⁹ It is precisely the statistical basis and economic logic behind this approach that define its strengths and weaknesses. In the first place, large areas of economic activity for this period have left no direct source of quantitative data. Agriculture is the most notable example. Consequently, quantifiers are driven on to indirect means, where assumptions and informed guesses are employed and unknown margins of error introduced. As Flinn remarks in his clear and thorough history, the sources available to calculate coal output during the period 1700–1830 'can offer no more than guides to the growth of some sections of the trades in coal'.³⁰ So whereas Crafts has the annual compounded growth rate of coal output between 1700 and 1760 as 0.64 per cent, Flinn puts the figure at 1.13 between 1700 and 1750 – nearly twice as quick. And Pollard's estimates of coal output, whose figures Crafts relied on, fall short of Flinn's by between 14 and 24 per cent between 1750 and 1815.³¹ Crafts, more than most quantifiers, is fully conscious of the shifting statistical sands his enterprise rests on. One can either accept the assumptions he uses to piece together bits of statistics about the economy or one can replace them. In the end, many will accept or reject them on impressionistic grounds – that the figures he comes up with either do or do not make sense in terms of all the other bits of information we have about the economy. Quantifying the eighteenth-century economy often involves much the same sort of guesses employed by those who use impressionistic evidence as representative of broader trends. Crafts, it seems to me, has made good guesses, though in time better ones may be made.

Applying the new economic history to the study of the Industrial Revolution is constrained both by data and by the suitability of the 'standards of economic logic' that Mokyr referred to as the discipline's most important contribution. Those standards

²⁸ E. A. Wrigley and R. S. Schofield, *The population history of England 1541–1871. A reconstruction* (London, 1981), p. 440.

²⁹ Mokyr, 'The industrial revolution', in Mokyr, p. 2.

³⁰ Flinn, p. 25; my emphasis. On the problems of quantifying aspects of agrarian change see M. Overton, 'Agricultural productivity in eighteenth-century England: some further speculations', *Economic History Review*, xxxvii (1984), 244–51 and M. Turner, 'Agricultural productivity in eighteenth-century England: further strains of speculation', *Economic History Review*, xxxvii (1984), 252–7.

³¹ Crafts, p. 23. Flinn, p. 26. S. Pollard, 'A new estimate of British coal production, 1750–1850', *Economic History Review*, xxxiii (1980), 212–35.

are good because they are explicit but poor because they may reflect poorly the actual logic of the eighteenth-century economy. Most of the new economic history of Britain in this period tends to treat the economy as a homogeneous entity. Yet when historians, new or old, talk about the national economy in this period they do so out of convenience as much as a reflexion of historical reality. Statistics about the national economy are an average and, like all averages, it is helpful to know about dispersion around the mean. Only a few elements of economic life in the eighteenth and early nineteenth centuries operated in national terms – largely those influenced by political factors such as customs, excise, legislation or war, though overseas trade and the balance of payments can also be viewed nationally. Pollard has rightly stressed that ‘The industrialization of Europe did not proceed country by country’; it was regional, where boundaries fell inside and sometimes crossed national borders.³² To describe and analyse the Industrial Revolution we often have to look at structural change and productivity growth on a regional basis and where attention is directed at both positive and negative developments. In fact Crafts is at some pains to acknowledge regional diversity, but usually adopts a national perspective.

Economically, the Industrial Revolution was the sum of prosperity and growth in regions like the Lancashire cotton industry and the West Riding woollen trades, of failure and regress in regions like the Norfolk cloth industry and the Wealden iron industry and of relative stability in areas like London. It was the sum of significant agricultural advance in areas well suited to the new crops and rotations and of the struggle for profitability in those areas less well suited. Because overall the economy prospered, it has been too easy to forget about those areas which did not, and too easy to view the eighteenth-century economy mainly as a place in which to uncover the origins of the Industrial Revolution. To adopt only a national, macro view of the economy carries with it the danger of drifting into whig history and, in all likelihood, teleology. Of course, this forward-looking perspective is far from limited to the new economic history. Crouzet’s study, very much a traditional piece of economic history, looks at the social and occupational origins of industrialists as ‘a new type of businessman, which emerged during the Industrial Revolution’. By picking out the industrialists Crouzet implicitly adopts the attitude that they were the key to the future in terms of business enterprise. But any piece of economic history which isolates dynamic and progressive features within an economy is likely to caricature as well as characterize it.

If one consequence of studying the economy in national terms is a certain whiggishness, another problem arises from the belief that we can talk about economic forces operating in national ways. Most new economic historians adopt a partial or general equilibrium analysis in their approach, where markets work to bring supply and demand into balance across the nation at a certain price. Essentially this relates to the belief that markets were well formed and reasonably competitive. Crafts argues that ‘the national economy of Britain represented, for many products, a well-integrated national goods market by the early nineteenth century and a fairly well-integrated set of factor markets with much more internal mobility of capital and labour than there was in the international economy’.³³ Yet, as Habakkuk wrote, ‘historians spend all their time dealing with economies which are not in equilibrium’.³⁴ Crafts’s point can be

³² S. Pollard, ‘Industrialization and the European economy’, in Mokyr, p. 166. Also, Wrigley, ‘Process of modernization’, p. 252 n. 57.

³³ Crafts, p. 3.

³⁴ H. J. Habakkuk, ‘Economic history and economic theory’, *Daedalus*, c (1971), 313.

contested in fact, as he himself does later.³⁵ For example, if the English market for wheat was efficient and well integrated by 1750 this was not true of other grains.³⁶ To take a second example, the poor laws were reformed in 1834 in part at least because labour was seen as immobile, causing labour markets to be in a constant state of disequilibrium.³⁷ As a final example, it is possible that the extensive use of highly unstable credit by businessmen during the late eighteenth and early nineteenth centuries testifies to a similar problem in capital markets.³⁸ Why does this matter? Taking labour as an example, if labour markets were imperfect and not in equilibrium then participation rates almost certainly varied from place to place, to the extent that one cannot, as Crafts does, use population data as the basis of seeking the role of labour productivity in growth. Moreover, market inefficiencies were unlikely to have been constant over time, though new economic historians often assume they were. At least part of the task before economic historians of the Industrial Revolution, therefore, is to try to see if and how the quality of markets changed during this period. So far, new economic historians have only looked at the markets for wheat and securities; old economic historians have done little more.³⁹ Studying markets also has the salutary influence of weaning historians away from their preoccupation with production towards distribution.

As Crafts says, the growth-accounting framework he uses is a 'simple' way of looking at the sources of growth.⁴⁰ But it may be too simple, though it is not, as McCloskey rightly points out, different in kind from the ways old economic historians pursue their task: 'One must leap over gaps in the data. The leaps are necessary, but each student of the subject makes them in a personal style: the statistical and literary approaches to history are not so very far apart'.⁴¹ But some leaps have to be made, others are by choice. So far both new and old economic historians have been reluctant to tackle the problem of the nature of markets in this period. They are leaping because they have not looked for alternative routes.

Peter Temin has argued that 'Economists assume almost automatically that people engaged in market behaviour act instrumentally or rationally. Other social scientists almost automatically assume that they do not'.⁴² Allied to this, one persistent early

³⁵ Crafts, p. 68.

³⁶ J. A. Chartres, 'The marketing of agricultural produce', in J. Thirsk (ed.), *The agrarian history of England and Wales*, v, 2 (Cambridge, 1985), 459-65. C. W. J. Granger and C. M. Elliott, 'A fresh look at wheat prices and markets in the eighteenth century', *Economic History Review*, xx (1967), 257-65.

³⁷ K. D. M. Snell, *Annals of the labouring poor* (Cambridge, 1985).

³⁸ J. Hoppit, 'The use and abuse of credit in eighteenth-century England', in R. B. Outhwaite and N. McKendrick (eds.), *Business life and public policy* (Cambridge, 1986), pp. 64-78. P. Mathias, 'Capital credit and enterprise in the industrial revolution', in his *The transformation of England* (London, 1979), pp. 91-2.

³⁹ Granger and Elliott, 'A fresh look at wheat prices'. R. V. Eagly and V. K. Smith, 'Domestic and international integration of the London money market, 1731-1789', *Journal of Economic History*, xxxvi (1976), 198-212. B. T. Parsons, 'The behaviour of prices on the London stock market in the early eighteenth century' (University of Chicago Ph.D. thesis, 1974). Chartres, 'The marketing of agricultural produce'. E. Pawson, *Transport and economy: the turnpike roads of eighteenth century Britain* (London, 1977). G. L. Turnbull, 'Provincial road carrying in England in the eighteenth century', *Journal of Transport History*, iv (1977), 17-39.

⁴⁰ Crafts, p. 79.

⁴¹ D. N. McCloskey, 'The industrial revolution 1780-1860: a survey', in Mokyr, p. 62.

⁴² 'The future of the new economic history', in T. K. Rabb and R. I. Rotberg (eds.), *The new history* (Princeton, 1982), p. 188.

complaint about the new economic history was that it was too dependent on unrefined neoclassical economics. This type of economics has been assaulted by economists on theoretical and practical grounds, and by historians who doubt its applicability to the reality of the past.

The power of neoclassical theory derives from the strong assumptions it makes about the presence of competition, the absence of transactions cost and uncertainty, and the stability of underlying economic institutions. Many of the most interesting historical problems in economics, however, revolve around the absence or imperfections of competition, the consequences of substantial transactions cost and uncertainty, and changes in the economic institutions of society.⁴³

These criticisms have had an effect, leading to new theoretical developments and wider concerns that 'have explored the implication of decision-making under uncertainty, the value of time, the cost of information, and positive transaction costs'.⁴⁴ But if new economic history has begun to lengthen its agenda in these ways this process is still unfinished and has had little direct impact on British economic history. The most vigorous proponent of what might inelegantly be called the new-new economic history, Professor North, has concentrated largely on the very broadest of generalizations about economic change in the past.⁴⁵ British economic history has not been touched significantly by this trend of inquiry, at least not by new economic historians. But other historians have assaulted the precepts of pure neoclassical economic history by coming at the Industrial Revolution from the direction of social as well as economic history. This is the perspective adopted in the volume of essays edited by Berg, Hudson and Sonenscher and in Berg's own book.

Berg, Hudson and Sonenscher argue that

'Pre-industrial' social values and practices seem everywhere to have profoundly affected the emergence and extent of factory manufacture and the displacement of rural domestic production. The transition to the factory was not just an economic question concerning the relative merits or efficiency of one form of organisation and technology over another, but a social and political issue.⁴⁶

The importance of such factors is determined not only by the inadequacy of pure neoclassicism – of which Crafts is perfectly well aware – but precisely by Crafts's arguments that the economy in 1700 was better developed than had been thought, only changed gradually thereafter and retained many of its old features and methods down to 1850. Whereas Crafts's book acknowledges the importance of transitions before 1750, it mostly stretches the chronology of the Industrial Revolution in the direction of the mid and late nineteenth century. But Berg, Hudson and Sonenscher stretch it mostly in the direction of the seventeenth and early eighteenth centuries. Attention has shifted, at least among the less persistently quantitative economic historians, from looking at what happened after 1760 to looking at what happened in the century before then. Most commonly, this discussion has been phrased in terms of the concept of proto-industrialization – a way of describing rural industry in the pre-industrial era and a way of explaining the presence and absence of links between such rural industries and

⁴³ R. Sutch, 'Douglas North and the new economic history', in R. L. Ransom, R. Sutch and G. M. Walton (eds.), *Explorations in the new economic history* (New York, 1982), pp. 28–9.

⁴⁴ D. C. North, 'Structure and performance: the task of economic history', *Journal of Economic Literature*, xvi (1978), 964.

⁴⁵ D. C. North, *Structure and change in economic history* (New York, 1981). D. C. North and R. P. Thomas, *The rise of the western world. A new economic history* (Cambridge, 1973).

⁴⁶ 'Manufacture in town and country before the factory', in Berg, Hudson and Sonenscher, p. 29.

~~the factory-based industries~~ of the classic Industrial Revolution.⁴⁷ The ghost of proto-industrialization occasionally shows itself in the pages of both *The age of manufactures* and *Manufacture in town and country*, though Berg's own book is less successful at shrugging off the limitations of the model than the edited volume. It is rightly pointed out that there is 'great difficulty of generalising about these complex changes' by which some areas of pre-industrial industry were followed by industrialization while others were not.⁴⁸ They notice that 'most of the proto-industry literature still tends to view the complexity of economic, social and familial relationships in the past in terms of their transitional qualities rather than in terms of their own internal characteristics'.⁴⁹

As might be expected the due caution expressed by Berg, Hudson and Sonenscher derives from their reading of highly detailed, often local, studies. Hudson's own chapter in the volume, 'From manor to mill: the West Riding in transition', investigates two broad types of rural domestic industry – the artisanal and the putting out – and shows that it was far from inevitable that the supposedly more modern and efficient of the two, putting out, would dominate the shift to factory production in woollens. The artisanal system, far from dying an agonizing death, survived in a new state because of the strength of 'aspects of co-operation, custom and community which were in part the legacy of the older agrarian order'.⁵⁰ Where the manorial system had crumbled least, where enclosure had not advanced too far, where size of holdings remained viable for individual proprietorship, or where leasehold and copyhold were still intact, the smallholder who was also an artisanal producer had the prestige and collateral to link into the chains of credit which were so vital to continued prosperity and competitiveness. In this case, economy and society happily united the old and the new.

Styles's chapter contests Professor North's belief that by 1700 England 'had developed an efficient set of property rights embedded in the common law... The stage was now set for the industrial revolution'.⁵¹ According to North, these

better specified property rights... improved factor and product markets... [and] The resultant increasing market size induced greater specialization and division of labor, which increased transaction cost. Organizational changes were devised to reduce these transaction costs and had the consequence of radically lowering the cost of innovating at the same time that the increasing market size and better specified property rights over inventions were raising the rate of return on innovating.⁵²

Yet as Styles points out in his excellent essay on embezzlement in industry between 1500 and 1800, it is by no means clear that property rights in the specific case of the appropriation by the workforce of goods in the process of manufacture, such as wood, rope or canvas, were clearly defined, even by 1800.⁵³ Although parliament did pass

⁴⁷ For a recent summary see L. A. Clarkson, *Proto-industrialization: the first phase of industrialization?* (London, 1985). The general theory was presented first by F. F. Mendels, 'Proto-industrialization: the first phase of the industrialization process', *Journal of Economic History*, xxxii (1972), 241–61. A more sophisticated and less unilinear picture was drawn by P. Kriedte, H. Medick & J. Schlumbohm, *Industrialization before industrialization* (Cambridge, 1981). The difficulties of applying such a general theory to the English case were made brutally clear in D. C. Coleman, 'Proto-industrialization: a concept too many', *Economic History Review*, xxxvi (1983), 435–48.

⁴⁸ Berg, Hudson and Sonenscher, 'Manufacture in town and country', p. 19.

⁴⁹ *Ibid.*

⁵⁰ Hudson, 'From the manor to mill', in Berg, Hudson and Sonenscher, p. 144.

⁵¹ North and Thomas, *Rise of the west*, p. 156.

⁵² North, *Structure and change*, p. 159.

⁵³ J. Styles, 'Embezzlement, industry and the law in England, 1500–1800', in Berg, Hudson and Sonenscher, pp. 173–210. Of related interest see D. Sugarman and G. R. Rubin, 'Towards a new

statutes against embezzlement through the seventeenth and eighteenth centuries, these laws were initiated by local and particular concerns rather than some sense of 'modernising' capitalistic relations. Moreover, prosecution against embezzling varied not just from place to place through the eighteenth century, but over time within specific localities. And even a modern area of the economy like the Yorkshire worsted industry was campaigning against their weavers on this score as late as 1837 and possibly beyond. In the instance of embezzlement, therefore, the redefinition of property rights was a long and tortuous process that began well before 1700 and continued well after the start of industrialization. Here, once again, the market was mediated and influenced by social expectations that were only partly considered in monetary terms; embezzlement was also seen as a right.

Manufacture in town and country does not try to provide some overview of the British economy in the eighteenth century. It is a collection of disparate essays, covering parts of England, France and Germany, held together by a thought-provoking but slightly awkwardly structured introduction. Berg's own book promises a more satisfactory structure and synoptic view, but on both counts is disappointing. It is a textbook, in so much as it is a synthesis of other historians' research, that perceptively and ambitiously aims to link economic history to social and intellectual history, anthropology, sociology and theory. But for all its many good intentions and insights, the book is lifeless. It lacks exactly the virtues of vigour, penetration and cohesion of Berg's book on the 'machinery question' in the early nineteenth century.⁵⁴ The faults of the book are more those of presentation than argument, though that might be enough to seal its fate as a textbook.

Berg begins *The age of manufactures* with a series of justified complaints about current economic histories of the Industrial Revolution. Under the influence of quantitative, development economics, these histories have moved away from a consideration of new technology and industry to the macroeconomy of growth, where disaggregation proceeds no further than carving the economy into big sectors like agriculture or industry. For her, processes of production lie at the heart of the revolution and should be the focus of concern. Yet she also rejects Landes' famous study of technical change because 'His Industrial Revolution was apocalyptic; his vision of its processes cataclysmic' – she accepts Crafts's broad characterization of economic development.⁵⁵ Her book looks at industry and technology within the context of slow growth, and where continuity of modes of production was as important as change. Her main concern is to contest solely economic explanations of economic history. She argues that

Profitability and labour costs were important determinants for the development of each [industrial] structure, but ... in a transitional capitalist society they were not the only ones – custom, community and patriarchal discipline played at least as significant a role in artisan, cooperative and protofactory alternatives to putting-out. This range of industrial structures also implied a range of different types of labour discipline and technological change.⁵⁶

This, if you like, is an economic history from below, where techniques of production are seen in the context of the men, women and children who used them and where artisans and outworkers rather than factory operatives are the focus of concern. It is

history of law and material society in England, 1750–1914', in Sugarman and Rubin (eds.), *Law, economy and society, 1750–1914* (Abingdon, 1984), pp. 1–123.

⁵⁴ M. Berg, *The machinery question and the making of political economy 1815–1848* (Cambridge, 1980).

⁵⁵ Berg, p. 16. D. S. Landes, *The unbound Prometheus* (Cambridge, 1969).

⁵⁶ Berg, p. 90.

a history of domestic outwork and workshops rather than factories, of Birmingham toys and Sheffield cutlery rather than Lancashire cotton. It is a history of ways of life and work as much as efficiency and marginality. These are good, striking aims and represent an important attempt to reverse the hardening of the arteries that the economic history of the Industrial Revolution has suffered. But Berg's book is much better as a series of hypotheses than as a set of selective conclusions. Her targets are well chosen, but her shooting is a little wayward.

One problem with *The age of manufactures* is that it reads as a series of imperfectly connected essays. This may make it more useful as a textbook, but given the strength and relative novelty of her arguments it detracts somewhat from the book's purpose. Equally, some parts of the book subtract from rather than add to its aim. Her discussion of the perceptions of manufacturing by contemporary economists, which purports to show how well aware they were of the reality of economic life, is based on an unspecified selection of authors that ignores the jeremiads – the doubters and worriers who periodically complained that the economy was on the point of collapse. Secondly, Berg calls on Marx's model of primitive accumulation and the model of proto-industrialization to show that 'the period just before industrialization was characterized by a multiplicity of different organizational structures of manufacture. The resilience of these structures was determined by their own special adaptability to the market, but it was also significantly affected by a range of nonmarket values and institutions'.⁵⁷ Yet there are simpler, narrative means of arriving at such a position than by calling on the models of Marx and Mendels. The urge to unite theory and history sometimes gets the better of her in a fashion similar to new economic history.

Description and analytical categories do not always co-operate harmoniously or constructively in Berg's book. This is clearest in her attempts to pull economic and social history together. Few could challenge the importance and justness of this effort, but the chapter in which she attempts this in a concerted way (chapter 7, 'Custom and community in domestic manufacture and trades') is not successful. That chapter revolves around descriptions of solidarity among groups of workers, often in a local context, and of consumption as a 'form of social participation' able to 'convey the fine gradations of social class, age and hierarchy'.⁵⁸ But her descriptions of both community solidarity and consumption are imprecise. Her examples of collective action tend to show people behaving not so much in defence of a type of social life as in pursuit of wages, conditions of work and job security. Naturally, the sanction of the community or kinship networks mattered in that struggle, but a more important question is whether ways of life took precedence at any time over ways of work.⁵⁹ The way of life helped structure the nature of industrial workers' reactions to changes in methods of production, but it was not the only determinant of the strength of that action and did not alone determine when and where such action would be necessary. Attempts to enclose the commons could threaten both a way of life and work, as the Hammonds and Thompson showed.⁶⁰ Social life was important in structuring reactions to forces

⁵⁷ Berg, p. 91.

⁵⁸ Berg, p. 168.

⁵⁹ Most obviously, E. J. Hobsbawm, 'The machine breakers' in his *Labouring men* (London, 1968), pp. 5–22. See also J. G. Rule, *The experience of labour in eighteenth-century industry* (London, 1981), chapters 6 and 7.

⁶⁰ J. L. and B. Hammond, *The village labourer* (London, 1911). E. P. Thompson, 'The grid of inheritance: a comment', in J. Goody, J. Thirsk and E. P. Thompson (eds.), *Family and inheritance. Rural society in western Europe 1200–1800* (Cambridge, 1976), pp. 328–60. Thompson, 'The crime

making for economic change and were perhaps strong enough at times to prevent or restrict such changes. But Berg needs to adopt a more varied picture of social action. She tends to adopt a position of social determinism just as other historians are often economic determinists. The reality of the past almost certainly involves an elaborate web of social, economic, political and intellectual determinism. The shift from communal to individual economic life that we often assume accompanied the triumph of capitalism was complex and variegated. Berg is right to stress that 'the imperatives of the world of community cannot really be so separated off from the world of work', but is imprecise in detailing the importance of community in eighteenth-century economic history.

One particular strength of Berg's book is that she assaults the whig approach to the eighteenth-century economy by including a chapter on industrial decline. As she puts it, 'Industrial decline is a subject curiously neglected by economic historians who are generally more concerned to point out the triumphs of industrialization and the growth of new regions'.⁶¹ Perhaps, though, stagnant areas of the economy might also have been discussed – this would have allowed more 'shades of grey' than a simple growth/decline distinction. Many areas of the eighteenth-century economy trod water, roughly maintaining their position. London's economy, for example, though by-passed by the factories, nevertheless managed to remain pivotal to the economy as a whole and kept its share of national population. Berg follows most historians of the Industrial Revolution in ignoring the capital.

The questions Berg raises are better phrased than her answers. Those unhappy students struggling to understand the Industrial Revolution will probably find Crafts's book better medicine. Indeed, Berg's book operates within the broad outline provided by Crafts and attempts to isolate some of the factors that influenced dynamism, inertia and collapse. In that sense the two books are complementary, not competing interpretations. But Berg broadens the teleology in ways that Crafts does not by attempting a reconciliation of economic history with other disciplines. In that way her book is more novel and exciting than Crafts's. But, as she admits, 'There are many other gaps both in the general discussion and in the detailed history of the book'.⁶² In fact, we still know too little to be able to write convincingly the type of book Berg has attempted. Perhaps her effort will, as she hopes, spur others on.

Crafts has taken historians closer to being able to unpick the Gordian knot of the Industrial Revolution simply by describing more accurately its outer form. But its inner complexities still remain largely hidden. If the outer part of the knot has been untied, its heart remains intact and can only be tackled with new pieces of information and different perspectives. In the first place, a multidimensional chronology has to be applied to the Industrial Revolution, one where the classic period nestles with earlier and later pieces of transition. Both Crafts and Berg make some moves in this direction, but there is still a long way to go. Equally, respect will have to be paid to both change and continuity. Beyond that, the nature of markets needs detailing – how they worked and whether they changed. This will relate not only to economic, institutional or political factors but exactly to the communal and cultural factors Berg is concerned

of anonymity', in H. Day, P. Linebaugh and E. P. Thompson (eds.), *Albion's fatal tree* (Harmondsworth, 1977), pp. 255–344. E. P. Thompson, *Whigs and hunters. The origin of the Black Act* (Harmondsworth, 1977).

⁶¹ Berg, p. 109.

⁶² Berg, p. 20.

with. Distribution and exchange will have to be subjected to much more attention. To do this will almost certainly involve crossing and re-crossing the border between quantitative and qualitative evidence and method; old and new economic history have to get on better with one another. As a corollary to this need to study markets, historians will have to pay attention to the actual nature of decision making. In the drive for generalizations and analytical clarity, the economic history of the Industrial Revolution has often forgotten that an economy functions as the sum of individual decisions. The short term has been sacrificed to the idol of medium and long term. Generalizations have been produced not by accumulating particularities but by using a wide-angled lens. The nature of opportunities, risks and rewards faced by decision makers has been pursued at too general a level and in too whiggish a way. Micro, short-term studies will help put macro, long-term views into perspective. We have to understand much more clearly how farmers, businessmen and labourers saw opportunities and problems, how accurate those perceptions were and how they responded to them. And again, in places this can be a quantitative assessment but in others it cannot. The quantitative and qualitative approaches, in this period of economic history at least, are not competing methods but, because of the nature of evidence and the range of questions that need answering, mutually reinforcing ones. If the history of the Industrial Revolution can be statistical and literary, macro and micro, short, medium and long term, personal and impersonal, economic, social, political and intellectual, and can encounter a genuinely wide range of theory, then perhaps students will find it an exciting and exacting problem not an infuriating one.

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