From Damnation to Redemption: Judgments on the Late Victorian Entrepreneur*

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In the 1890's it became clear that Britain had lost the industrial leadership of the world to Germany and the United States. Each year the statistics of trade and output brought fresh evidence that the trend established in the 1870's of slower industrial growth in Britain than in the new industrial nations was continuing. New products and new markets were being developed by German chemists and salesmen and by American engineers and plant managers while British businessmen fought a rearguard action on economic battlefields where they had once stood unchallenged. Such military metaphors as this last flowed naturally from the pens of journalists and scholars describing this humbling experience, and there was much talk of commercial "invasion" and industrial "defeat." Anthropomorphic metaphors, as well, of "youthful" foreign nations usurping the place of "old" Britain, were called on to bolster the frail illusion of understanding the turn of events. And when metaphor proved unsatisfying, it was natural that attention should turn to the men at the top. When an army is outmaneuvered, who is to blame for its defeat but its incompetent generals? When an economy grows old, who is to blame for its decrepitude but its aging businessmen? Increasingly after the 1890's in the editorial columns of trade journals and in the pages of government reports, for one industry after another, blame for the British lag behind Germany and America was put on British management.

On the level of journalism and schoolbook history there is no difficulty in meting out praise or blame: if great entrepreneurs, independent of circumstances, were responsible for Britain's relative rise before 1870, then surely bad entrepreneurs must have been responsible for her relative decline after 1870. The reasoning involved is the same as that underlying the

*Without implicating him in the views expressed here, we should like to thank Peter Lindert of the University of Wisconsin for his incisive comments on a draft of this essay.

perennial political cry in troubled times, "throw the rascals out." When the British cotton textile industry fell on bad times after World War I, it was suddenly discovered that entrepreneurs before the war had lacked foresight. Similarly the once lionized New England cotton textile managers were found to be incompetent when their industry began to shrink in the face of Southern competition.[1] The American coal industry, whose technical efficiency was renowned the world over before World War I, was found by the Coal Commission of the troubled 1920's to have fatal flaws in management. In short, any competitive rise or fall in an industry's output is in this view attributable to good or bad management. The British decline, then, was seen to be a clear case of bad management.

A more sophisticated view was that bad management, although important, was nonetheless only a part of the reason for Britain's relative decline. A number of contemporary intellectuals, from all sections of the political spectrum, among them Hobson, Veblen, and Marshall, took this position. In 1903, Marshall, for example, wrote:

> Sixty years ago England had . . . leadership in most branches of industry. . . . It was inevitable that she should cede much . . . to the great land which attracts alert minds of all nations to sharpen their inventive and resourceful faculties by impact on one another. It was inevitable that she should yield a little of it to that land of great industrial traditions which yoked science in the service of man with unrivalled energy. It was not inevitable that she should lose so much of it as she has done.[2]

Marshall's great student, Clapham, chided the less rational of the critics of British performance for judging entrepreneurial skill by the mere size of American versus British output: "Half a continent is likely in course of time to raise more coal and make more steel than a small island, although this fact still surprised people between 1890 and 1910."[3] Yet for all his

[1] See Irwin Feller, "The Draper Loom in New England Textiles, 1894-1914: A Study of Diffusion of an Innovation," *Journal of Economic History*, 16 (September, 1966), 320-47, and L.G. Sandberg, "Comment" (on Feller's article), *Journal of Economic History*, 18 (December, 1968), 624-27.

[2] "Fiscal Policy of International Trade," in Alfred Marshall, *Official Papers* (London: Macmillan, 1926), p. 405. Cf. his *Principles of Economics*, 8th ed. (London: Macmillan, 1920), p. 298 ff. and *Industry and Trade*, 4th ed. (London: Macmillan 1923), p. 86 ff. Also T. Veblen, *Imperian Germany and the Industrial Revolution* (New York: Macmillan 1915), p. 128 and J. Hobson, *Incentives in the New Industrial Order* (New York: Thomas Seltzer, 1923), pp. 78-83.

[3] J.H. Clapham, *An Economic History of Modern Britain*, vol. III, (Cambridge: Cambridge University Press, 1938), p. 122.

reasoned caution and carefully balanced examples, Clapham too believed that he had uncovered case after case of less than satisfactory management in steel, in coal, in textiles, and in the new industries. A student of his, Duncan Burn, developed this theme in detail for the steel industry, in his influential book, *The Economic History of Steelmaking 1867-1939, A Study in Competition*, which formed the capstone of the Marshallian tradition in the study of entrepreneurial failure.[4]

The heirs of Hobson, occupied with labor and social history, had less to say on the subject, although they could not be blamed for noting when the occasion arose that the capitalists themselves believed their house to be in disarray. It was the heirs of Veblen and Schumpeter, taking a sociological view of the matter, who in the 1950's carried on the development of the hypothesis of entrepreneurial failure. An important factor in this work was a group of economic historians, especially Americans, who developed the argument in the late 1940's and 1950's that the linchpin of economic history is the entrepreneur.[5] With the revival at about the same time of general scholarly interest in the performance of the late Victorian economy, the British entrepreneur became a case in point.[6] The most forceful and eloquent application of the entrepreneurial approach to Britain was David Landes' contribution to *The Cambridge Economic History of Europe*, published in 1965.[7] Building on an earlier piece presented in 1954

[4](Cambridge: Cambridge University Press, 1940). Cf. T.H. Burnham and G.O. Hoskins, *Iron and Steel in Britain, 1870-1930*. (London: Allen and Unwin, 1934), who concluded, after a lengthy assessment of the extenuating circumstances, that "if a business deteriorates it is of no use blaming anyone except those at the top" (p. 271).

[5]The center for this work was the Harvard Business School, which published the movement's journal, *Explorations in Entrepreneurial History*. Arthur H. Cole was one of the key figures and his paper "An Approach to the Study of Entrepreneurship," *Journal of Economic History*, 6 (Supplement, 1946), 1-15, reprinted in Frederic C. Lane and Jelle C. Riemersa, eds., *Enterprise and Secular Change: Readings in Economic History* (Homewood, Illinois: Irwin, 1953)—itself an important text for the new approach—is a good statement of the central argument.

[6]This revival in interest was largely a result of an apparently solid statistical case for British economic failure presented by E.H. Phelps-Brown and S.J. Handfield-Jones and D.J. Coppock. See Phelps-Brown and Handfield-Jones, "The Climacteric of the 1890's: A Study in the Expanding Economy," *Oxford Economic Papers*, (October, 1952), 266-307, and Coppock, "The Climacteric of the 1890's: A Critical Note," *Manchester School*, 24 (January, 1956), 1-31. Coppock successfully moved the climacteric from the 1890's to the 1870's. For a recent summary of the issue, see S.B. Saul, *The Myth of the Great Depression, 1873-1896*, (London: Macmillan, 1969).

[7]"Some Reasons Why," pp. 553-84 in David S. Landes, "Tech-

to a conference sponsored by the Harvard University Center in Entrepreneurial History ("Entrepreneurship in Advanced Industrial Countries: The Anglo-German Rivalry"), Landes crystallized the long-standing argument that the contrast between German and American industrial triumphs and British defeats could best be explained by emphasis on "the importance of this human factor—the success of entrepreneurial and technological creativity on one side, the failure on the other."[8] Similar conclusions emerging in the 1960's from other publications, such as Derek Aldcroft's influential article "The Entrepreneur and the British Economy, 1870-1914," published in 1964,[9] added up to a broad indictment of British entrepreneurs in the late nineteenth century, namely, that:

(1) They failed to adopt the best available techniques of production in many industries, ranging from ring-spinning and automatic weaving in cotton to the mechanical cutter and the electrification of mines in coal.

(2) They underestimated the growing importance of science, investing little in laboratories and technical personnel for research or for the effective exploitation of foreign research.

(3) They overinvested in the old staple export industries such as cotton and iron, and were slow to move to the industries of the future such as chemicals, automobiles, and electrical engineering.

(4) They were bad salesmen, especially abroad.[10]

(5) They were insufficiently aggressive in organizing cartels to extract monopoly profits from the world at large.

The development of this damning catalogue marked the high point in the historiographic career of the hypothesis of entrepreneurial failure, for although accorded the honor of serious consideration in many writings on the Victorian economy by this time the hypothesis was already under attack from several quarters.[11]

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nological Change and Development in Western Europe, 1750-1914," chapter 5 in H.J. Habakkuk and M. Postan, eds., *The Cambridge Economic History of Europe*, vol. VI, (Cambridge: Cambridge University Press, 1965), reprinted with minor revisions and an extension to the present in Landes, *The Unbound Prometheus*, (Cambridge: Cambridge University Press, 1969).

[8] Landes, "Some Reasons Why," p. 582.

[9] *Economic History Review*, 2nd ser. 17 (August, 1964), 113-34.

[10] A seminal work in the transformation of this allegation from journalistic to scholarly opinion was R.J.S. Hoffman's *Great Britain and the German-Trade Rivalry, 1875-1914* (Philadelphia: University of Pennsylvania Press, 1933), which used British consular reports to paint a singularly unfavorable picture of British salesmanship in Latin American, continental, and other markets invaded by the Germans.

[11] Opinions in the textbooks of the last decade or so are a useful barometer of professional opinion on this matter. R.S. Sayers, *A History*

The first line of attack was to admit that late Victorian entrepreneurs did in fact neglect to install the best available industrial equipment, but to explain this neglect in terms other than entrepreneurial failure, shifting the explanation from sociological to economic variables. One such variable, which Veblen himself thought important, while not on this account foregoing the pleasure of damning British entrepreneurship, was the age of British industrial equipment. Britain, it was argued, was burdened with the equipment of an earlier generation of industrial technology while foreign late-comers to industrialization had the advantage of a fresh start. An oft-cited example of the burden of the past is the alleged inefficiency of Britain's tiny coal cars on the railways. The difficulty with moving to larger coal cars was that of "interrelatedness," as Frankel called it in an influential article on the economic burden of the past:[12] sidings, loading equipment, tracks, and so on were designed to accommodate the small cars, and consequently changing the cars would require massive investment in these interrelated pieces of equipment as well. Charles Kindleberger, in his stimulating if inconclusive *tour de force*, *Economic Growth in France and Britain, 1851-1950*,[13] favored an institutional rather than a technolog-

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of Economic Change in England, 1880-1939, (London: Oxford University Press, 1967), and W.H.B. Court, *British Economic History 1870-1914, Commentary and Documents* (Cambridge: Cambridge University Press, 1965), were largely silent on the issue. The rest devoted a good deal of attention to it. W. Ashworth, *An Economic History of England 1870-1939* (London: Methuen, 1960), thought the suggestion "that leaders of business and technology were less ingenious and adaptable than either their fathers or their foreign contemporaries . . . a very doubtful one" (p. 241). E.J. Hobsbawm, *Industry and Empire* (London: Pantheon, 1968), agreed finding the several versions of the sociological explanation "all quite unconvincing" (p. 153). S.B. Saul, *The Myth of the Great Depression*, cited above, was willing to grant entrepreneurship a residual role, but a small one (see p. 46 ff). P. Mathias, *The First Industrial Nation* (London: Methuen, 1969), was more sympathetic to the hypothesis: "Undoubtedly, however, such failure to innovate was wide-spread and undoubtedly the more aggressive adoption of new techniques would have led to greater industrial investment and possible to better records in exports" (p. 415). Cf. S. Pollard and D.W. Crossley, *The Wealth of Britain 1085-1966* (New York: Schocken, 1969), p. 227.

[12] M. Frankel, "Obsolescence and Technological Change in a Maturing Economy," *American Economic Review*, 45 (June, 1955), 296-319. See also D.F. Gordon, "Obsolescence and Technological Change: Comment," *American Economic Review*, 46 (September, 1956), 646-52, and Frankel's "Reply" following Gordon.

[13] (Cambridge, Mass.: Harvard University Press, 1964), especially chapters 6 and 7. See also C.P. Kindleberger, "Obsolescence and Technical Change," *Oxford Institute of Economics and Statistics*, Bulletin no. 23 (August, 1961), pp. 281-97.

ical version of the hypothesis. The difficulty, Kindleberger argued, was not so much that large investments were needed to overcome the disadvantages of Britain's early start in industrialization, but that the benefits and costs of the investments were not centered in one economic unit. The railways, for example, owned the sidings, but the collieries owned the coal cars. Consequently, as in the technological version of the hypothesis, the long-standing neglect of the larger cars was rational from the point of view of the individual entrepreneurs involved.

Although one might well doubt that these obstacles to fresh investment could be large enough to offset the advantage Britain got from having the capital to begin with before her rivals and still more that the obstacles would necessarily be greater in Britain than elsewhere,[14] both forms of the interrelatedness argument have been mildly fashionable. For all their fashionability, however, little work has been done to establish their quantitative significance, leaving supporters of the entrepreneurial hypothesis free to attribute some substantial part of the reluctance to install new industrial equipment to entrepreneurial failure. The only attempt to show that interrelatedness was quantitatively significant, indeed, is a paper by Paul David applying the argument in both the technological and institutional form not to industry but to agriculture.[15] David's success in explaining the British lag in the adoption of the mechanical reaper on these grounds, however, says little about the applicability of the argument outside of agriculture, for interrelatedness is peculiarly a problem of capital in land. Farmers as a group have to work with land as they find it, in the case of nineteenth century Britain with land in the ridge-and-furrow configuration appropriate to earlier agricultural techniques but highly inappropriate to an age of drainpipes and mechanical reapers. Industrialists, however, need not work with the equipment of their predecessors: unlike the farmer with his land, they can abandon their old plant and equipment.

A similar paucity of quantitative evidence has dulled the impact of the

[14] The existence of small coal cars on the railways, by the way, seems a doubtful example on which to base the argument: the cars are still small to this day, twenty years after nationalization and eighty years after their alleged economic inferiority first emerged.

[15] "The Landscape and the Machine: Technical Interrelatedness, Land Tenure, and the Mechanization of the Corn Harvest in Victorian Britain," in D. McCloskey, ed., *Essays on a Mature Economy: Britain After 1840, Papers and Proceedings of the MSSB Conference on the New Economic History of Britain, 1840-1930*, (London: Methuen, 1971). See the discussion following the paper for a balanced assessment of how well David made his case.

attempt to focus attention on another variable, the growth of demand. Slower aggregate growth in Britain than in the industrializing countries may have meant that it was rational to keep an older capital stock: a slowly growing capital stock, like a slowly growing human population, has a higher average age and therefore includes less up-to-date components. This explanation, based again on the allegedly antique character of British equipment, was a popular alternative to entrepreneurial failure among contemporaries,[16] especially for the steel industry, where it seemed most likely to apply, and has been adopted by subsequent doubters of the entrepreneurial hypothesis such as I. Svennilson and H. J. Habakkuk.[17] Like the interrelatedness argument, the age-of-capital argument received its formal theoretical baptism in the 1950's long after it had been proposed in the historical literature, emerging as technological change "embodied" in new capital equipment. And again, only one attempt has been made to use the logic developed in the theoretical literature to derive an estimate of its quantitative significance, by Peter Temin in "The Relative Decline of the British Steel Industry, 1880-1913" published in 1966.[18] Temin arrived at the startling conclusion that slower British growth could account for a 15% lag in productivity in steelmaking behind that of Germany and America, a large enough effect, were it true, to destroy the hypothesis of entrepreneurial failure: a 15% difference is surely enough to account for any difference attributable to bad management. Fortunately for the hypothesis of failure, it is not true. Temin's argument rests on two demonstrably false propositions: first, that productivity growth in the American steel industry was 3% per year (in fact it was only 1.3% per year); second, that productivity change fell in proportion to the fall in the growth of output in Britain (in fact it did not).[19] These and other revisions reduce the estimate of the embodiment effect from 15% to less than 1%.

[16] Such as S.J. Chapman, speaking of steel in *Foreign Competition* (1904), p. 4, quoted with approval in H.J. Habakkuk, *American and British Technology in the 19th Century*, (Cambridge: Cambridge University Press, 1962), p. 208: "The up-to-date character of many American works is as much an effect as a cause of the expansion of the industry in America."

[17] Svennilson, *Growth and Stagnation in the European Economy* (Geneva: 1954), p. 123, and Habakkuk, *American and British Technology*. See Landes' review of Habakkuk's book, D.S. Landes, "Factor Costs and Demand: Determinants of Economic Growth," *Business History*, 7 (January, 1965), 15-33.

[18] In Henry Rosovsky, ed., *Industrialization in Two Systems: Essays in Honor of Alexander Gerschenkron* (New York: Wiley, 1966).

[19] See D. N. McCloskey, "Economic Maturity and Entrepreneurial Decline: British Iron and Steel 1870-1913" (unpublished Ph.D. disserta-

The various attempts to explain the neglect of the newest equipment on economic grounds, then, did not succeed in dislodging the hypothesis of failure. The difficulty was that the new variables were usually introduced in the same non-quantitative way that adherents of the hypothesis of failure introduced entrepreneurship itself. In his development of the hypothesis Landes discussed a variety of economic arguments; discarding them one by one on qualitative grounds to arrive at his final result. Kindleberger's and Habakkuk's methods in developing alternative hypotheses were similar, carrying the discussion through casual empiricism and more or less cogent reasoning on the alternative arguments suggested in the literature towards the one position that seemed to them tenable. Another example of this procedure is a book by A. L. Levine, *Industrial Retardation in Britain, 1880-1914*, published in 1967.[20] Apparently unaware of Landes' work, Levine nonetheless reached much the same conclusion by much the same route. After arguing, in the manner of Landes, that there existed a lag of British industry behind German and American industry in matters of technology and organization, Levine marshalled a good sample of contemporary and retrospective testimony on the various possible explanations, discarded them in sequence, and came finally to the judgment that the "technical and organizational lag in British industry was, more than anything else, a question of entrepreneurial responses."[21] This sort of *qualitative* argument by isolation has the critical difficulty that the size of the isolated residual variable, whether sociological or economic, is left a matter of faith rather than fact. Few who were not already convinced of the importance of entrepreneurship would be converted to the faith by Levine's argument, or even by Landes' more sophisticated and eloquent argument, because it does not rest on some indubitable line of fact or logic. At each step the reader is invited to accept without quantitative evidence a judgment on the quantitative significance of an alternative factor in order to arrive at the final result that the effect of the residual factor, whether entrepreneurship, interrelatedness, or embodiment, was "large."

The uncertainties in using a qualitative argument to arrive at a quantitative result are common enough in historical writing, although a sanguine observer might hope that economic history, with its potential for drawing on clear economic theories and concrete economic facts, would be able to

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tion, Harvard University, April, 1970), chapter 6. A revised version of this dissertation is to be published as a book by the Harvard University Press.

[20] (London: Weidenfield & Nicholson, 1967).

[21] Levine, *Industrial Retardation*, Levine emphasizes the embodiment argument as a contributing factor, as did Habakkuk.

avoid them more often than it does. The theories were clear in the economic alternatives to the hypothesis of entrepreneurial failure, but the facts for making them general explanations were lacking. The entrepreneurial hypothesis itself was built on a somewhat narrow base of fact, consisting of the one presumably well-founded case of failure in iron and steel provided by Burn's book and a few considerably less well-founded cases in chemicals, electrical engineering, and a handful of other industries.[22]

The second line of attack on the hypothesis of failure consisted of a broadening of this base of fact through the detailed narrative study of the performance of individual industries. Although not directed at this particular issue alone, the narrative studies greatly modified the picture of poor entrepreneurship. S. B. Saul led the attack with a series of papers centering on the engineering industries, published over the last decade or so,[23] and this approach reached a climax in the publication of a set of industry studies in 1968 entitled *The Development of British Industry and Foreign Competition 1875-1914*[24] under the editorship of one of the framers of the hypothesis of entrepreneurial failure, D. H. Aldcroft. There was much in these essays, in Saul's work, and in similar work elsewhere[25]

[22] Burn's and Burnham and Hoskin's books (cited earlier) on the steel industry were the only full-length studies of entrepreneurial failure in an industry until recently, and it was natural that the framers of the entrepreneurial hypothesis drew on them heavily. One index of the steel industry's dominance in the literature on entrepreneurial failure is that some third of the footnotes in an early version of Landes' sub-chapter, "Some Reasons Why," in his contribution to the *Cambridge Economic History of Europe*, vol. VI (same title, comprising chapter 3 in "Entrepreneurship in Advanced Industrial Countries: The Anglo-German Rivalry," cited above) deal with it. But the gross output of iron and steel was only 4.4 percent of national income in 1907.

[23] S.B. Saul, "The American Impact on British Industry, 1895-1914," *Business History*, 3 (December, 1960), 19-38; "The Motor Industry in Britain to 1914," *Business History*, 5 (December, 1962), 22-44; "The Export Economy 1870-1914," *Yorkshire Bulletin of Economic and Social Research*, 5 (May 18, 1965); "The Market and the Development of the Mechanical Engineering Industries in Britain, 1860-1914," *Economic History Review*, 2nd ser. 20 (1967); "The Machine Tool Industry in Britain to 1914," *Business History*, 9 (January, 1968), 22-43; "The Engineering Industry" in Aldcroft, ed., cited below.

[24] (London: Allen and Unwin, 1968).

[25] Such as R.A. Church, "The Effect of the American Export Invasion on the British Boot and Shoe Industry," *Journal of Economic History*, 28 (June, 1968), 223-55, and A.E. Harrison, "The Competitiveness of the British Cycle Industry, 1890-1914," *Economic History Review*, 2nd ser. 22 (August, 1969), 287-303.

to support the hypothesis, but only in a mild and modified form. Saul argued that the consulting engineer system was an important cause of economic inefficiency in the making of railway engines and automobiles, but rejected the typically uniform condemnation of British entrepreneurship in these industries, as well as in machine tools and electrical engineering. A similar revision of the journalistic picture of widespread failure emerged from work on cotton textiles, shipping, and other industries. Indeed, Aldcroft's own indictment of British entrepreneurs was substantially less sweeping in his introduction to the 1968 volume than it had been in his earlier work, although he still insisted that entrepreneurial failure characterized a good part of industry:

> [T]he fact that some industrialists were slow to adopt new techniques does not necessarily mean that they were inefficient or lacked enterprise. . . .
>
> On the other hand, neither must one adopt an unduly complacent attitude when discussing the performance of British business in this period. As we have already seen there was considerable room for improvement in many branches of British industry. . . . But the problem was not always simply one of a failure to innovate on the part of industrialists.[26]

Earlier industry studies, such as Burn's on iron and steel, had yielded the conclusion that entrepreneurs had failed; apparently close study of other industries along similar non-quantitative lines could yield the opposite conclusion on British performance in the aggregate. It was perhaps Charles Wilson's close study of the marketing successes of Unilever in soap, for example, that motivated him to propose an interpretation of British performance precisely the reverse of the hypothesis of failure: he argued that over a substantial part of British industry, especially among the "miscellaneous industries and incorporeal functions," as Giffen called them, vigorous entrepreneurship prevailed.[27]

As close as Wilson's position on entrepreneurial failure is to his own, Saul remarks at one point in his useful survey of the period, *The Myth of the Great Depression, 1873-1896*, that he is not convinced by Wilson's essay because Wilson "argues by example."[28] This is a common criticism and is valid not only for Wilson's work, but for Saul's own, and that of

[26] Aldcroft, ed., *Development of British Industry* p. 34f.

[27] C. Wilson, "Economy and Society in Late Victorian England," *Economic History Review*, (August, 1965), 183-98. See also his *The History of Unilever* (New York: Prager, 1968) [first published by Cassell and Co., Ltd., 1954], vol. I, especially Part I.

[28] Cited above. The quoted phrase is in the useful annotated bibliography, p. 62.

virtually all the disputants, at least to the extent that they wish to draw general inferences for or against British entrepreneurs from their own particular sample of entrepreneurial performance. A case, after all, is merely a case, and little effort has been expended in constructing a truly random sample of British behavior, properly weighted for the importance of each industry. The rules of the game of example and counterexample, indeed, discourage a random choice of cases: in comparing British with German enterprise, supporters of the hypothesis of failure have felt free to ignore the apparently clear cases of good performance of British agriculture and retail trade, while opponents of it have until recently remained silent on the apparently clear cases of poor performance in the slow adoption of ring-spinning in cotton and the basic process in steel. Short of a truly random sample of sectors to be studied intensively or a national assessment of performance based on productivity in creating national income, larger samples, whether statistical in nature or not, are of little help. The industries in W. Hoffmann's index of industrial output, to take as an example a vein of data that has been worked hard and long by students of the period, do not constitute a random sample of the statistical universe of British entrepreneurial performance, weighted as they are towards old industries making commodities and away from new industries providing services. International comparisons of productivity using similar indices of output in the United States and Germany would yield biased readings: it could well have been that as a mature industrial nation in 1870 Britain already had achieved an advanced technology in the basic industries of the industrial revolution and was well advised to concentrate the search for productivity improvement in services and light industries, which are under-represented in the standard indices of industrial output.

One swallow, then, does not make a summer, nor do scattered cases of entrepreneurial success or failure make or break the hypothesis of general entrepreneurial failure. More important still, while the first, economic attack on the hypothesis had the enlightenment of economic theory without the discipline of economic fact, the second, narrative attack too often consisted of fact without theory. The facts in the sources were brought to life with makeshift economics or, worse yet, the economic logic of the sources themselves. The judgment of acquittal of the British cotton textile managers rendered by R.E. Tyson on the charge that they irrationally ignored ring-spinning, for example, rested primarily on the testimony of Melvin Copeland in 1912.[29] Copeland was reputable and well-informed,

[29] R.E. Tyson, "Cotton Textiles," in Aldcroft, ed., p. 122. Compare M. Copeland, *The Cotton Manufacturing Industry of the United States* (Cambridge, Mass.: Harvard University Press, 1912), especially pp. 66-73 and 90-92.

and as it happens his impressionistic assessment of the economics of ring-spinning can be verified by more cogent methods,[30] but to accept his assessment without further inquiry is to accept his implicit economic theory, that is to say, his particular brand of the more or less vague and contradictory intellectual machinery of makeshift economics. Without redoing the economics and reevaluating the facts, there is little reason to accept his favorable judgment over the unfavorable judgment of many equally qualified observers of the industry.

Furthermore, the manner of proof in the work of Saul, Wilson, and the rest was similar to that in the work of Landes and Aldcroft in that it attempted a qualitative rather than a quantitative isolation of entrepreneurial performance. The same measures of performance were used, namely an industry's output or an industry's speed in adopting allegedly critical innovations indicative of entrepreneurial skill. Neither of these measures is adequate on theoretical grounds, the measures of output because they confound influences of demand with those of supply and the measures of indicative innovations because they neglect the variability in the advantage to be gained from different innovations in different countries. The flaw in using a mere output measure to gauge entrepreneurial performance is clear enough, despite its perennial popularity. The use of indicative innovations—such as ring-spindles and automatic looms in textiles, machine cutters in coal, and the basic process in steel—is less obviously flawed. The usual way of identifying these innovations is to rely on hindsight together with the faulty lemma that any innovation eventually adopted should have been adopted, if it was available, earlier. Clapham remarked of the basic process in steel, for example, that "it is hard to believe that a process employed so extensively in 1925 and 1913 might not have been employed to advantage rather more than it was in 1901 and earlier."[31] This may well be true, but the mere fact that the process was adopted in 1925 sheds little light on the appropriateness of adopting it in 1901.

What is required, but is seldom forthcoming in works using such measures to damn or praise British entrepreneurs, is a close examination of the economics of each innovation, to determine whether something other than entrepreneurial vigor might account for the rate of adoption in Britain and abroad. Interpreting indicative innovations as reflections of vigor often yields absurd implications. The by-product coke oven was

[30] Cf. L.G. Sandberg, "American Rings and English Mules: The Role of Economic Rationality," *Quarterly Journal of Economics*, 83 (February, 1969), 25-43.

[31] J. H. Clapham, *Economic History of Modern Britain*, p. 148.

adopted first in Germany, next in Great Britain, and last in the United States, and the lag of Britain behind Germany has been used to support the argument for entrepreneurial failure in Britain. But few would suggest that American entrepreneurial vigor in steel was inferior to British, despite the slower adoption of the by-product oven in America. Apparently, then, the rate of adoption reflects the ranking of some other variable among the three countries—perhaps the price of labor relative to coal—rather than the ranking of entrepreneurial quality. The point applies to other indicative innovations as well. Before they can be used as indicators of entrepreneurial ability the record of adoption of each must be examined for the influence of less intriguing but more measurable variables. To use output or indicative innovations as measures of performance without the necessary theoretical and empirical groundwork leaves in doubt the very fact to be explained, the existence of British failures in entrepreneurship.

The most recent development in the debate on the entrepreneurial hypothesis has been a direct attack on this premise that there were indeed economically relevant failures, an attack grounded in economic theory and using quantitative information relatively intensively. The present writers have contributed to this work,[32] and other work of a similar nature by Roderick Floud, Charles Harley, Peter Lindert, and Keith Trace is published in a volume of papers and discussion arising out of a conference on quantitative British history held in 1970.[33]

The assertions of failure imply a comparison with superior performance elsewhere, and the standard of comparison used most often in earlier work is the performance of entrepreneurs in Germany and the United States. The new quantitative work has adopted as well the pro-

[32] D. N. McCloskey, "Productivity Change in British Pig Iron, 1870-1939," *Quarterly Journal of Economics*, 82 (May, 1968), 281-96; L.G. Sandberg, "American Rings and English Mules," cited above; D.N. McCloskey, "Did Victorian Britain Fail?" *Economic History Review* 2nd ser. 23 (December, 1970) 446-59; L.G. Sandberg, "Lancashire in Decline," unpublished book-length manuscript; and D. N. McCloskey, "Economic Maturity and Entrepreneurial Decline: British Iron and Steel 1870-1913," cited above.

[33] McCloskey, ed., *Essays on a Mature Economy*, cited above, including Roderick Floud, "Changes in the Productivity of Labour in the British Machine Tool Industry," Charles K. Harley, "The Shift from Sailing Ships to Steamships, 1850-1890," and Peter H. Lindert and Keith Trace, "Yardsticks for Victorian Entrepreneurs." Other studies in this volume bearing directly on the hypothesis of failure are the paper by Paul David mentioned above and a paper by one of the present writers, D.N. McCloskey, "International Differences in Productivity: Coal and Steel in America and Britain before World War I."

cedure used in the older literature of comparing performance in Britain and abroad one industry at a time. As inadequate as this procedure is for proving or disproving the hypothesis of entrepreneurial failure in the aggregate, ignoring as it does the possibility that British performance was better or worse in other industries, it is adequate for the purpose of accepting or rejecting the particular allegations of failure made in the previous literature.

To measure the distance between British and foreign performance a measuring rod is needed. Two related questions are involved, both of which require a quantitative measure of performance. First, assuming that there were failures, were they important for the performance of the British economy as a whole? To prove that British businessmen neglected certain new techniques in production and marketing does not prove that this neglect was of great consequence for the British economy. Second, were there in fact failures? That is, whether or not it would have made a great deal of difference to the economy as a whole, would British businessmen have done better to adopt American and German habits of enterprise? The measuring rod used in the new quantitative work to answer these questions is the profit foregone by choosing British over foreign methods. The adoption of foreign methods, in other words, is viewed as a potential investment, and entrepreneurial failure as a failure to make such investments as were profitable. The existence of profitable but unexploited investments is used to gauge whether British entrepreneurs could have done better, and the size of the foregone earnings to gauge the significance for economic growth of their failures to do so, a reasonable enough approach, for if these failures did not yield lower profits they are failures only in a peculiar sense of the word.

In applying the criterion of the profitability of imitating foreign methods, the new work has distinguished carefully between prospective and retrospective opportunities for profit. The point is sometimes made that Britain's traditional attitudes towards new techniques in production and marketing, and towards cartels, research, and new industries, were profitable enough in the pre-war economic world, but proved disastrous afterwards. It is surely driving the theme of the irony of history too far, however, to expect British entrepreneurs to have anticipated in 1913 the trick history was about to play on them. Indeed, a truly prescient entrepreneur in, say, cotton textiles would have avoided investment in virtually any type of cotton equipment in the years just before 1913, certainly in the very capital intensive automatic looms: if the unforseeable events of the 1920's and 1930's are to be made retrospectively foreseeable almost any case of slow adoption of new machinery becomes a rational anticipa-

tion of the collapse of Britain's traditional exports. That is, one cannot have it both ways, criticizing British entrepreneurs on the one hand for not investing in capital intensive new methods in the making and marketing of the old staple exports and on the other for putting too much capital into the very same industries. In any case, the issue is what investments in imitation British entrepreneurs could have made that would have been profitable, from their point of view at the time the decisions were made.

Any of the alleged categories of failure could be examined from this point of view, although in fact only one, the putative failures to adopt the best available technique of production, has been so examined in the new work. The opportunities foregone in neglecting the best technique have been expressed in a variety of ways and this gives a misleading impression of heterogeneity of purpose in the new work. The various measures used are essentially identical. Higher profits can be achieved if more output can be produced with the same inputs, that is, if productivity can be raised. The measuring rod for entrepreneurial failure, then, can be expressed indifferently as the money amount of profit foregone, as the proportion by which foreign exceeded British productivity, as the distance between foreign and British production functions, or as the difference in cost between foreign and British techniques. All of these give the same result and each can be translated exactly into any one of the others. The only fundamental methodological variety in the studies is that some deal with particular innovations, such as the ring-spindle or the steamship, and others with entire industries. When the accusations of entrepreneurial failure are confined to a number of readily identifiable innovations, the logic of comparing actual and potential productivity can be applied to these alone. Peter Lindert and Keith Trace, for example, measured the profit foregone, expressed as an absolute money amount, in the slow adoption of the Solvay soda process in British chemicals. Charles Harley reconstructed the production and cost functions for sail and steamships, through which he was able to examine the speed with which entrepreneurs replaced one with the other as their relative profitability changed.[34] When the accusations of failure are made for an industry's entire mode of doing business the comparisons must be broader. Roderick Floud, for example, measured productivity change over time in a British machine tool firm,

[34] Other examples of single-innovation studies are McCloskey's "Economic Maturity and Entrepreneurial Decline," Chapter 4 (on the basic process of steelmaking), Sandberg's "American Rings and English Mules," and David's "The Landscape and the Machine" (on the mechanical reaper), all cited above.

with a view in part to comparing that performance with performance elsewhere.[35] But the underlying logic in all the studies is uniform.

So too, on the whole, are their findings. Taken together, the quantitative work is most damaging to the hypothesis of entrepreneurial failure, rejecting repeatedly the presumption of missed opportunities underlying the hypothesis. From one point of view the findings are not very surprising, for any significant gain in output to be had from adopting foreign methods would yield a much larger proportional gain in profits to alert entrepreneurs, profits which would be proportionately larger the smaller was the initial share of entrepreneurial profits in costs. Technical communication in the late nineteenth century was surely good, and if businessmen could not be convinced of the superiority of a new technique through reading their trade newspapers, the ringing cash register of even one competitor who did become convinced would do the job. The only case of entrepreneurial failure quantified in detail by the new studies, the slow replacement of the Leblanc soda process in preference to the Solvay process, documented, along with several successes, in the paper by Lindert and Trace, makes the point, for British soda-making was in the hands of a tightly organized cartel protected by substantial barriers to entry after 1890. But in a competitive milieu, even a brief period of irrationality would be eroded by the expansion of better managed firms, and there is little doubt that the British economy was on the whole competitive. In cotton textiles, for example, there is no evidence that firms installing automatic looms at the time the industry was beginning to be criticized for ignoring them, in the first decade of the twentieth century, expanded faster or made larger profits than their more conservative competitors.[36] This fact by itself, even without the confirming calculation of profitability, suggests that the slow conversion to automatic looms was a rational response to economic conditions, not a failure.[37]

From another point of view it is indeed somewhat surprising that only one minor failure was detected in these many studies, for there must

[35] See also D.N. McCloskey, "Productivity Change in British Pig Iron" and "Did Victorian Britain Fail?" cited above.

[36] Cf. Sandberg, "Lancashire in Decline," Chapter 4.

[37] This argument is relevant to a subsidiary hypothesis in the literature, that Britain as a whole in the late nineteenth century suffered from the disinterest of the third generation of industrial dynasties in making profits. In a competitive milieu the social loss from this behavior, which is the loss from the mismanagement of the real capital in the hands of indolent grandsons, is minimized by the entry of new firms, the declining market shares of the old, and the hiring of competent managers by wealthy heirs who know their own limitations.

surely be no country at any time that has not experienced to some degree the consequences of mistakes and irrationalities on the part of its businessmen. The relevant historical question is whether one can explain the different pattern of economic growth in Britain contrasted with Germany and the United States by the difference in the amount of entrepreneurial failure. In order to be able to accomplish this, the failures must have been larger in Britain than elsewhere and must have been important. The new quantitative studies are, of course, subject to error. But within any reasonable bounds of the error, there is little doubt that in the industries examined the failures, if they existed, were neither large nor important. The social loss from poor management is the lost output. If the lost output was as much as five percent in the basic industries usually considered poorly managed—steel, coal, cotton, chemicals and railways—British national income would have been lower than it could have been by only a little over one percent.[38] It might well be inferred from these studies, in short, that the hypothesis of relatively slow adoption of new techniques has little to contribute to the understanding of British growth in the later nineteenth century.

The new quantitative work represents a substantial advance in the understanding of the late Victorian economy, but it is not beyond criticism. The advance in precision is sometimes gained at the expense of a narrow focus on the question of how rapidly British entrepreneurs adopted new processes of production, neglecting the other items in the catalogue of failure. The proponents of the hypothesis of failure have not satisfactorily demonstrated that there was indeed underinvestment in research, in the new industries, in marketing or in the formation of cartels. But whether they have established their case or not these issues would deserve treatment in a full study of the hypothesis, and could indeed be treated in much the same way as investments in new processes. Although the economic theory of the adoption of new processes is unusually well-developed, there are nonetheless adequate tools available for putting many of the other assertions into testable form.

The assertion that there was underinvestment in the new industries, for example, is not difficult to test. One relevant statistic would be the marginal rate of return on the capital that was in fact invested in them: if

[38] The value of output of these industries in 1907 was roughly £500 million. Five percent of £500 million is £25 million, or 1.2 percent of 1907 national income. The source for the value of output is the 1907 census of production. For a full development of the argument see McCloskey, "Economic Maturity and Entrepreneurial Decline," Chapter 1, cited above.

it was unusually high, the argument would deserve some consideration, and the appropriate weight to be put on it in explaining British growth could be inferred from the income to be gained from eliminating the disparity in marginal returns. The alleged British inability to form cartels and extract monopoly gains from the world at large, as it is said the Germans did, can be tested as well. Late in the period at least the British exhibited more skill in this regard than they have usually been credited with—witness Lever in soap and Cortauld in rayon.[39] It may be doubted, too, whether the gains in foreign markets would offset the misallocation from monopoly in domestic markets. In any case, the extent of the gain in foreign markets from combination could be measured and set against the loss. The profit foregone from bad marketing, if it existed, could be estimated too, perhaps by viewing expenditure on marketing as an investment in shifting the demand curve. It is not clear that these experiments in applied economics would yield results unfavorable to British entrepreneurs. The comparisons in the literature with American and German performance in marketing, in cartel formation, and in investing in the new industries, usually assume that it is obvious that foreign behavior in these matters was to be emulated. It is not often realized that the estimates of the profitability of these activities might well show that the Americans and Germans pursued them too much, rather than the British too little.

The alleged reluctance to invest in research is an especially good case in point. H.W. Richardson, in common with many other students of the industry, argues that there was too little investment in research in British chemicals,[40] and the same has been said of other industries. Whether more research was individually or even nationally profitable, however, is by no means clear. There is a good argument to be made for being a "fast second" in research, that is, as T.C. Barker put it in his study on the glass industry in the volume edited by Aldcroft, "to stand by watchfully while others poured their fortunes into development . . . and to be sure to obtain a license for a successful process as soon as it became a paying proposition."[41] The fruits of research, in other words, are to some extent commonly consumed goods for which investment by an individual firm would be irrational: America and Germany may have been investing too much.

[39] See Wilson, *The History of Unilever*, cited above, and D.C. Coleman, *Courtaulds*, (Oxford: Oxford University Press, 1969), vol. II. See also Lindert and Trace on United Alkali and McCloskey, "Economic Maturity and Entrepreneurial Decline," Chapter 3, on the successful cartel in Bessemer steel rails.

[40] Aldcroft, ed., *Development of British Industry*, p. 302. Compare the similar judgment of Lindert and Trace regarding dyestuffs in McCloskey, ed., *Essays on a Mature Economy*.

[41] *Ibid.*, p. 324.

British investment in research may in any case have been constrained compared to the American or German by the relative shortage in Britain of scientifically educated personnel, and, for most of the period, by Britain's peculiar patent system. A calculation of the rationality of more research would have to allow for these constraints. Unless one attempts to explain the constraints themselves as responses to entrepreneurial demand, as Landes, for one, does, they should be looked on as external conditions imposed on entrepreneurs, and their results should not be accounted failures.

A broader issue is involved here. The new quantitative work has chosen to focus on the rationality or lack of it of entrepreneurs in a given market environment. This focus is perhaps defensible, for the literature does allege that there were such irrationalities. Individual rationality, however, does not necessarily produce aggregate rationality, and the literature on entrepreneurial failure can be interpreted as arguing in part that there were not only individual but also aggregate irrationalities. Entrepreneurs in British chemicals may have been well-advised to invest little in research on dyes, given the scarcity of British technicians trained in chemistry. From the national point of view, however, more investment in training chemists may have been desirable. This issue, the issue, as Paul David put it, of market failures above and beyond any individual entrepreneurial failures,[42] is not treated in the quantitative work. This is not to say, however, that it is out of reach of standard economic and statistical tools. The social return to technical education, for example, could be estimated and comparisons made with German and American rates of return. There is no presumption that the expected return in the late nineteenth century, disallowing the misuse of hindsight involved in arguing that these investments paid off most in the new technological environment of the twentieth century, was high, but this and similar questions need more work.

The tools used in the quantitative work, in common with those used elsewhere to study the hypothesis of entrepreneurial failure, do appear to break down in one respect. Entrepreneurship has always been studied as a residual, because it is not a variable that can be measured directly. Argument by identifying a residual category is a respectable procedure, but it has the inevitable hazard that other variables besides the one of interest may be affecting what remains from the influence of directly measured variables. It may be possible to show that the adoption of the ring-spindle in cotton or the basic process in steel was unprofitable, but it still may be that entrepreneurship was bad, offset by still other unmeasured variables.

[42] See the "General Discussion on the Performance of the Late Victorian Economy" in McCloskey, ed.

This objection to the residual methodology does not have great force. With any reasonably complete theory of how economic change takes place the major variables will appear in the accounting. One may speculate on offsets to poor entrepreneurship, but the speculations become less interesting with each successive demonstration that the behavior of British industries can be fully explained with conventional variables such as factor prices and available technology. Occam's razor is a good precept in these matters, and it cuts deep into the hypothesis of entrepreneurial failure.

In a related context, that of studies of productivity change, the residual has been called, rightly, "a measure of our ignorance." The range of our ignorance of the influence of entrepreneurship on British economic performance has been narrowed greatly by its intensive study. The study has progressed from journalistic generalization, through qualitative statement and counter statement, and finally to quantitative assessment. The process is by no means complete, for nothing less than a full and detailed explanation of late Victorian economic performance would be required for its completion, and that accomplishment is far beyond the horizon. It is fair to say, however, that the late Victorian entrepreneur, who started his historiographic career in damnation, is well on his way to redemption.