German Historical Institute London

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Industrialisation and De-Industrialisation? The Interaction of the German and British Economies before the First World War

by

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Foreword

On 2nd November 1979 the German Historical Institute London held its First Annual Lecture with Prof. S. B. Saul, Vice-Chancellor of the University of York, giving a paper on Industralisation and De-industrialisation in Great Britain and Germany before 1914. We are now pleased to present it in published form to a wider public. With this remarkable contribution we hope to initiate a series of lectures, given alternately by distinguished British and German historians, that will be of interest to historians both in Germany and Britain, and indeed in the West in general. The topic dealt with in this essay is not only of great significance for the history of British-German relations; it is also of topical interest today. For it may well be that the present debate on de-industrialisation in Britain does not deserve to be conducted in quite the negative tone that is so fashionable at the moment, insofar as Britain's economic efforts now, as before 1914, are encompassing a much wider field of operations than mere industrial production, while the German economy is still on the way to extending its operations beyond its traditional fields of activity, and is likely to be subjected to far-reaching structural change in the process, which may make it more similar to the British one.

However that may be, perhaps one of the main achievements of this essay is that it paves the way for a discussion of the relative performance of the German and British economies before the First World War that is no longer conducted in the narrow-minded terms of commercial rivalry; rather Prof. Saul shows that both economies played a vital, if different role in the emerging international economy.

The German Historical Institute hopes that its activities will encourage and assist historical research along lines which transcend yesterday's nationalist approaches, and which see the past history of both countries in a broader, European context. In this respect the Annual Lectures will, we hope, provide a small but perhaps important contribution.

Wolfgang J. Mommsen London, September 1980

Industrialisation and De-Industrialisation? The Interaction of the German and British economies before the First World War

I

IT IS, AS YOU MAY WELL IMAGINE, a great honour for me to be asked to inaugurate this series of lectures. Problems of foreign trade and the world economy, problems of European growth in general, problems of technological change and British industry have been, I suppose, the key elements in my own research and I welcome the opportunity of bringing them together tonight in the context of the pre World War I British and German economies, showing if I can how they interacted in the world context in a competitive and a non-competitive sense in the years before 1914 and of course, inevitably, I am bound to look again at that old question, the comparative rates of growth of the two.

Now it might reasonably be asked – what can be said that has not been said lots of times before? The German advance and the failings of the British form a familiar story set out brilliantly by Landes nearly 20 years ago and very little improved upon in a general way since that time[1]. Even so, new views of some significance have emerged that I shall try to evaluate. Above all, we have to ask ourselves more clearly than we have done in the past – what is there to explain? – a much more sophisticated question than is sometimes thought. We have to remember that the two economies were intermixed and complementary to each other as well as competitive to a very important degree. And there is this important question, often concealed by the brilliant growth of certain industries – how far *had* German industrialisation gone by 1914 and, perhaps more controversially, how far is it reasonable to argue that Britain was beginning on a process of de-industrialisation that was a logical response to the industrial growth of competitors. That is, of course, a possibility much discussed in relation to contemporary British problems.

One thing we must get out of the way immediately is the argument, much in vogue nowadays, that national economic history makes no sense. From a purely economic point of view there may be a lot in that. The growth of the Ruhr was clearly a part of the growth of a whole great industrial complex involving also Luxembourg, Belgium and N.E. France. The structure of farming was as much determined by climatic differences scattered between east and west Europe as by national policies. In Germany, as elsewhere, some areas gained from industrialisation and some lost. The average income level means very little when we find that in 1913 in the main agricultural area of the North East it was only 59% of the average and in the South Central region, including Saxony, it was 142%[2]. Inequality within countries was as normal as inequality between them: in Britain we tend to ignore this question because we cannot measure it. All that is true, but for my purpose the argument is too economic. I am thinking of economic history in a context that will contribute to an understanding of total history and the relative rates of growth of these two countries is one of the fundamental features of modern European history in the widest sense. So unashamedly I stick to the nation state.

But let us begin by reminding ourselves of the nature of economic growth in the 19th century. Economic progress in Europe was built on a shifting system of complementarities between economies which continuously changed in accordance with fluctuations in resource and cost patterns. Industrialisation in Britain stimulated Prussian development, first through the encouragement of exports of primary products, then through her imitation of, and adaptation to, British technology, the less developed country favouring the production of the more finished, labour intensive goods where the advantage of cheap labour was most pronounced. So the availability of cheap British yarn stimulated Prussian cotton weaving, a process where labour costs were more important and the British technological superiority less marked. Prus-

sian and Saxon knitters and lacemakers, using British yarn, began to swamp markets in Russia and Italy as well as the rest of Germany. As German spinners gradually began to make more yarn for themselves, Britain sold them spinning machinery and then machines to make machinery, and so it went on.

Rising incomes in Britain, stimulated in part by British exports to non-European countries, attracted imports from Europe and so helped growth develop in Europe. There was between the two economies a circle of mutual stimulation and economic development. It was not confined to Britain and Germany. One can see it working clearly between both of them and Russia, for example. For my purpose in this lecture the important point is that the interaction did not cease after 1850, though it took new forms. Although British trade outside Europe more and more took precedence over her trade to Europe, the relationships of the advanced countries became yet more complex with the growing sophistication of consumer demand and the growing division of labour among producers, especially of capital goods. So Germany sent to Britain much semi-manufactured steel and machinery, while Britain sent finished goods in return. Germany sent electrical machinery to Britain: Britain supplied textile and agricultural machinery to Germany. Britain exported finer textiles, Germany a remarkable amount of coarse cloth to Britain. In 1912 Germany sent £6m of sugar to Britain, Britain £4m of coal to Germany. But, of course, there was a steadily shifting balance between complementarity of trade mutually stimulated by rising incomes and competitiveness arising from alternative sources of supply, a balance that is still the essence of the development of world trade and one we must be careful to strike in our Anglo-German comparisons.

The most remarkable element of the world economy, affecting both economies very closely, was the very special pattern of multilateral trade that existed in 1913. Germany, together with Russia, was the big surplus country. She had a

balance of payments surplus with virtually every European country including Britain and also a small one with the United States. But the growth of imports that resulted from her rapid industrialisation led to balance of payments deficits with the primary producing countries even in South America, despite the big German export drive there and much more so with the British Empire. So Germany, like other European countries and the US, was paying for her import surpluses by her export surplus with Britain and her export surpluses with other European nations who in turn had favourable balances with Britain. The key to the completion of this circle of payments was clearly Britain, for she almost alone had the necessary favourable balances with the primary producing countries – a role much helped by the process of de-industrialisation, for service income was a crucial element in the emergence of those surpluses. So under the pre-war gold standard European countries formed, together with the overseas territories, interlocking patterns of multilateral trade which offset unbalanced increases in trade between individual countries without inhibiting further expansion of trade because of a lack of return sales. In this the German and British economies were wholly interlocked though it was the strength and flexibility of the British balance of payments that was the key element in it all. The major contribution of Britain to the world economy, a contribution which helped Germany as much as any other country, was that as a result of lending so freely, there was no sterling problem, no ruling surplus currency. The willingness of OPEC countries to lend their surpluses during the 1970s provides an interesting parallel.

Given this closely knit world economy, and given that the major industrial countries were all on the gold standard and consequently barred from moving their exchange rates, the prices of internationally traded goods had to be kept comparable by purely market forces. The very striking movements in wages that took place therefore created something of a problem.

Real wages in Germany, taking 1895 as 100, stood at about 70 in 1871 and 110 in 1900: thereafter there is some doubt about the trends but the latest estimate puts them up to 125 by 1913. In Britain experience was much the same to 1900 but stood at something like 118 in 1913[3]. Why it happened is puzzling. There was no apparent link with the cost of living or with unemployment. There was, in other words, no wage/price spiral as the rate of growth of money wages was much the same in the downswing and the upswing. Favourable movements of the terms of trade greatly helped by reducing food and raw material costs, though in Germany the improvement in real, as opposed to money, wages was limited by the protection given to farmers. More to the point is the fact that although productivity was increasing at different rates in the main countries, the increase in money cost per unit of output was roughly the same: in other words, differences in productivity changes were offset by differences in money wage movements (not real wages) as equilibrium under the gold standard required. How did the mechanism work? Where did the wage movements begin? Lewis suggests that Germany was in fact the leader. Money wages certainly grew faster there: between 1883 and 1913 they rose 2% p.a. In Britain they rose by 0.9% and he suggests that German employers got into the habit of increasing wages some 20% every decade irrespective of productivity changes and the other countries fell in line, adjusting their wages to their productivity levels so as to match German prices[4]. It is an interesting and ingenious idea and indeed it seems very likely that the lead in wages came from the country leading in productivity changes, but it seems more likely that it was the rapidity with which a labour force had to be recruited at a time of heavy emigration from western Germany and of rapidly increasing returns to agriculture that brought about the phenomenon. Actually in Germany the standard of living did not rise in line with the high rise of money wages because the cost of living fell least there after

1880 and rose most after 1899 (a) due to protection and (b) because high money wages pushed up the prices of services and costs in all of those industries where productivity was rising slowest – especially construction. In that sense one could possibly argue that there was something of a wage/price spiral in Germany after all.

II

But we must move on now to that crucial question of contrasting rates of growth in the vital half century or so, to 1914. First we must ask what the relative position was in 1914. So far as we can tell – and the figures are very inaccurate indeed – per capita income in Britain was £55 and in Germany more like £44 (a ratio of 5 to 4). If one took money wages the ratio would be more in Britain's favour at 4 to 3. But that does not indicate comparative average standards of living, for the rate of exchange reflects only the relative prices of internationally traded goods not relative internal prices and this is particularly true where one country has a significant tariff and the other does not. We can try to overcome this by comparing the cost of a typical basket of consumables in the two countries and from that we find that German prices were some 10-20% above those in Britain. Allowing for such differences, German money earnings in industry were only two-thirds of the British level in real terms – average incomes more like 70%[5]. That is a very important result which puts the extent of German progress in truer perspective. Even with a considerably larger population her total national income was no bigger than the British in pure money terms. It is much simpler to calculate how the rate of growth of German output compared with that of Britain over time. The annual growth of GNP 1860-1910 was just over 2½% for Germany and 1.9% for Britain. Per capita

it was 1.4% against 1%[6]. The gap was closing and indeed at an accelerating rate: in part this was in no way surprising as Germany was able to use British technology and leap forward where Britain had had to find her way and go up many a blind alley – an inevitable disadvantage of an early start. All the same Germany had still a long way to go.

Before taking the argument any further, we must analyse rather more closely the reasons behind the higher per capita incomes in the UK in 1914. Basically they derive from differences in productivity but also from differences in the relative importance of each economic sector. The British per capita income was higher not so much because of higher productivity in industry (though it was distinctly higher) but because she derived only 7% of her income from agriculture compared with 23% for Germany. Furthermore, net output per man in farming in Germany at the outbreak of war in 1914 was only 57% of that in industry. This is not to minimise the progress made in German agriculture where labour productivity rose 60-90% in the second half of the 19th century – a remarkable achievement that brought about a rise in internal demand that was important to German industry. But in Britain, where the numbers in farming collapsed in the 70s and 80s, productivity in farming rose even more with the shift to animal husbandry and by 1914 labour productivity in British farming was perhaps 30% above the German level – possibly even more, if you allow for relative price levels[7]. So Britain gained in two ways: she had a far smaller proportion of her labour force in the low productivity sector, where she was more efficient anyway, and she had a small advantage in industrial productivity too. That was why incomes in Britain were higher than in Germany. A larger proportion of British GNP came from the service sector, reflecting de-industrialisation in Britain and to some extent this pushed the scales back in favour of Germany since labour productivity in this sector is generally considered to be low.

Since the rest of this lecture is mainly about industry, we

have to ask how the two countries compared in that sector. The figures are poor but 'value added per man' in British industry in 1913 was probably some 10-20% above that in Germany. Why was this? A much higher proportion of the British labour force was engaged in mining, a relatively high productivity industry: on the other hand an industry like chemicals, where we know the Germans were far more efficient, employed a mere 2½% of the labour force. It is a point often forgotten – that the areas of obvious German superiority were narrowly based in terms of men employed and one must contrast the situation in the chemical industry with the fact that Germany had 9% of her industrial labour force in pottery, stone and glass and 10% in wood products, both very low productivity sectors. In metals and engineering both countries employed about the same shares of their workers at much the same moderately high levels of productivity – both employed much the same proportions too on textiles and clothing at much the same low levels of productivity. German industry had some truly backward sectors: it was still a kind of industrial dual economy of good and bad and the advanced sectors were either very small or enjoyed no great advantage over Britain – hence the overall British advantage in productivity.

It is fundamental to try to appreciate where the two economies really stood in 1914. Of course, discussion of the relative progress of the two economic systems is really not about this absolute level but about the rates of growth, for however one looks at it, over the half century to 1914 German industrial productivity grew much faster than British and most of all from the mid 1890s on. The timing of the decline in the British rate of industrial growth has caused much argument and need not seriously detain us here. All countries had their troubles in the mid 70s but in Britain they were less serious than most: her problems seem to have come in the 80s when the rate of growth of industrial productivity was low, when capital and people were going overseas at a

great rate and when unemployment at the end of the decade was high by contemporary standards.

In no way were the 80s depressed in Germany as they were in the UK. The growth rate was high: investment flowed into industry and into new technologies. Over the years 1870/75 only 10% of net investment went into industry, and in 1880 it was over 40% and from then on Germany was set on a period of astonishingly consistent growth[8]. From 1889 to 1913 NDP rose 3.3% p.a. and in only five years was it markedly below that rate. The average unemployment rate was 2% compared with 4½% in the UK[9]. It cannot have been a foreign trade-led boom because in those circumstances the fluctuations would surely have been greater. The economy was driven on by powerful forces of internal transformation. The large agricultural sector exploited its considerable potential for change and in years of otherwise bad trade it was noticeable that old established makers of agricultural machinery remained as unaffected as the new electrical industry by falling sales. So this was when the two economies truly began to diverge. In comparing Britain and Germany though, we have to remember that British productivity in the older industries was much higher than the German in the 1880s but had reached a plateau with little room for further increase, so her growth was bound to slow down: a penalty of an early start. Germany had a lot to gain in those industries as well as the newer ones she was to develop.

It may well be that a special feature in Germany was the rapid growth of cities and of urban life. Nowhere was this so true in other developed European economies and nowhere in the world except perhaps in the Mid-West did so many large cities grow so quickly. In 1910 there were 48 towns with over 100,000 people with more than a fifth of the total population and the rate of growth was high because of the skewed age distribution. The building of endless miles of stucco dwellings for these people formed a perpetual reinforcement of the process of industrialisation that created them – a demand

for building materials, glass, water and gas and the vast apparatus of trade and transport that allowed them to function. Not only did it give the electrical industry big investment opportunities in urban electrical works and tramways but there came the secondary effects in production of steel, copper and lead and at the same time electrical generation needed more coal and the tramways facilitated yet more house building. In Britain, in contrast, urbanisation came more slowly – more spread over the century, and with established horse and steam transport and gas lighting, electrification of transport and electric lighting were much slower to come about. Railway building too, though it slowed down after the 70s and became much less important to the German economy, still gave it a push that was not present in Britain at the end of the century. Of course, German exports did rise too, to reinforce the home-led boom especially after 1900, partly because better terms of trade made the primary producers better customers and partly because the acceleration of industrialisation all over Europe in the early years of the 20th century – for reasons which are not altogether clear – greatly assisted German exports of capital goods. In all of this Britain missed out, for the second great contrast between the two countries is the quite extraordinary *fall* in industrial productivity recorded by Hoffmann for Britain after 1900. I believe this is in part a statistical error; there are too some special factors linked with decreasing returns as the coal industry expanded very rapidly. But these only modify, and do not eliminate the depressing picture of British industry in the Edwardian age.

III

What kinds of explanation for these differentials in relative rates of growth can we offer that may add something to those propounded by Landes two decades ago? Professor

Abramovitz pioneered the idea of the residual factor in economic growth, something he himself with his marvellous sense of humour and honesty was later to call 'the part of economic growth we cannot explain', but it means all those factors, apart from the input of capital and labour – advance of knowledge, quality of labour, economics of scale and above all, the re-allocation of labour from handicraft and agricultural activities – that contributed to growth. His admittedly very rough calculations give a strikingly high figure for the residual factor in Germany before 1914, nearly twice that for Britain[10]. It is probably too high. Abramovitz himself has always put great stress on the importance of a supply of cheap labour during periods of rapid economic growth – this surplus, from agriculture largely, making it possible to get a shift of labour to industry without a rapid rise of wages and therefore of costs. Even so, though there does not seem to have been significant pressure on returns to capital during the earlier part of our period in Germany due to a shortage of labour, the situation was different as emigration grew after 1880 but the crucial issue surely is why was the cheap labour that moved out of farming not a spur to industrial growth in Britain too? Economists argue that since 1945 the movement of labour from farming has given a big drive to growth on the Continent but, of course, not in Britain where farmworkers had already largely disappeared. But why did it not help in the 80s at the peak of the movement? Why were the 80s bad years and not good ones?

In a way the displacement of farm labour came at the wrong time because there was a very high natural increase of population of working age. Even allowing for emigration, the increase of population was proportionately larger than in Germany and census evidence seems to suggest that there was a population in Britain bottled up in rural areas waiting for employment opportunities. So there was plenty of spare labour anyway. The problem especially in the 80s was lack of demand from industry. Cheap labour did not therefore pro-

vide the spur in Britain that it did in Germany where there was that remarkable burst of technical innovation and urbanisation.

This apparent weakness in Britain in the 80s, and again after 1900, brings us to a second and related problem – that of capital supply – what is sometimes described as the deterioration of Britain into the status of a rentier nation. To some this was a quite logical form of de-industrialisation and I will come back to that in a moment. But the critics say that capital going abroad starved industry at home and went by and large into safe fixed-interest securities. The structure of the capital market is blamed for this and in its most sophisticated form we are given the Atlantic Economy interaction in which Britain played an entirely passive role – an American boom called away capital and men from Britain thereby reducing the supply of capital for home industry, and capital and demand for house building; the opposite happened when conditions in the US were less buoyant. It is not an argument that one can take very seriously. Professor Habakkuk and I have tried to show that the housing industry in Britain responded to quite different influences – above all being subject to the tendency to over-build in time of boom and consequently to long depressions, one of which hit the economy, during the 80s, regardless of what was going on in the US[11]. In the 70s the housing boom helped Britain more than Germany: in the 80s Germany, perhaps due to rapid urbanisation, enjoyed a house-building boom and perhaps fortuitously it coincided with – more likely it helped stimulate – a burst of innovation opportunities in home industry. The two economies were by no means always in the same phase of the various cycles and perhaps this was beneficial to the world economy as a whole, for had the booms and slumps in house building in the main industrial countries coincided before and after World War I fluctuations in world activity would have been infinitely more severe than they were.

More specifically, one cannot argue that shortages of

investment funds starved British industry in the 80s because the rate of interest remained at a very low level. Industry did not want the money. On the other hand in Germany in the 80s funds that had poured into Russia in the early 70s were now cut off. There were political overtones, of course, but Girault suggests that the Berlin banks would have lent to Russia anyway, if only the price had been right: it was internal demand that cut off funds for overseas borrowers, the exact opposite of the British case.

But we still have to face the suggestion that the structure of the capital market in Britain distorted investment. The answer to this is a very interesting one: it suggests that the capital market in Britain was in fact highly efficient and very responsive to the needs of industry; it points to the big industrial issues that were floated in the 80s for firms in brewing, cotton and iron and steel by investment trusts, merchant banks and joint stock banks. In addition the regional financial facilities were very superior compared with those overseas. So whereas, for example, in the US industry's response to the inadequacies of the financial structure was to enlarge firm size and to expand on the basis of its own resources, the *adequacy* of Britain's long term financial institutions put aside the need for such expansion: it was not something forced by market rigidities. The efficiency of the capital market inhibited fundamental change. We may be inclined to argue, therefore, that in the last three decades or so to the Great War Britain was a capital rich economy, able and willing to invest for the future abroad so developing markets and resources, and in changing technology at home when the demand arose. It really is very hard to find firms held up by inability to find financial backers. In international terms Britain became a service economy, using a portfolio of liquid and safe securities as a basis for a large and profitable business. Foreign funds were brought to London by foreign banks with branches there as a basis for their activities and not surprisingly were placed in safe and easily realisable

assets; insurance companies with world wide businesses needed securities to be saleable at a moment's notice. Wealthy private individuals also found it convenient to manage their portfolios from the world's financial centre. No wonder that a sizeable part of British investment went into fixed interest securities compared with say, Germany and the USA, but that was the nature of their business, not a cause for criticism.

Such an argument carries weight and bears similarity to the approach adopted by a number of US historians to British industry generally – that the 'weaknesses' were largely unavoidable or accidental. There is a link too between this kind of argument and that made about the German scene. It has been said that in the socio-cultural environment of mid 19th century Germany, a more efficient capital market would have drained capital away from industrial investments and into domestic and foreign government loans. Professor Borchardt himself has argued that the financial strength of the British merchant class was well established and could finance excellently the gradually expanding sales of British industry – a pattern of finance ideal for consumer goods exports. But Germany had no such merchant class of comparable financial strength. In any case the emphasis of German development on mining and capital goods needed too much fixed and working capital for firms to be able to rely on credit from suppliers and customers. So the two countries went different ways with very different consequences, but for perfectly natural reasons.

Landes, with his obsession for 'success', probably got his emphasis here wrong and recent research has cast doubt anyway on the passionate praise he lavished on the great German investment banks and on the central role he gave them in German economic growth through the capital and the entrepreneurial skills he said they had to offer. The investment banks provided credit through a current account on which interest was paid (or charged). Some heavy indus-

tries were able to use this facility to raise long term credit at short term rates and since the banks themselves did not allow their profits to suffer, it follows that other industries must have paid higher than normal rates. Consequently capital was not allocated in accordance with marginal productivity in each sector: the economy was not maximising its use of capital and so perhaps suffered a net loss from this bias. As for their general role a recent study of the relationship of the Siemens family and the Deutsche Bank suggested that the banks played a useful but hardly an indispensable role. Furthermore, the capital of the bigger joint stock companies in 1912 was almost as big as that of the major investment banks and in those circumstances who was influencing whom? The banks' representatives could never remotely have sufficient knowledge of the detailed operations of a firm to dictate policy and in no sense surely were they uniquely promoting economic efficiency. Of course, in times of liquidity crises – as in 1901 – then this was a matter central to the banks' operations and they would have to be heeded like any bank elsewhere[12].

One major function fulfilled by German banks was to take part in syndicates, forming subsidiaries to finance public works overseas through which they could successfully promote the products of their associated companies. British electrical and constructional firms constantly complained of this lack of support and compared the help given to German firms throughout Eastern and Southern Europe and especially in Russia. The German banks even invaded the Empire market – a consortium financing the electrification of the Rand, for example, and of course insisted on installing German electrical equipment. Even so, I believe that the balance lies in favour of the argument that it was demand, rather than supply elements, that were the key to the pattern of British lending at home as well as overseas before 1914.

IV

But references to overseas investment and overseas trade inevitably bring us to the much wider question of imperialism and the advantages Empire may have conferred upon Britain.

We know the limitations of German colonialism: we know too that the authorities in Berlin as in London were worried about the implications of formal imperialism – especially the cost – though from 1880 onwards they were less willing to resist it if local interests demanded it. But German informal imperialism, if we look outside Europe – at South America, for example – had distinctly limited success too. The German agricultural colonies in Brazil were highly effective and resulted in strong trading ties with the Fatherland. Germany developed strong shipping links to southern Brazil, competing effectively with the Lamport & Holt Line sailing from Liverpool. But in Argentina the settlements came later and were distinctly less successful. German shipping lines such as N.D. Lloyd worked hard at the La Plata trade but in no way ousted British lines from their pre-eminent position there. German banks set up in South America by 1914 had only registered modest gains. Sterling still ruled because it was cheap and those German writers who calculate what German traders had to pay in interest to British banks forget that they would have had to pay a lot more if they had used German banks[13].

In South America German exports succeeded where they did because of sheer effort – price, quality, originality – not because of the home relationship. On the other hand, partly because of the effectiveness of her service industries – investment, banking, shipping, insurance – informal empire was much more significant for Britain in creating markets. If we think simply in terms of the formal Empire I am by no means certain that the balance of gain and loss for Britain is at all clear cut. What exactly were the benefits? Looking after

Empire was costly. Nothing was imported from any colony or Dominion at a price other than the world price, so there was no gain there. Imperial Preference did not begin until 1897 when Canada and others began to offer it on a very modest scale to enable them to press for reciprocal mutual preferences from Britain which would, of course, have raised the cost to Britain of imports from non-Empire countries. The consequences of investment were not always directly helpful either: to take the extreme case, the large sums poured into Canada between 1900 and 1914 were mainly used to finance imports from the US. Britain made almost no tied loans: the recipients could spend the money where they liked. Empire countries – except India – were sparsely populated and could not compare as markets with the potential offered by Russia, Austria/Hungary, Italy and the Balkans which in a trading sense formed the true informal German empire. Unquestionably the political influence of the India Office was very powerful in preventing the erection of tariffs to limit exports of cottons from Britain. When this cover was lost after the war, the consequences for Lancashire were dire indeed. It is true that by 1914 Germany was finding protection beginning to limit the development of her trade in local European markets; overseas she was blocked by the British imperial influence and German exporters had to fight hard in the open market areas of the Near and Middle East, in Equatorial Africa, South and Central America, China and the Far East, and here the weakness of her informal empire links was a great disadvantage. They made great efforts in small countries like Chile, Columbia, Siam, Morocco, the Philippines, Venezuela, Bolivia, Uruguay, for, as I have said, Britain was very strong through informal empire links in countries such as Argentina and China and by and large British merchants were not too unhappy about German inroads elsewhere. Why worry about shipping services to south Brazil when you are doing so well at Buenos Aires? The British concentrated on the big ports and towns and left

markets off the main routes to those less fortunate.

So the argument on trade gains and losses can be made in terms of logical specialisation. It is not entirely valid as some serious losses were suffered by British exporters in the major markets. Also the German losses from protection in Europe can be exaggerated because it was consumer goods that were most protected: the German specialities in capital goods were less affected and in any case direct investment in German-owned factories in Russia and Austria/Hungary was becoming extensive by 1914. But for Britain it is not clear that she gained more from her formal empire than from the informal. It can be argued that in the long run the concentration on the Empire markets brought more loss than gain. The Dominions and India became wedded to high protection to Britain's great disadvantage – all the semi-developed countries were to the fore in this – and for income reasons too they were eventually to grow as markets more slowly than other areas. All the same, although that was true between the wars and even more so after World War II, it was not true before 1914. During the two decades before World War I world exports of manufactured goods to semi-industrial countries such as India, South Africa, Australia, New Zealand rose by 147%, at a considerably faster rate than to any other group of countries. Since in 1913 Britain supplied 56% of world exports of manufactures to these semi-industrial countries and Germany only 9%, she obviously positively gained from the structure of her trade[14]. So the Empire argument takes us along a number of conflicting paths.

V

The real contrast between Germany and UK lies in the unwillingness of British industry to move into new directions in the way German industry did; there is no doubt that technological progress was an immense driving force in

German growth. But Britain was also facing the kind of problem the more advanced countries face today from cheap labour countries like Korea. Germany began with a price advantage: in the early 80s production per head in German industry was perhaps 70% of the British, but her wages were 60% lower. In 1913 productivity was still 10% lower but wages were 14% lower, so the advantage still remained[15]. This made Germany a most formidable competitor, keeping her lead in price terms as well as in new technology. But one can explain the British response quite logically. In its most sophisticated form the argument runs rather like this. The famous Leontieff paradox showed that, contrary to all our beliefs American exports in the 1960s were less capital extensive than her imports and the explanation usually accepted is that the comparative advantage of advanced economies such as the US lies not in elaborate machine processes but in the skills of the labour force. Now maybe the same was true of Britain in Edwardian times. The US and German labour forces at that time, unlike the British, included large numbers of recent immigrants to the urban areas coming from Eastern and South Eastern Europe – cheap labour indeed. But not so in Britain where a more stable, skilled labour force was the rule, rather than cheap unskilled workers. If so, then the so-called conservatism of British industry, the slowness to move to machine methods, to standardisation and to mass production is easily explained and fully justifiable. For those were appropriate methods for the cheap 'unskilled'. This was clearly very true in shipbuilding where British equipment was much inferior to that in German yards but the labour skills were very much higher. Foreign builders, lacking this skill, had to install expensive machinery to overcome the disadvantages but such investment could only pay if the industry became a mass production one and that neither the Germans nor any other shipbuilding nation could achieve before 1914. Paradoxically, the new equipment laid down abroad, if it suited any conditions, only suited the British

where there was mass demand, but they did not need it – and so British yards held on to the competitive lead. The same was true of the manufacture of cotton spindles, for example, a process difficult to mechanise but one where skilled female workers could fit them to tolerances of one 200th of an inch by hand methods[16]. In general British industry concentrated with great success on heavily specialised capital goods where the opportunity for mass production was limited and where her skilled labour gave her a big advantage. So perhaps the same Leontieff paradox operated in the late nineteenth century too in that a bundle of British exports was more labour intensive than a bundle of import substitutes, whereas in Germany this was almost certainly the opposite of the truth.

Unfortunately for Britain the trends of industrialisation were not on her side. Though he was certainly not consciously aware of the argument in terms of the paradox, Landes argued that the German industrialists had a passion for mechanisation that went beyond the economic logic of labour cost and absence of skilled labour; they did it for its own sake[17]. Only a few days ago the same argument was made to me privately by a leading British industrialist – that German industry has an obsession for labour-saving machinery, going sometimes wildly beyond what cost considerations could justify, but of course to Landes and my industrialist, logical or not in the short run, in the long run this is the way of the world. The distinction between the short run approach which sees British reponses as right and logical in the complex of changing complementarities that I talked about at the outset and an approach that was only logical in the longer run is fundamental. It could be said that it was sheer short run expediency to respond to changing competitive advantages by shifting to new markets and not by cutting costs or developing new products. But it is difficult to understand why changing markets should always be thought so open to criticism. Someone was going to sell railway iron to South America; why not Britain? The point is that switching

markets was not wrong in itself but it was not enough and does not excuse unwillingness to take other action. Kindleberger may be right in saying that market switching was a short-run expedient but he can say it with hindsight; who was to distinguish short run from long run prospects at the time and, as we say, who was to satisfy these short run needs anyway?[18]. Was it unwise to feed the avid European market for coal? Failure to cut costs there was, but it has been persuasively argued recently that in many mines mechanisation simply would not have paid. The coal industry survived because prices were so high, and why not? It may be said that as a result Britain was saddled with an industry with over 1m men in 1920 that was to suffer appalling trials as markets collapsed but can one say that investors should have known that before 1914? We must remember too that labour productivity was higher in British mines than in the Ruhr, though below that in Silesia, for geographical reasons. What purpose is served by criticising by implication the cotton industry for switching to new markets – i.e. India – after 1850 when India was to give the industry the whole basis of its prosperity for another seventy years? We have a fundamental problem here. The economist is above all concerned with explaining the basis of current difficulties and naturally tends to look at historical evidence in that light. The historian, however, is primarily concerned with analysing past events for their own sake, and to him the passing of judgment on the motives and competence of businessmen is extremely hazardous, for it is so difficult to assess how far each generation should be able to anticipate the problems which will arise for the next.

The same long run or short run question emerges in the type of argument much used currently by American economic historians, above all; this is that Britain's industrial problems before World War I were not of her own making, that indeed her businessmen were acting rationally and if anything the economy was moving in sensible direc-

tions[19]. For one thing, a degree of de-industrialisation made sense: industry could hardly carry on growing at the rate enjoyed in the third quarter of the 19th century when it had largely a monopoly position and as others came along one would expect Britain to start de-industrialising and expanding its tertiary industries. Britain was servicing the world, choosing this as a comparative advantage over Germany and others. What went wrong was not anything British businessmen did but World War I. The war destroyed the old international economy: but for that Britain would have concentrated still more on foreign investment, banking, insurance and shipping – a perfectly logical form of specialisation. It is in fact a peculiarly glib and unconvincing argument. A great many factors contributed to the destruction of the international economy besides the war, and many were quite obvious before 1914. Equally, they argue that the evidence of true industrial tardiness is very sparse. One econometric study of total productivity in the British and American steel industries shows apparently no disadvantage for Britain at least to 1900. I find this unconvincing for technical reasons but in any case, maybe it just shows that US steel making was mediocre too and we need European contrasts where factor prices are more comparable[20]. Cotton manufacturers also, it is said, were rational in not moving to continuous ring spinning and to use of automatic looms before 1914, even if they were sorely missed afterwards, simply because the more advanced technology would not have paid in the context of the markets Lancashire was then satisfying.

These and other studies are based on dissatisfaction with generalised explanations in terms of entrepreneurial weaknesses which are indeed very difficult to prove, though we obviously have to be careful not to discount a factor because we cannot measure it statistically. The contrast between the German and British educational systems and the greater willingness of German industry to accept scientific

advances are hardly debatable, but when we try to go further then we do indeed get into woolly vagueness; for example, talk of third generation decline when most firms did not start business until after 1850 in the UK just as in Germany. Who would want to argue that Germany was a less socially stratified country than Britain? There is a lot more that we do not know: the effects of the comparative militancy of workers' movements, for example. Britain suffered from more rigid Trade Unions; Germany had a far higher proportion of Marxist leaders, though studies have shown that doctrinal struggles had a minimal impact on trade union industrial activity in Germany. Probably there was a cumulative element here. British workers were more alienated because of the slower growth of the economy and higher levels of unemployment after 1880, whereas the German economy grew fast enough to absorb most of those needing jobs in industry. Habakkuk in his comparison of American and British technology commented that in the US machine techniques were introduced to obtain the maximum output out of the existing work force, whereas in the UK they tended to be used to displace workers, and hence the long run hostility of Trade Unions to new technology[21]. In the context of the post 1880 trends the contrast probably holds good for German and UK industry too.

But the variety of excuses proffered about the British performance by no means provides the only answer. For example, though it might be argued that market conditions justified Lancashire's continued preference for intermittent spinning on the mule rather than continuous spinning on the ring frame, there were also real problems that the Lancashire spinners could not face, as a recent book has shown – failure to replace male by female machine minders, costs made less flexible by the survival of small scale production and by the excessive development of specialisation, by the separation of spinning from weaving and also, above all, by wages becoming highly inelastic as wage lists became more influential and

limited the freedom of action of capital through the massive inertia of a quasi peasant society[22]. Technically some of the new studies seem weak; comparing two industries, if one assumes a competitive model in which technological change is exogenous, it is quite easy to find that in the usual case companies were maximising. But you are near to assuming what you are trying to prove. What about the relevance of a model in which firms 'satisfied' rather than 'maximised' profits or maximised a function that included among its arguments a desire for a quiet life or maximised profits in a model in which technological change is fundamental, not assumed away? The new economic historians choose static models in which the problem is to maximise within given constraints but the dynamic model of the more realistic world involves breaking the constraints and is this not what British industry failed to do on many fronts? The new economies, moreover, might have been expected to take note of the finding we mentioned earlier – that economic growth has a large residual element, whether through investment in human capital, technical change or learning by doing. At the very least, speed of imitation of innovations that can be recognised as likely to be successful has a payoff even if short run considerations worked to the contrary[23]. The return to electricity may be less where there was a gas network as in Britain compared with Germany but recognition of future trends required a longer run view. When the residual element in growth is so large the *a priori* view that technological change would not pay is hard to accept.

For another thing, there were then, as now, severe limitations to the extent to which de-industrialisation could go. But the blanket condemnation of British industrialists is exaggerated too. The commitment to the older industries was hard to surrender while they remained profitable, as in many instances they did, and marvellous technological progress continued in some of these old branches – development of the steam turbine is just one example. It is important to

put the German achievement in perspective: catch up quickly she did but overall her industrial productivity remained below the British. No more than in Britain did the German engineering industry match the specialisation and innovation of the American and a great deal of non-traditional American machinery – typewriters, cash registers, farm machinery – was cheaper and of better quality than the German. Germany was still a relatively undeveloped country in 1914 measured by the share of her population engaged in farming and did not pass average British income levels till the early 1960s. Wars played a part, of course, but all had not been won and lost between the two countries by 1914. The rapid growth of some new industries in Germany did not offset the lags in farming, textiles, shipping, other services and the persistence of the handicraft trades and we do well to remember that as regards one major new innovation at least – the motor car – income patterns in Germany did not favour the growth of the industry which lagged significantly behind that in France and even that in the UK[24]. For her part, Britain was beginning to show an interest in scientific industries that was to develop fast between the wars and perhaps go to extremes as far as spending on research and development was concerned after 1945.

It is still possible to argue that British manufacturers were wholly rational in continuing to make steam engines and textile machinery, and yet be able to see that there were elements derived from early nineteenth-century experience in technical education, labour skills, markets and so forth that were to be inimical to change when it became essential. This seems to be the strong question mark that must be put against the assertion that Britain's troubles were mostly due to wars. In their absence, it is said, Britain would have had time to adjust gradually and would have thrown off the burden of the past easily enough, an argument that gathers force from the adjustments that were actually achieved during the 1930s. But then another war came to hinder adjust-

ment again. It needs careful study, for wars helped as well as hindered, but we certainly have to explain why the disadvantages of an early start in the first industrial revolution do not yet appear to have been converted into the advantages of a late start in the second.

So the patterns of gain and loss, of advantages and disadvantage between the two economies are complex and conflicting – partly reflecting shifting comparative advantages, partly reflecting historic forces and only partly reflecting positive inertia on Britain's part. These shifting patterns, to my mind, make it very dangerous to look back before 1914 to determine the long run roots of Britain's current industrial problems. I myself, anxious for the broad sweep, not long ago made the dogmatic assertion that 'we ought to rethink the whole nature of Britain's development over the last two centuries. Possibly we must come round to accepting that the upsurge in growth of the first two-thirds of the 19th century was a unique unrepeatable feature in British economic development. Maybe certain objective factors have determined that the long run British rate of growth will always be well below that of continental European countries such as Germany.' I no longer think that is true. It does not follow from the analysis of the paper: it encourages a degree of fatalism that historians must beware of creating. We may be engaged in producing 'bunk' but we are prone to be taken seriously when we least expect it. I wish I knew what went wrong with Edwardian Britain as much as I wish I understood the great European boom of the time. These two factors put the German and UK economies on very different tracks but let us not delude ourselves into believing that if we knew, it would help us greatly understand the similarly divergent growth rates of the 1960s and 1970s. I have thrown out a few ideas tonight but please take them just as a contribution to comparative history. After all this is an Historical Institute Lecture and I believe we do well to stick to our task.

References

[1] See generally *D.S. Landes,* The Unbound Prometheus, Cambridge 1969, chapter 5.

[2] *A.S. Milward and S.B. Saul,* The Development of the Economies of Continental Europe, London 1977, p.63.

[3] *A.V. Desai,* Real Wages in Germany 1871-1913, Oxford 1968, p.36.

[4] *W.A. Lewis,* Growth and Fluctuations 1870-1913, London 1978, p.111.

[5] *E.H. Phelps Brown,* A Century of Pay, London 1969, p.46. Standard of living is, of course, a complicated concept and it must be remembered that industrial workers in Germany benefited far more than their counterparts in Britain from social welfare provisions made by the State.

[6] *P. Bairoch,* Europe's Gross National Product 1800-1975, in: Journal of European Economic History V(1976), p.283.

[7] *Milward and Saul,* pp.53/4 and *P.K. O'Brien, D. Heath and C. Kyder,* Agriculture in Britain and France 1815-1914, in: Journal of European Economic History VI (1977), p. 340.

[8] *Milward and Saul,* p.23.

[9] *Lewis,* pp. 42/3.

[10] Unpublished lecture given at Edinburgh University, 1977.

[11] *S.B. Saul,* House Building in England 1890-1914, in: Economic History Review, XV (1962), pp. 119-137 and *H.J. Habakkuk,* Fluctuations in House Building in Britain and the United States in the 19th Century, in: Journal of Economic History, XXII (1962), pp.196-230.

[12] See especially *H. Neuberger,* The Industrial Politics of the Kreditbanken, in: Business History Review, LI (1977), pp. 199-207.

[13] See generally *Ian L. D. Forbes,* German Informal Empire in South America before 1914, in: Economic History Review, XXXI (1978), pp. 384-398.

[14] *S.B. Saul,* The Export Economy, in: Yorkshire Bulletin, XVII (1965), p.14. It should be noted that the category semi-industrial countries does not include any countries in Europe where in all probability Germany had a greater advantage.

[15] Lewis, p.122. It has been suggested that earlier, in the 1850s and 60s, German prices in the iron and steel industry were higher than the British, helped by the tariff. With lower wage levels too this gave the German industry high excess profits which account for the great burst of investment in the industry during those decades. See *R.C. Allen,* International Competition in Iron and Steel 1850-1913, in: Journal of Economic History, XXXIX (1979), p.922. Similarly in steel and probably in other industries the higher wage rates in Britain just prior to 1914, which were due to higher per capita incomes generally and were outside the control of the steel industry, made competition all that more difficult. Ibid., p.937.

[16] See *S.B. Saul,* The Market and the Development of the Engineering Industries in Britain, 1860-1914, in: Economic History Review XX (1967), p.114.

[17] *Landes,* p.354.

[18] *C.P. Kindleberger,* Economic Growth in France and Britain, Cambridge 1964, pp. 271-273.

[19] See generally *D. McCloskey (ed.)*, Essays in a Mature Economy, London 1971, and especially pp.391-7.

[20] A more recent study suggests that in 1907/09 both American and German steelmakers were 15 per cent more efficient than the British. See *R.C. Allen*, International Competition in Iron and Steel, 1850-1913, in: Journal of Economic History, XXXIX (1979), pp. 911–38.

[21] *H.J. Habakkuk*, American and British Technology in the 19th Century, Cambridge 1962, p.141.

[22] *D.A. Farnie*, The English Cotton Industry and the World Market 1815-1896, Oxford 1979, p.326.

[23] *C.P. Kindleberger*, Economic Response, Harvard 1978, p.224.

[24] This analysis needs some care because the persistence of some handicraft trades represented the growth of specialised suppliers ancillary to the rapidly modernising sectors and therefore not representing backwardness.