advantage

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special issue

A tribute to Nick Crafts (1949-2023):

Britain's most distinguished economic historian

In this issue ...

An intellectual, human and institutional legacy

At his death in October 2023, Nick Crafts was Britain's most distinguished economic historian. Born in March 1949 in Nottingham, he graduated from Trinity College, Cambridge in 1970. He held positions at the Universities of Exeter, California, Warwick, Oxford, Leeds, Warwick again, LSE, Warwick for a third time (by now he called himself a "Warwick recidivist") and Sussex.

Nick's legacies are intellectual, human, and institutional. His intellectual legacy is a portfolio of books and papers on the modern economic history of Britain and Europe that have changed the way scholars understand the origins of our world. His human legacy is found in the generations that he taught, including a phalanx of PhD students who, on taking up positions in academia and public service, started from a shared understanding of the historical origins of our present-day problems and the associated scope for productive interventions. This understanding is plentifully illustrated in the reminiscences that follow.

Nick's institutional legacy is Warwick's CAGE Research Centre, which he led for ten years from its foundation in 2009. His vision of CAGE was a centre for research that would investigate contemporary problems and propose solutions in a way that was informed by history.

Nick was thoroughly aware that economic growth matters, but human development is more than growth and the factors associated with successful economic development in one period of history could hinder it in the next. This is evident today around the world in traditional centres of heavy industry and mining, which have been 'left behind' as our world has changed.

While committed to research, Nick never forgot what he owed (as we all do) to our co-workers, our students, and the public. His outlook was fundamentally egalitarian. He sought the views of all and knew how to listen as well as to counsel. While he will be missed as a leading scholar, those who knew him will also miss him as a colleague and friend.

Bishnupriya Gupta
Mark Harrison
Sascha Becker
James Fenske
- Economic History Group at The University of Warwick

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“the most important economic historian of his generation”

An inspiring and important economic historian

by Stephen Broadberry

By 1870 the British economy was the most industrialised in the world. Nick's radically different views of its rate of growth and its implications were far-reaching.

I first met Nick Crafts at The University of Warwick in my second year as an undergraduate in Economics and Economic History. He had just returned from Berkeley where he had been observing the Cliometrics Revolution up close. His lectures on British Economic History 1750-1870 had a big effect on me. They provided an inspiring overview of British economic development as he incorporated his own ideas at a time when he was just beginning to chip away at Deane and Cole's estimates of British economic growth. This would lead eventually to his most important and far-reaching work. This was his radical reinterpretation of the First Industrial Revolution, which occurred in Britain between the mid 18th and 19th centuries and marks the first transition to sustained economic growth.

Nick had moved on to Oxford during my third year at Warwick. Before he left, Nick encouraged me to apply to Oxford where he continued to mentor me during my graduate study, acting as my dissertation supervisor. By this point, Nick's path-breaking book, *British Economic Growth during the Industrial Revolution*, was in preparation. It was published in 1985 and has been reprinted numerous times. The book presented a radically different view of the Industrial Revolution as a more gradual process than previously believed. Nick demonstrated convincingly that earlier writers had exaggerated the growth rate of industrial production and hence of total national output during the Industrial Revolution. This had a number of implications, which have influenced much of my work ever since.

One implication is that although by 1870 the British economy was the most industrialised economy in the world, it was in a more vulnerable position than was widely perceived. This was due to its relatively slow productivity growth during the Industrial Revolution and its specialisation in the labour-intensive old staple industries.

Nick and I began working together between 1988 and 1995 teaching British economic history since 1870 and publishing joint papers which made international comparisons of productivity during the late 19th and 20th centuries.

The general theme of this work was that Britain's long run relative decline was rooted in the legacy of the early start, exacerbated by a move away from the intensely competitive environment of the pre-1914 period to a more corporatist approach to business and economic policy. Our 1992 *Journal of Economic History* paper emphasised the neglected factors of human capital and the interwar retreat from competition in explaining the growing Anglo-American productivity gap in the 1930s. ▶

Our following work on the post-World War II settlement highlighted an acceleration in the pace of Britain's relative economic decline. Firms and trade unions colluded in an equilibrium of low effort for workers and a quiet life for managers, underwritten by governments intervening to protect failing firms, preserving union power and supporting rather than controlling anti-competitive behaviour.

I learned valuable lessons during this period, watching the master craftsman at work from close quarters. Nick had an encyclopaedic command of the literature and had always read everything that could possibly have been relevant. In addition, he always took the trouble to make sure that arguments were grounded in a theoretical framework that was both sophisticated and yet presented in an accessible way.

And years ahead of the Impact agenda, Nick always had an eye for policy relevance, which he went on to embed at Warwick as the founding Director of CAGE.

In the long run, though, perhaps the most important way in which Nick's work influenced my research agenda was at the other end of the Industrial Revolution. The slow growth view of the Industrial Revolution implied that the British economy must have been richer and more developed in 1700 than previously thought, casting an entirely new light on earlier periods of economic history.

If Britain was already quite developed on the eve of the Industrial Revolution, then this opened the possibility of earlier episodes of growth and development. It is this that inspired me to begin a project undertaken together with Bruce Campbell, Alex Klein, Mark Overton and Bas van Leeuwen, which resulted in our 2015 book *British Economic Growth 1270-1870*. Although Nick left Warwick to go to the London School of Economics during the 1990s, he had returned to Warwick by the time this project started, and he continued to offer very helpful advice and guidance.

"I learned valuable lessons during this period, watching the master craftsman at work from close quarters."

So far I have focused on Nick's fantastic scholarship and intellectual achievements but I want to end by saying a bit about what extraordinary fun it was to work with Nick. As a DPhil supervisor at Oxford, Nick was wonderful; he had a wicked sense of humour and seminar nights were a real experience.

Let me end with a gesture which I know Nick would have approved of. That is a toast to Nick Crafts, the most important economic historian of his generation. ◀

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The spatial distribution of economic activities

by Nikolaus Wolf

"Nick would have loved to see how far new economic geography goes to understand modern economic growth"

Economic geography and its potential for economic history was a significant part of Nick Crafts' work. His analysis into industrial growth in the UK and US showed the importance of interactions with the physical and social environment.

The pivot around which Nick Crafts' work turned was understanding modern economic growth. With the rise of new economic geography in the 1990s, spearheaded by Paul Krugman and Tony Venables, Nick was among the first to see its potential for economic history: how did modern growth evolve across regions? And what can we learn from new economic geography about the fundamental factors driving growth? Tony Venables happened to be his colleague at the London School of Economics since 1997, and they coauthored a book chapter entitled: "Globalization in History: A Geographical Perspective". According to them "...firms seeking profitable locations will be drawn to locations with good market access and proximity to clusters of related activities, as well as locations with appropriate factor endowments." (Crafts and Venables 2003, p. 324). A key role is played by the market potential of a place, and positive feedback from external economies of scale.

Over the next years, Nick developed an ambitious research agenda on economic geography. Partly funded by an ESRC grant "Understanding the effects of different generations of large-scale technological change" (2001-2005) he set out to describe the economic growth of regions within the UK (2005a), their market potential (2005b), revisited the change in British transport infrastructure (Crafts and Leunig 2005) and examined the role of market potential (Crafts and Mulatu 2005, Crafts and Mulatu 2006), based on a model suggested by Tony Venables (Midelfart-Knarvik et al 2000). The main finding was that over the period 1871 to 1911, both forces of Neoclassical location theory such as the endowment with natural resources (coal) as well as forces of new economic geography are needed to explain the location of British industry (Crafts and Mulatu 2006, pp. 598ff). The role of market potential may have increased over time (ibidem, table 10), but this effect was modest for most regions and industries in Victorian Britain.

After his return to Warwick in 2006, Nick broadened his approach to consider the dynamics of the global economy and Britain's role therein. A landmark was the establishment of CAGE. Here, Nick brought together a large group of researchers to study the determinants of success in a global economy, including trade and geography. Part of this research agenda was to understand the rise of the United States, particularly the deep roots of US-productivity advantages in manufacturing. Klein and Crafts (2012) established that new economic geography was essential to explain the location of US manufacturing. They show that the persistent dominance of the manufacturing belt, which produced 80% of US manufacturing output in 1900, was largely due to market potential.

Next, Crafts and Klein (2018) analysed how industrial

agglomeration mattered for US productivity, distinguishing between external economies from specialisation and those from diversity. They find that specialisation had a strong positive effect on labour productivity, while the effect of diversity is less robust. In Crafts and Klein (2021) they trace the spatial concentration of manufacturing in the US over the entire 20th century, from 1880 to 2007 and conclude that concentration followed a secular decline.

Around 2009 I started a project with Nick to understand why the English cotton textile industry was so incredibly concentrated in Lancashire, with the aim to learn something about the driving forces behind the First Industrial Revolution. We used the detailed 'factory return' (BPP 1839), which documented the location and scale of operation of all the textile factories in England, Wales and Scotland as of 1838. Drawing on a (surprisingly) large literature on the factors that might explain the location of the British cotton industry, we collected data ranging from humidity, over access to coal, and waterpower, to market potential.

The major finding of our research (Crafts and Wolf 2014) is twofold: there is again evidence for both the more Neoclassical location factors such as the availability of waterpower and coal, and forces of new economic geography. Unlike earlier work, we found that for the cotton industry around 1838, market potential was decisive. Paul Krugman put it this way: "The two Nicks, Crafts and Wolf, have a piece right up my alley: they argue that the cutting edge of Britain's Industrial Revolution, the cotton textile industry, benefited hugely from agglomeration."

In a final project, Nick made a bold attempt to estimate how far new economic geography goes to explain global patterns of development during the long 19th century, based on a vast new dataset. For several reasons, the paper remained a draft, (Caruana Galiliza et al) entitled 'Geography and the Great Divergence: Market Access and Economic Growth in the Nineteenth Century'.

"Nick brought together a large group of researchers to study the determinants of success in a global economy"

Nevertheless, it would be worthwhile finishing this project. For sure, Nick would have loved to see how far new economic geography goes to understand modern economic growth, not only locally but globally. ◀

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PRODUCE
GOODS
SERVICES
PRODUCTS

Thirty-five years of joint research and recreation

by Terence Mills

The interwar period of the 1930s and austerity measures had important economic impacts. Nick was a major contributor to debates on productivity in Britain, Europe and the United States.

I first encountered Nick in 1974 when I was a postgraduate and he was in his first spell in the Department of Economics at Warwick, but our friendship and research collaboration only began in 1987 when Nick became Professor of Economic History in the School of Economic Studies at Leeds University, where I was lecturer in econometrics.

Nick had been appointed to replace the recently retired Maurice Beresford and there must rarely have been such a contrast between two professors of economic history. I was familiar with all the pubs close to the university and the pair of us soon gravitated to them on a lunchtime, where we got to know each other's research interests and shared our passion for cricket, particularly of the county championship during the 1960s.

I had just come across the work of Charles Feinstein and others on the timing of the 'climacteric', a downturn in economic growth in Victorian Britain, and, as a time series analyst, was intrigued as to how trend growth had been modelled in this literature. Nick's interest was piqued after I introduced him to the then novel methods of trend extraction based on time series containing unit roots, which seemed to be particularly suited to historical output data. ▶

"These were some of the most challenging research problems that I have encountered but were immensely fulfilling to solve."

We got together with Steve Leybourne, now Professor of Econometrics at Nottingham University but then a doctoral student at Leeds, who was developing a suite of computer programs for applying the Kalman filter, a recursive algorithm for computing optimal forecasts of the components of state space models, to economic time series data. These models provided a statistical framework for extracting optimal estimates of the 'smooth' trend component of the British output series, from which we could more easily establish the timing and extent of any climacteric in the data.

Four papers were quickly published, the first on the climacteric in Britain and France, the second examining trends and cycles in British industrial production from 1700 to 1913, and the remaining two extending this analysis to a wider set of European countries.

These laid the foundation for a research program that has lasted for a further thirty years in which Nick introduced concepts from endogenous growth theory. These included models of endogenous innovation which provided a theoretical economic framework, and I played around with various statistical approaches to modelling evolving trends. This enabled us to provide characterisations of the evolution of output, real wages and industrial production through the pre-industrial age, the breakout from the Malthusian epoch to the first and second industrial revolutions, and the presence and timing of the climacteric.

An offshoot of this research program were two papers which focused on the growth process in European countries after 1918 and during and after the 'Golden Age' of economic growth from 1946 to 1973. Here the framework was a model for evolving growth that allowed the 'Janossy' hypothesis to be tested, this being the idea that, after all shocks caused by war and recovery had played out, trend growth would revert to its pre-World War I level, for which, perhaps unsurprisingly, we found little evidence to support.

As well as being a world-renowned expert on the Industrial Revolution, Nick was keenly interested in the economic history of the interwar period, particularly the 1930s. I collaborated with him on two studies of the most important economic aspects of these years: an analysis of the impact of the austerity measures in place during the early part of the decade and an empirical examination of the role played by the subsequent expansionary rearmament policies during the run up to the outbreak of war in 1939.

Nick was also a major contributor to debates on productivity in Britain, Europe and the United States. We published historical studies on productivity in British railways and the economy in general during the Victorian era, in post-war British and German manufacturing and on UK price-cost markups over the long run. In recent years, we examined productivity trends in both the UK and the US, confirming that the slowdown in productivity since the financial crisis was indeed unprecedented in UK economic history.

In all our research together, my enduring memory of Nick was of him asking me if I could obtain a statistical measure of some key economic concept and of me replying that it was not immediately obvious how this might be done but that I would go away and consider how it could be. This invariably led to a non-standard statistical approach that often required the construction of new estimators, the setting up of simulation experiments, and the writing of programs to calculate them. These were some of the most challenging research problems that I have encountered but were immensely fulfilling to solve. When receiving the results, Nick would respond by saying that they were of great interest and could be interpreted in ways that provided evidence to support or even reject the issue that we were investigating.

Before his sad and untimely death, Nick and I had embarked on two further studies of the economic growth process. The first was on whether the growth process was, as is typically assumed, always exponential in nature or whether there have been any economic epochs in which it could be characterised as additive. The second was on testing Oded Galor's unified growth theory: that countries will always break out of the Malthusian stagnation epoch of zero output per capita growth, but they would do so at different times and at different speeds. The preliminary empirical work for both has been completed but Nick's crucial and imaginative economic and historical insights will no longer be available to enhance and interpret the statistical results: as a consequence, the projects currently remain in limbo. ◀

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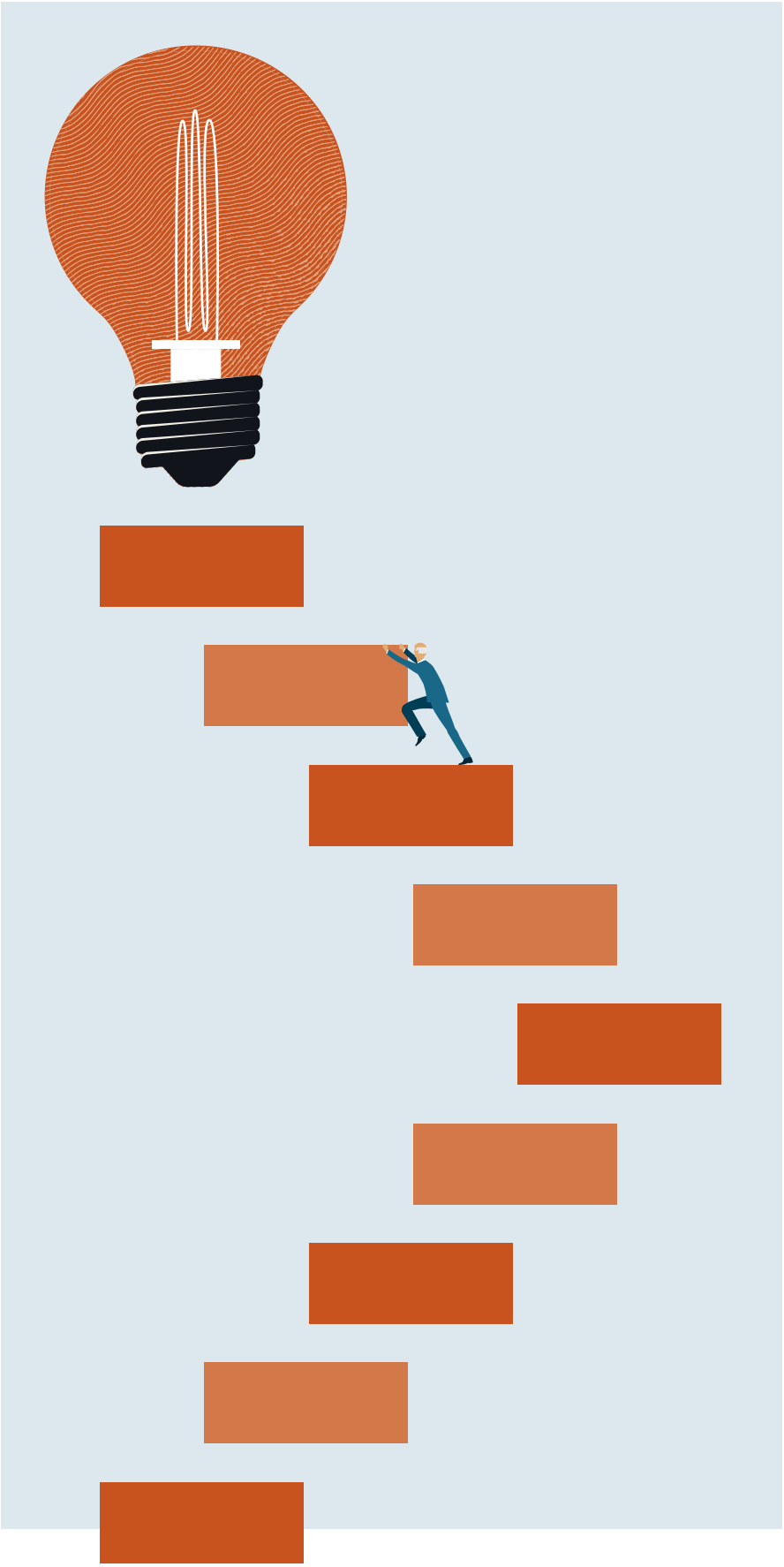
The leading economic historian of his generation

by Tim Leunig

An international outlook which sought to understand Britain in an international context characterised much of Nick Crafts' academic research.

"Nick contributed to almost twenty government and other policy commissions"



"He always had a historical dimension that others in the room were unlikely to offer."

Professor Nicholas F. R. Crafts - known without exception as Nick - was the leading economic historian of his generation. He was made a CBE in the Queen's birthday honours of 2014 - but rather than the citation reading "for services to economic history", it read "for services to economic policy".

At one level this is surprising, because Nick was, to the core and from the core, an economic historian. During his life, he authored or edited 10 books, published 131 refereed articles, 80 book chapters and 44 other pieces. Of those, no more than a dozen or so can be said to be primarily about policy.

Nor - to the best of my knowledge, at least - did Nick ever strive to be seen as a policy influencer. He certainly turned down invitations to 'prestigious' government roundtables. I know this because I once invited him to 11 Downing Street to an event with the then Chancellor, Rishi Sunak. I don't think he had ever met Sunak, but for Nick meeting important people was never a reason for involvement in policy work.

He declined my invitation not because he was disinterested in government. Rather, he asked himself two questions before accepting. First, was the person - whether they were a politician

or a civil servant - sensible or silly - Nick's highest accolade and insult respectively. Second, was whether he thought he had anything useful to say that he had not already said to that group. He never wanted to be the person who is invited to say a particular thing they have said many times. His view was that if you knew what he would say, you did not need to invite him.

Nick's CBE recognised - I think - two distant contributions. The first was teaching many civil servants. For more than 20 years, starting in the late 1970s, Nick was on the Civil Service College's list of ad hoc lecturers, teaching literally a generation of future Sir Humphreys. Later on, he taught HM Treasury civil servants for eight years. If Keynes was right that we are all slaves of the defunct economists who taught us, at least civil servants were slaves to a decent economist. The second was that Nick contributed to almost twenty government and other policy commissions, including working for the Scottish Executive, the EU, the EBRD, the IMF, and the World Bank, as well as the UK government.

Nick always had something interesting to say, for two reasons. First, he always had a historical dimension that others in the room were unlikely to offer. Sometimes this was explicitly sought - that was why he was appointed to the UK Eddington Review on Transport and the Economy. On other times it was simply that - pretty much without exception - he knew more about the past than anyone else in the room. He had an ability to apply it to the present in a way that is exceptionally rare among historians in public life.

The second reason that Nick was useful is that he was always a fresh pair of eyes. The corollary of Nick not wanting to say the same thing, time and again, was that he liked to work on new things.

He did so with an international outlook, seeking to understand Britain in international context. This also characterised much of his academic research. His first internationally comparative article looked at why the Industrial Revolution happened here in Britain rather than in France and was published in 1977. This underpinned his seminal book on the British Industrial Revolution, but more importantly in this context it underpinned how he looked at the world in general.

> "Nick shaped CAGE. He ran it diligently"

That interest in Britain in a European perspective led him, with Gianni Toniolo, to undertake a major project funded by the European Commission on European economic growth during the postwar period. The results were published in two volumes, and demonstrated the relevance of economic history beyond academia, in shedding light on issues of current economic policy.

> "CAGE was and is a success."

Nick enjoyed responding to events. He wrote widely on Britain under Thatcher, under Major, and under Blair. He took Gordon Brown to task for claiming that his own work showed that Brown had ended boom and bust (a judgement that was clearly right at the time and was massively vindicated shortly afterwards).

He was rightly proud of the book he co-edited with Peter Fearon on policy lessons from the Great Depression. Nick had never really contributed to the academic literature on the 1930s. There were no papers on the Gold Standard, or tariffs and the collapse of trade to draw on. But as the Global Economic Crisis took hold in 2007-8 Nick was inevitably interested, and inevitably his interest led to serious insights. He drew together many prior experts, challenged and prodded them to think seriously and deeply about what parallels could and could not be drawn, and therefore what lessons we could learn. His own insights into the role of fiscal and monetary policy in the context of the zero lower bound, that is, interest rates falling close to zero, were particularly influential.

That book coincided with his successful bid to found The University of Warwick's CAGE centre. Now is not the time to give any exhaustive account of CAGE, but it is worth reflecting on how Nick shaped CAGE. He ran it diligently. Nick never sought to be an administrator, but when he was asked to do so, he did so strategically and with aplomb. CAGE was and is a success.

Above all, although Nick was CAGE's founding director, the figurehead who made it credible with the ESRC, Nick never saw it about himself. Rather, it was a way to support his colleagues to think and write about applied economics, to speak to policy makers, and so to influence debates and nations. Long may that continue. ◀

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Research and agglomeration economics

by Alexander Klein

A re-examination of trends in the Manufacturing Belt across the 19th and 20th centuries

"It explained the economic forces behind the existence of the Manufacturing Belt in its formative years at the turn of the 20th century."

Our research on economic geography and agglomeration economies in the United States focused on the decades at the turn of the 20th century. This period was known for large spatial inequalities in the location of manufacturing, when more than 80% was in the so-called Manufacturing Belt - a region including New England, Middle Atlantic, and the Midwest. Nick and I tried to understand what drove the industrial location into the Manufacturing Belt, the economic forces that made it a successful industrial region from the late nineteenth century until the 1960s. Our approach was empirical and for that purpose, we built large data sets by digitising the US Census of Manufactures from 1860 until 2007.

The first paper in this research agenda was published in the Journal of Economic Geography in 2012 and titled *'Making Sense of the Manufacturing Belt: Determinants of U.S. Industrial Location 1880-1920'*. It explained the economic forces behind the existence of the Manufacturing Belt in its formative years at the turn of the 20th century. Specifically, we found that market potential was central to its existence and that its impact came through scale economies and industrial linkages. Natural advantage played a role, but only in the late 19th century and its importance faded away after that. This paper challenged the prevailing opinion that the manufacturing location was driven solely by natural advantage. We resurfaced the older explanation going back to Harris, the father of the market potential concept, that transportation costs and market potential mattered and they were almost as crucial as endowments of natural resources. Our empirical examination confirmed the educated opinion of scholars working in the 1950s and 1960s as well as contemporaries that the Manufacturing Belt was indeed the product of economic forces going beyond natural resources.

This paper was a springboard to our further examination of US manufacturing at the turn of the 20th century. In particular, we wanted to know how the location of industries in the cities influenced their labour productivity. For that, we turned to the literature on agglomeration economies which inspired us to look at the role of industrial specialisation and diversification respectively. As before, we used the Census of Manufactures as the primary data source and found that initially, greater industrial specialisation was associated with faster productivity growth and that industrial diversification mattered only for very large cities. Quantitatively, the industrial specialisation in 1890 raised the level of labour productivity by about 4% by 1920. This paper was published in the Economic History Review in 2020 with the title *'Agglomeration Externalities and Productivity Growth: US Cities 1880-1930'*.

After these two papers, we decided to look at the Manufacturing Belt and cities during the entire 20th century. We discovered that before plunging into a century-long investigation, the basic long-run trends in spatial concentration of US manufacturing needed re-examining. New advances in geographical indices had occurred since the conventional long-run geographical indices were produced, and we applied them to the geographical concentration of manufacturing sector between 1880 and 2007. The results showed that whilst post World War II patterns were robust to new geographical indices, the interwar period was different - we did not find an increase in spatial concentration. On the contrary, the geographical concentration was declining. Overall, the long-run geographical concentration of manufacturing sector did not exhibit an inverted U-shape curve, as was thought previously, but a continuous decline. This paper was published in the European Review of Economic History in 2021 with the title *'Spatial Concentration of Manufacturing Industries in the United States: Re-examination of Long-Run Trends'*.

This research agenda has been interrupted by Nick's untimely death. We had been working on a research monograph to explain the life-cycle of the Manufacturing Belt, and its ultimate demise in the 1970s and 1980s the 'Rust Belt'. The monograph will carry his ideas, and the insights he brought into US economic geography. ◀

About the author

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Reflections on the view of the Industrial Revolution

by Knick Harley

The Industrial Revolution changed Britain's economic structure. Nick Crafts put a different perspective on just how the transition took place.

"His correction showed more rapid growth prior to 1740"

The Crafts-Harley work on the Industrial Revolution put forward two main findings. First, evidence that Britain grew more slowly and, thus, was richer in the 18th than previously thought. Second, a general equilibrium framework highlights key features driving change.

The Industrial Revolution has shades of meaning. Two are fundamental. First, that the growth of an urban factory-based textile industry made Britain the 'workshop of the world'. Second, that it set in motion, "the most fundamental transformation of human life in the history of the world recorded in written documents" by creating "modern economic growth" (Eric Hobsbawm). Prior to the 18th century, Malthusian dynamics governed the standard of living where population decline increased the standard of living, but population growth increased poverty. In contrast, in 19th century Britain, a rapidly rising population experienced improving standards of living. The mid-Victorians and historians concluded the factory system caused this transformation.

Our view developed out of two important quantitative estimates of British growth. In 1939, the German economic historian, Walther Hoffmann published an index of industrial output that was updated and translated in 1955. In 1962, Phyllis Deane and W. A. Cole provided estimates of national income from 1700. Both showed rapidly acceleration coinciding with the rise of textile factories. Calculations based on these estimates indicated that industrial growth was widely spread in the economy.

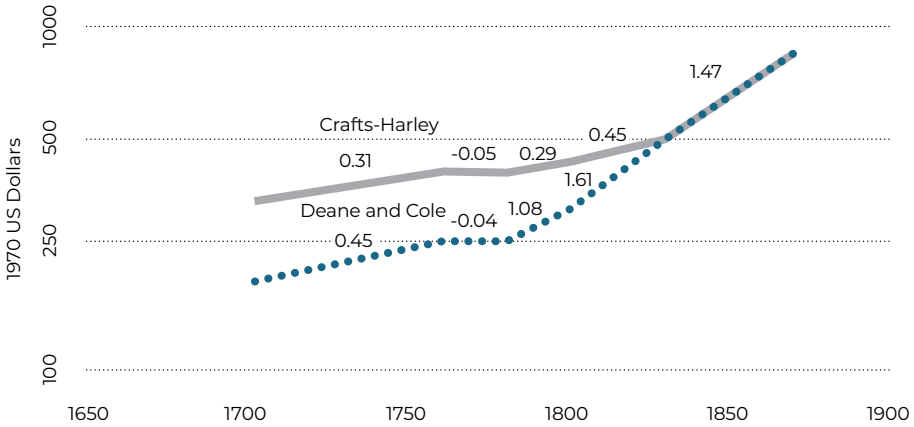
Nineteenth century calculations (by Deane and Cole) were based on censuses from 1841 which included detailed occupational information. This provided estimates of national income and research at the time assumed that both food consumption and the output of non-governmental services grew at the same rate as population.

Nick Crafts re-assessed these estimates. He first observed inconsistency between the 18th century agricultural series and rising real wages and falling food prices prior to 1740. His correction showed more rapid growth prior to 1740 which eliminated the late 18th century acceleration of agricultural and per capita aggregate growth. Next, he criticized the previous growth estimates for the early the 19th century which depended on deflation of current income level estimates.

Nick's conclusions were that although previous estimates for agricultural growth were reasonable, they considerably overestimated the growth of services and manufacturing. His best guess for services (42% of income in 1820) was that labour productivity increased at 0.5 per cent per year. For manufacturing he adopted Hoffmann's index.

I re-examined Hoffmann's index

Figure 1: National Income per capita, 1700 – 1870
Deane and Cole and Crafts-Harley



which aggregated the industries for which he had data (about half the total during the Industrial Revolution) on their relative weights, implicitly assuming the undocumented industries grew at the same rate. This inadvertently doubled the weight given to the extraordinary growth of cotton and over-estimated aggregate growth.

These data adjustments underpin the Crafts-Harley estimates of British national income. Our revised national income exceeds the previously accepted estimate by some 70% in the early 18th century and show no acceleration in per capita terms prior to 1830. The doubling of population between 1760 and 1830 without Malthusian decline indicates that Britain was entering modern economic growth, but the process was underway before the 1760s. A second implication of the new estimates was that technological improvement was concentrated in the new growth industries and in agriculture.

The Industrial Revolution changed Britain's economic structure. Improvements in textile and iron technology stimulated manufacturing production, much of it for export. Population growth with limited land supplies also drove structural change. Despite impressive increases in agricultural productivity, feeding growing numbers involved a shift towards manufacturing to finance food imports. Flexibility of resource allocation played a major role. Nick showed that unlike most European countries where agricultural labour productivity lagged, in Britain the proportion of the labour force and of output in primary production remained approximately equal. The labour market adjusted quickly, presumably due to the proletarianization of agriculture.

> **"Britain began its transition before the Industrial Revolution"**

In the late 1980s, my colleagues, John Whalley and Tom Rutherford, developed computational general equilibrium (CGE) models which we used to explore growth and structure consistent with 1770 historical data. The model confirmed that key manufacturing innovations lowered prices stimulating demand and urban factory development. As a result, these industries' expansion had a muted impact on the growth of British standard of living. Lower textile prices benefited domestic consumers, but textiles made up a modest portion of overseas budgets. Falling prices drove exports, but as Nick suggested, falling terms of trade eroded potential welfare gains.

The overriding conclusion of the Crafts-Harley view is that understanding the transition to modern economic growth cannot be based primarily on the experience of British of urban factory manufacturing in the classical Industrial Revolution. Britain began its transition before the Industrial Revolution. Much of the structural transformation was driven by exports brought about by unique country specific advances that became entrenched by protracted warfare preventing foreign emulation. However, the industrialisation that this brought about had limited impact on British welfare. The nature of British agriculture with its land-less workers, enhanced structural mobility and accelerated change. ◀

About the author
Knick Harley is Emeritus Fellow at St Anthony's College, Oxford.

Parting Shot

Mar Rubio-Varas

Professor of Economic History and Institutions at the Public University of Navarre, Spain

Nick Crafts, my mentor and guide, profoundly influenced both my academic and personal journey. As my MSc tutor in 1996 to later overseeing my PhD and guiding my early steps in academia, his impact was transformative.

Nick's approach was marked by a unique blend of warmth, wit, and kindness. His exceptional memory allowed him to recall vast amounts of information, and his intellectual curiosity led him to explore diverse subjects, making him an invaluable source of wisdom.

Unlike some mentors, Nick never pushed. He understood the importance of allowing researchers the time to absorb information, reflect, and let ideas mature. His responsiveness, however, was unmatched. If I submitted something, he promptly provided insightful comments - showcasing his commitment to our intellectual growth.

"an invaluable source of wisdom"

Importantly, Nick's mentorship extended beyond graduation. Nearly a decade after completing my PhD, his guidance proved instrumental once again. He suggested I apply to present my research at the workshop "Developing policy regimes for combating climate change," organised by CAGE and the Centre for Climate Change Economics and Policy in 2011. This recommendation served as the spark that ignited my first Energy Policy publication, showcasing Nick's enduring impact on my academic journey.

Nick Crafts, a mentor whose influence transcends time, has left an enduring legacy of intellectual curiosity, kindness, and a commitment to nurturing the potential of those fortunate enough to be under his guidance. ◀

Jose Rowell Corpuz

Assistant Professor of Economics at The University of Warwick

Professor Nick Crafts was a great teacher and PhD supervisor. He was a lecturer in the first economic history module that I took as an MSc student at Warwick in 2011. When I became an MRes/PhD student in 2013, he taught me again in one of my advanced economic history modules.

Nick was a great storyteller. He would always show the 'wood for the trees' in every lecture and would support his arguments with figures and tables. He was very well read and would often say to me that "the more you read, the luckier you get." I guess this is why Nick was so good at explaining the main points in his lectures – reinforcing the importance to keep on reading without being overwhelmed by too much detail.

As a PhD supervisor, Nick had a genuine concern for his students. He encouraged good ideas, but also quashed the bad ones. He would separate half-baked criticisms from the well-thought ones. His advice was to treat the former "like water off a duck's back" and to focus on the meaningful criticisms instead. Nick introduced me to Professor Mike Waterson and Professor James Fenske, who also became my PhD supervisors and supported and guided me through studies.

After obtaining my PhD in 2019, Nick continued to be influential to me as a young scholar. After being repeatedly rejected by various referees and editors, he would always remind me of the value of persistence. He even told me the story of a Nobel Laureate whose paper was rejected many times before getting published.

"Nick was a great storyteller"

Nick really did encourage me to be persistent and to keep going. I wish I could still update him about my research. After trying so many times, my main PhD dissertation chapter is now with a top field journal. My other paper has recently been accepted for publication. I am extremely grateful to Nick for all his help with my academic career – I will miss him a lot, as will many others too. ◀

Alfonso Herranz-Loncán

Head of Economic History at the University of Barcelona

I met Nick in 1998, when he started supervising my PhD thesis at the London School of Economics. I arrived in London with a traditional Spanish style MSc training in Economic History at a time when the field in the Spanish universities had hardly been touched by the cliometric revolution. It wasn't until I attended Nick's classes that I discovered a fascinating immersion in this completely new scholarly world. He was an incredible teacher, with the capacity to capture the students' attention and put them in contact with the most up-to-date work.

> "a model of an academic"

As a supervisor, he totally changed the way I did research. My first meetings with him to speak about my thesis project were mind-blowing. Meeting after meeting he challenged me, forcing me to clarify why what I was doing was important and the economic rationale behind my interpretations. He clearly showed me the centrality of rigor and relevance in research. And his supervision always went beyond discussing my ideas and put me in contact with streams of literature that I could have never found by myself. Finally, in the time he supervised my work he also showed me the value and the importance of generosity in academia. Despite being such a prominent figure in global economic history, he was always available and extremely generous with his time. His revisions of my texts, written (especially at the beginning) in very poor English, were thorough and very detailed. Because of the excellency of his research, his teaching skills and his generosity, for me he has been a model of an academic - not easy to imitate, but always enlightening. ◀

Guillaume Daudin

Professor of Economics at Paris Dauphine University

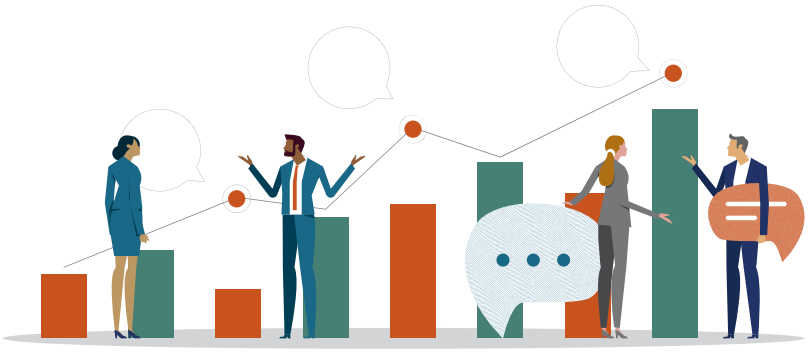
Nick Crafts changed my life. We met for the first time in 1995 at a research seminar he was presenting in Paris. I was impressed by his work in quantitative history, and bombarded him with questions. Afterwards he accepted to co-supervise my PhD based on the flimsiest evidence of my capacity to conduct one. That was quite a gamble.

At the London School of Economics between 1997 and 2001 I met him almost weekly during term. This was the most professionally fulfilling time of my life. I remember the whole department as a haven for research. He had gathered a great group of PhD students from all around Europe, many of whom have since conducted successful academic careers. His insights and deep knowledge which were freely shared in his office or in the pub, pushed all of us towards our best. He was an exceptional PhD supervisor.

> "I am proud to walk in his footsteps"

He was a gateway to multiple aspects of British culture with a whole range of interests outside of academia. I was quite surprised (and pleased) when he could have found me a job at the Christie's wine department.

Each time I supervise a student my thoughts go to Nick. He encouraged us to nurture PhD students who could be seen as his grandchildren, but were quite wary of not being up to the task. I am proud to walk in his footsteps and am sorry he's not around anymore to advise me how to accomplish it. ◀



About CAGE

CAGE is a research centre based in the Department of Economics at The University of Warwick. We conduct independent policy-driven research informed by history, culture and behaviour. Our aim is to move beyond traditional measures of economic success to consider broader influences on global prosperity: from cultural and behavioural attitudes to voter preferences and political institutions. We analyse historical and contemporary data to draw out lessons for modern policy. CAGE is supported by the Economic and Social Research Council (ESRC).

Who we are

We are a small team of experts seeking to apply economic principles to ask new and innovative questions of data. We want to know how and why economies are successful, and the ways in which history, culture and behaviour shape the global economy (and vice versa).

We produce robust evidence to inform policymakers and journalists and influence both policy and debate. Our core team consists of nine Research Theme Leaders and Deputy Leaders who work across five Research Themes. We also have a number of internal and external associates who contribute to our research.

Publications and events

Our academic working paper series showcases the research of our team and our associates. We also publish a bi-annual magazine, *Advantage*, which highlights the best of our policy-driven research for an informed non-academic audience. Our policy briefings and themed policy reports seek to draw out policy recommendations and findings to inform current debate.

Our event programme focuses on driving impact from our research and we conduct regular briefings in London and across the UK. We also host a policy conference bringing together academics and policy specialists to discuss contemporary economic and political challenges. We support young talent through our annual summer school.

CAGE research uses economic analysis to address real-world policy issues.

A more detailed appreciation of Nick Crafts' contributions, written by Stephen Broadberry, Bishnupriya Gupta, Timothy Hatton, and Tim Leunig, together with a complete list of his publications, can be found on the Economic History Association website.

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advantage

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