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Location, location, location: reassessing W.H.K. Turner's legacy for industrial geography in Scotland and beyond

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ABSTRACT

For more than three decades between the 1950s and the 1980s, W.H.K. (Keith) Turner was a valued colleague and teacher in the Department of Geography at University College, Dundee (later, the University of Dundee). During that time, he researched extensively on the industrial development of Dundee and its environs, as well as the linen industry in East-Central Scotland more generally. His approach, combining a detailed understanding of human geography in its local setting alongside a recognition of the importance of physical geography on the development of industrial landscapes, was exemplary in its clarity and insight; and his recognition and explication of what he described as 'industrial inertia' – the long-term inertial effects of landscape features and natural resource use on patterns of industrial development – offers scholars the potential to look anew at long-established questions about how, when and why industrialisation took place during the First Industrial Revolution in Britain. In this review, we argue that Turner's approach deserves a much wider audience, and much greater consideration in future work on patterns of industrialisation in Scotland and beyond.

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Introduction

For at least 150 years, the development of mechanisation in the manufacture of textiles (and cotton in particular) has been central to discussions about economic and industrial progress, modernity, mechanisation, changing work patterns and the impact of rapid urbanisation (e.g. Allen, 2009; Floud et al., 2014; Mokyr, 1999a). Over time, new strands of inquiry have added layers of geographical, ideological and methodological complexity (Hahn, 2020, pp. 14–18). Yet, despite a century and a half of intense scrutiny (or, perhaps, partly resulting from it, as we discuss below) there remain some significant gaps in the academic literature on the causes and consequences of the 'First Industrial Revolution' in textiles.

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Two topics that might be said to have received less attention than they deserve – the disciplinary lessons of historical geography and the development of factory industrialisation in Scotland – are of particular interest to us in our current work on the ‘first energy transition’ from waterpower to steam power in Britain’s early textile industries. Our project takes a multidisciplinary approach to the subject, integrating methodologies from hydrology and geography, social and economic history, and the history and sociology of technology to investigate a range of factors that may have influenced the decision making of early Scottish and English industrialists in their choice of motive power. It is within this context that we (re)discovered the work of W.H.K. Turner and his significant, but largely overlooked, contribution to Scottish historical geography.

Keith Turner joined University College, Dundee, in 1948 while studying for a master’s degree at the University of Wales (Turner, 1952a). He was one of the first geographers to be appointed at the College and remained central to its life and work until he retired in 1985, by which time it had become the University of Dundee (Findlay & Werritty, 2010). His research focused on Dundee and its environs and, like most of his contemporaries, his oeuvre was not especially extensive by modern standards. Most of the dozen or so articles he published appeared in this journal and its predecessor. They centred on the industrial geography of the linen and jute industries (Turner, 1952a, 1952b, 1953, 1957a, 1957b, 1958, 1966, 1968a, 1968b, 1982a, 1982b, 1983), but he also did important work on flax cultivation and on the early-modern woollen industry in Scotland (Turner, 1964, 1972, 1985a, 1985b). Turner’s work was, in many ways, characteristic of its time: other geographers were working on similar topics, especially in the latter part of Turner’s career, but most of their work focussed on English industrialisation and its relations to the city, country and region (see for instance Butlin, 1981; Gregory, 1988; Langton, 1984). Turner’s work was resolutely Scottish and he took a case-study approach, placing detailed archival research alongside an exploration of the physical geography of his chosen region to better understand patterns of industrial development over decades and, sometimes, centuries (see, for instance, Gregory and Walling (1987) for a contemporary treatment of interactions between physical and human geographies; and Gregory (2004) for a historical survey of work on the topic). Despite its relatively limited spatial and topical range, Turner’s work was meticulous and nuanced in its understanding of the ‘space economies’ of East Scotland’s textile industries; yet up to now it has been largely neglected in the wider literature on the growth of Britain’s textile industries overall, especially during the crucial phase of development during the classic ‘First Industrial Revolution’ period, ca.1770–1850. The aim of this brief review is to demonstrate that Turner’s locally focused approach still has important lessons for students of industrial development, and that it can provide a much-needed corrective to the ‘grand narratives’ which have long defined study in the field.

Current trends in research on the industrial revolution

The literature on Britain’s (or, more properly, England’s) first Industrial Revolution is huge (‘massive’ in the words of Hauptert, 2019, p. 739; ‘awesome’ according to Riello & O’Brien, 2004, p. 4) and almost incomparably wide-ranging. Even a brief discussion of its parameters would require far more space than is available here, but its extent is illustrated by the fact that the term ‘Industrial Revolution’ has its own historiography

dating back as far as the second decade of the twentieth century (Bezanson, 1922). Yet, despite its scale, there is a curious lack of detail in the literature about some of the key empirical realities that underpinned the growth of Britain's textile industries between ca.1770 and 1850. This is not a new observation: it was first made more than a century ago, when J.H. Clapham wrote that 'even if the history of [the] industrial revolution is a 'thrice squeezed orange' there remains an astonishing amount of juice in it' (Clapham, 1910, p. 195). Fully fifty years later, R.M. Hartwell echoed Clapham when he noted that 'interest in the industrial revolution is increasing, not waning ... [yet] as a topic for research it seems still to be strangely unworked' (Hartwell, 1965, p. 164). That we can continue to suggest this is the case in 2022 might seem remarkable; but, on further consideration it is, perhaps, not so surprising.

The problem with conducting research on a topic as large and complex as the 'First Industrial Revolution' is that, arguably, over time scholarship can become somewhat detached from its subject. Since Toynbee crafted the first 'grand narrative' in the 1880s, many scholars and schools of thought have vied to explain the Industrial Revolution according to a particular schema or set of economic, industrial or demographic conditions (for some earlier overviews, see Coleman, 1992; Flinn, 1966; Hartwell, 1965, 1971). For example, in the mid-twentieth century Rostow's hugely influential explication of the 'stages' of economic growth in Britain, from 'take off' in the 1780s to the age of mass consumption in the twentieth century, was avowedly less an attempt to explain historical phenomena than 'an economic historian's way of generalising the sweep of modern history' (Rostow, 1960, p. 1). As this quotation suggests, Rostow's model was self-consciously un-empirical (a 'stylized economic history of Britain', according to Taylor, 1992, p. 12), and he was not alone in taking a broadly theoretical approach to what are, at root, empirical trends in history. For example, in the 1980s a new generation of economic historians turned to the relatively novel sub-discipline of cliometrics (the application of economic theory and mathematical methodologies to historical enquiry) to explore what we mean by the term Industrial Revolution in the British context (Hauptert, 2019). This approach – also dubbed the 'new economic history' – has, like Rostow's stages of economic growth, gained considerable traction as an explanatory schema. But it, too, can be seen as symptomatic of a move away from empiricism and towards theoretical models that are intended to be applied far beyond the confines of British history (see, for example, Voigtländer & Voth, 2006).

In a parallel development, since the middle of the twentieth century interest in the underlying demographic conditions of early-modern Britain (population growth, migration and limits to natural resources) has led to a range of epiphenomenal explanations for many of the 'novel' characteristics of the first Industrial Revolution (see Floud et al., 2014, for an overview). Much of this work relates to, and extends, far older questions about how and why Britain 'led the way' in Europe and beyond; and this, in turn, has led to an even broader and more expansive interest in the comparative development of economies globally in the *longue durée* (for example, Jones, 1981; Landes, 1998; Pomeranz, 2000). More recently, this global focus has shifted away from 'the European Miracle' (to use Jones's, 1981, phrase) and towards the costs to other nations and regions of Europe's economic success. In this analysis, considerably less weight is afforded the attributes or advantages (technological, physical and/or financial) which may have accrued in Britain, and far more to the way that expansionist

forces centring on Britain and the North Atlantic were able to exploit and manipulate natural and human resources, transportation networks and distant markets far beyond their shores (e.g. Beckert, 2014; Hahn, 2016, 2020; Inikori, 2002; Riello, 2013).

The theoretical, top-down and/or globalising approaches reflected in much of this work make perfect sense if we accept, *a priori*, that in studying the first Industrial Revolution we are primarily seeking to understand a (possibly the) epochal shift in economic and social relations, whether from the point of view of the triumph of industrial capitalism, the dawn of modernity, the origins of globalisation, or how certain societies at certain times escaped from the Malthusian traps of the past. The obvious objection, though, is that in scaling up the terms of our enquiry we risk downgrading or ignoring much of the detail that can help us to make sense of change over time; the empirically observable realities and the decision-making processes of individuals and communities of interest that existed and interacted in specific historical spaces. This is not the place to engage in detail in the ‘global versus microhistory’ debate, but it is instructive to take note of it; for, as John-Paul Ghobrial recently cautioned in his introduction to a special edition on the subject, there is now a danger of global history becoming a victim of its own success, leading to ‘a real worry on the part of some scholars about the methodological downgrading of place-based knowledge and expertise’ in the writing of history (Ghobrial, 2019; see also the other contributions to the special issue). The comments of Clapham and Hartwell, noted above, suggest that such ‘place-based knowledge’ has been side-lined for a very long time in debates about the Industrial Revolution, which, though far from analogous with Lyotard’s notion of the *grand récits*, often share some of their totalitarian, and therefore limiting, qualities (Lyotard, 1979). In contrast, however, an approach like Turner’s reminds us that the Industrial Revolution was a local, as well as a global, affair; that however broad our terms of reference, the actual processes of industrialisation took place in cottages and houses, towns and villages, workshops and factories, and in regions and sub-regions, and that these smaller units of inquiry can have as much to tell us about the causes and consequences of the first Industrial Revolution in textiles as the meta-phenomena with which we are nowadays much more familiar.

‘Industrial inertia’ and the fine details of industrial development

In the very first line of his first published article, in 1952, Turner wrote that ‘The present features of the textile industry in Dundee are the result of an evolutionary sequence of growth’ (Turner, 1952b, p. 107). Over the following thirteen pages he elaborated on this evolutionary perspective by demonstrating the intimate relationship (sometimes causal, at others conditional) between Dundee’s linen and jute industries and a range of environmental and what might be described as accumulated phenomena (that is, the long-term legacies of industrial activity in Dundee and the surrounding area). He also looked beyond the usual chronology of the classic first Industrial Revolution period to explain processes that had influenced Dundee’s patterns of industrialisation. He noted, for example, ‘the early functional dependence of the town’ on the neighbouring catchments of the Dighty Water, beginning in the sixteenth and seventeenth centuries (Turner, 1952b, p. 107). He also pointed to the fact that Dundee turned to linen only after the demise of its coarse woollen industry ‘which had been the staple since at least as

early as 1437,' and he noted that from the eighteenth century onwards, 'the tradition of coarse manufacture [was] preserved in the making of osnaburgs and other coarse [linen] fabrics,' thus emphasising that manufacturing traditions of very long standing were still influential on patterns of industrial development well into the classic Industrial Revolution period (Turner, 1952b, pp. 107, 108).

Moving on to the early nineteenth century, Turner made two further key observations on the geographical development of Dundee's linen industry: first, that the siting of the earliest steam-powered mills 'heralded the economic contraction ... of the dispersed textile interests of the area'; and second, that the new factories were still located proximal to water sites (Figure 1) due to:

water being needed not only for steam-raising but also for boiling and bleaching the flax yarn. The streams were, therefore, prime factors of localisation, and remained so until piped water in quantity was introduced to the town. (Turner, 1952b, p. 109)

The true value of these observations became clear only when Turner went on to consider the later development of Dundee's linen and jute industries and their industrial footprints in the mid-*twentieth* century. By then, he wrote, '[f]or half of the period of the town's growth as a textile centre the streams have not played a controlling part' (Turner, 1952b, p. 117). This was for two reasons: first, because the water which was such a vital part of industrial processing was abundantly piped in as part of the town's supply from the 1870s onwards (as he had already noted); and second, because electrification in the early twentieth century eliminated the need for water to feed steam boilers. Yet, as late as the mid-1950s, 'twenty-five of the thirty-three spinning units and thirteen

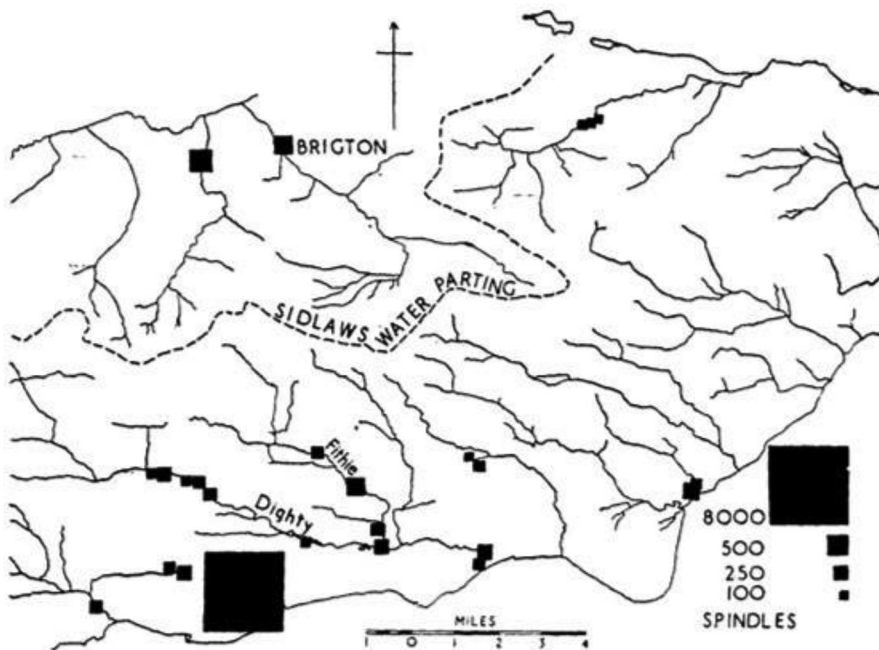


Figure 1. The distribution of spinning mills in the Dundee area, 1822 (Original Source: Turner, 1952b, p. 109, Fig. 3).

of the seventeen spinning and weaving concerns [lay] along the stream lines'. This, in turn, led him to conclude that:

the compelling force of *industrial inertia* has thus maintained much of the old pattern ... Though the initial localising factor ceases to function, the fabric remains. Growth, in fact, has produced a structure conservative to change, and not necessarily seeing the need for change; while the streams themselves, the virtual controllers of early growth, are now scarcely known. (Turner, 1952b, p. 117, our emphasis)

One only needs to walk through downtown Dundee to see this phenomenon physically enacted: the Scouring Burn, the rivulet upon which Dundee's city-centre linen and jute industries first developed, is now entirely out of sight, culverted below street level along its entire length.

Turner developed his ideas around 'industrial inertia' in his later work, although he never again referred to them specifically in those terms. For example, charting the decline of 'country' flax weaving in the early nineteenth century (that is, the decline of weavers in rural settlements) and its growing concentration in urban-industrial centres, he noted that 'industrial evolution largely adapted to an existing order,' and that 'the more important places' – traditional textile centres from the post-medieval period, such as Dundee, Perth, Dunfermline and Arbroath – '[were] the most susceptible' to the relocation of industry from rural to urban areas (Turner, 1983, p. 29). Thus, his keen eye for the geography of industrial development was always open to the influence of much longer legacies in specific localities and their inertial influence on the choices made by merchants and manufacturers.

In considering 'The Significance of Water Power in Industrial Location,' Turner again recognised the need to look beyond the normative timescale of the first Industrial Revolution, noting that '[t]he selection of river falls for relatively large-scale developments in the textile industry [occurred] mostly in the period 1736–1836' (Turner, 1958, pp. 98–99; see also, Turner, 1957a). Here, his focus was on Perthshire, and he pointed to the intimate connection between the earlier location of textile manufacturing activity (bleachfields, printfields and flax spinning) on the rivers Tay and Almond, and the later siting of the Stanley cotton mill complex, one of the largest water-powered mills in Scotland and, indeed, in Britain as a whole (Figure 2). Later in the same article, he provided another deceptively simple explanation for these observations. 'Finally,' he wrote:

one should emphasize that the value of many of the sites considered had already been appreciated before the Industrial Revolution made its impact. Of those chosen for the various textile works, probably more were in use for water-powered milling than were not. Seldom was there involved the selection of a site wholly undeveloped previously, and even where this did occur some contributory feature of past use, such as the presence of a laide to serve a mill elsewhere, often influenced the choices made (Turner, 1958, p. 102).

A quarter of a century later, Turner revisited the issue of the historical geography of early spinning mills, this time in the context of the linen region of East Scotland as a whole. Echoing his earlier comments, he noted that the choice of mill sites by manufacturers 'was often partly conditioned by existing use, falls commonly being redeveloped' (Turner, 1982b, p. 77). But by now he had added nuance to these observations, noting that factory spinning by water tended to follow patterns of water usage that extended beyond even long-term textile manufacture, noting that flax scutching, yarn washing

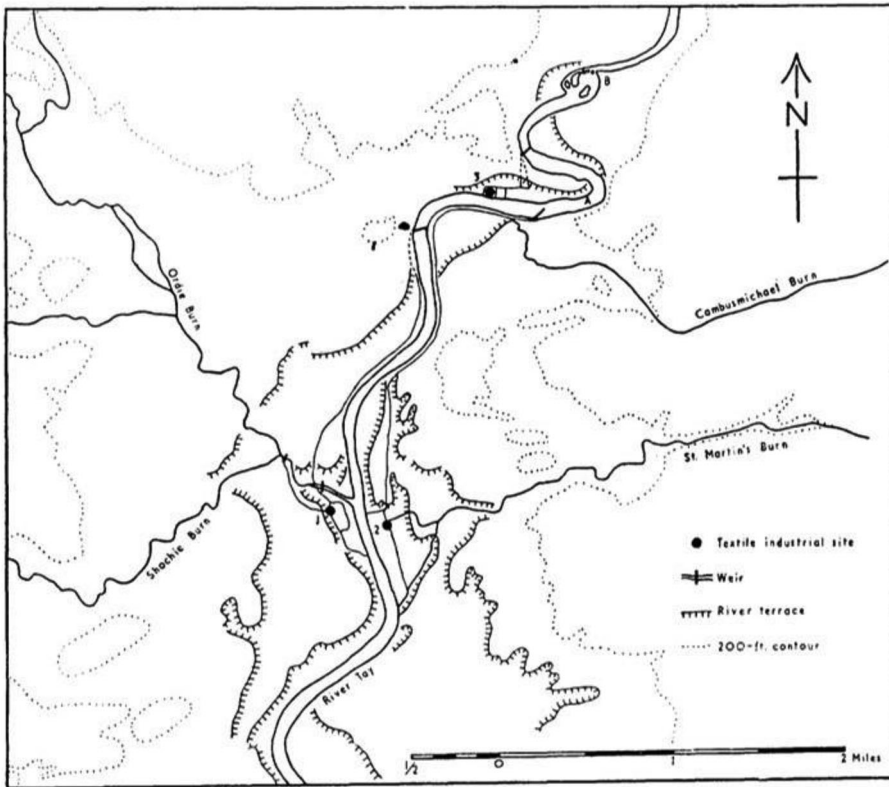


Figure 2. Siting of the textile industry along the lower Tay, A. 50 feet O.D.; B. Campsie Linn. *Sequence of use as textile works:* 1. LUNCARTFIELD – bleaching (also late eighteenth-century cotton spinning). 2. STORMONTFIELD – printing, bleaching (also late eighteenth-century cotton spinning). 3. STANLEY – cotton spinning and weaving (formerly also bleaching, and late eighteenth-century flax spinning). (Original source: Turner, 1957b, p. 134, Fig. 4).

(‘plashing’) and bleaching in the early eighteenth century tended to cluster around sites previously used by non-textile interests, most often corn (grain) mills. This was true of the relatively remote Stanley cotton mill complex, which utilised the route of an earlier corn mill lade at the Campsie falls on the river Tay (Cooke, 2003, p. 39), but Turner noted that such clusters were found in greatest number around the fringes of towns. This led him to further conclude that:

Within these fields of urban influence, when flax-spinning came into vogue, merchants, manufacturers and others redeveloped and extended older patterns, the effect being to form textile provinces of a sort. Local systems of circulation then existed, embracing mills and bleachfields and centring on urban nodes. The rural fringes of Dundee, Arbroath and Perth, for instance, were notable in this way, small streams like the Dighty, by Dundee, with a functional significance out of all proportion to their size. (Turner, 1982b, p. 77)¹

Through close attention to detail Turner was therefore able to link patterns of urban-industrial development in East Scotland to traditions that stretched back much further than we might anticipate if we confined ourselves to the more expansive, ‘top-down’

and/or theoretical explanations that we suggest have characterised much of the literature on the first Industrial Revolution. His notion of the development of 'textile provinces,' centring on 'urban nodes' but dependent on a whole network of environmental and human influences, was also remarkably prescient, anticipating some key aspects of later work on the importance of trading and business networks in the creation of industrial districts and clusters (e.g. Popp et al., 2006; Popp & Wilson, 2003) while never losing sight of the importance of landscape and geography.

Despite his engagement with many themes which are of undeniable interest to scholars of the first Industrial Revolution, as we have already suggested his work has not gained wide attention. It is hard to avoid the conclusion that this is, at least in part, because his focus was on regional Scotland rather than on the Midlands and the North of England. Although Scotland's industrial progress is reasonably well represented in the general literature and in textbooks, most serious scholarly work tends to stop short of assessing its role in the early development of industrialisation; and it is certainly true that the kinds of epiphenomenal theories for the growth of Britain's textile industries during the 'classic' Industrial Revolution period remain almost entirely Anglocentric (e.g. Mokyr and his co-authors in Mokyr, 1999b, in which Scotland receives only cursory mentions). This is not to dismiss the fundamental contributions of scholars such as Henry Hamilton, or later commentaries by, for example, Roy Campbell and Chris Whatley (Campbell, 1965, 1980; Hamilton, 1932; Whatley, 1997). Rather, it is to emphasise that, generally within the literature on early industrialisation, Scotland's path to growth has been treated as distinct from (and peripheral to) that of England; and, indeed, this is true even of those works which are dedicated to Scottish industrialisation. In the wider British literature Scotland rarely figures beyond a nod towards Glasgow and Renfrewshire as early cotton centres along with references to New Lanark as an exemplar of the 'factory colony' during the age of waterpower (e.g. Chapman, 1972). Yet recent work by Anthony Cooke, and in particular Stuart Nisbet (who takes a long-term localised approach not unlike Turner's), suggests that until the first decades of the nineteenth century Scotland's progress in manufacturing the new material of cotton was central to the trajectory of a truly *British* mechanised textile industry (Cooke, 2010; Nisbet, 2003). It shows that for much of the period of the first Industrial Revolution in textiles, Lancashire and the West of Scotland were not so much distant cousins, only remotely connected, as co-partners: they grew in tandem by exchanging knowledge and expertise, capital and producer goods, and they often shared personnel, both on the shop floor and in the boardroom (e.g. Nisbet, 2003, p. 131). This is rarely accounted for in a predominantly Anglocentric (or, if one were to be generous, Lancashire-focussed) theoretical literature on the foundations of the first Industrial Revolution.

Turner's work offers a model for understanding industrial change and development during the first Industrial Revolution at the local or sub-regional level, a model that can be applied wherever these processes were influential regardless of whether those locations sit at the centre of current debates. In its focus on Scotland, his work also offers us the chance to build both a more nuanced comparative picture of development during Britain's first Industrial Revolution, and a more connected one because, as he demonstrated more than fifty years ago, much of what was happening in the North and Midlands of England during the crucial decades between the 1770s and the 1830s was occurring simultaneously in parts of Scotland; and understanding this inevitably

leads us to ask in what ways these two centres of early-textile industrialisation were distinctive, and in how they fed on each other's experience and expertise. In other words, by examining local patterns in the way that Turner did, whilst always keeping the broader picture in mind, we can reach towards a much more detailed contextual understanding of why some regions and localities fared so well during the first Industrial Revolution in textiles and others did not; and what, if any, were the necessary connections between them.

We believe that Turner's emphasis on the long-term relationships between physical geography, resource use and later industrial development are key to understanding patterns of social, economic and technological change such as those through which we have come to understand the first Industrial Revolution. As the examples above illustrate, Turner demonstrated that, for the East of Scotland at least, what emerged as primary responses to need – sufficient waterpower to run corn mills and, later, pre-industrial manufacturing processes close to settlements – became, over time, inertial forces that propelled and constrained development patterns right through the classic period of the first Industrial Revolution and beyond. Through his explication of the *longue durée* process he described as 'industrial inertia,' Turner arguably anticipated evolutionary conceptions of the 'canalization' of sociotechnical development described in contemporary innovation studies as 'path dependency' (Aghion et al., 2014; Berkhout, 2002; Fouquet, 2016; McCauley & Stephens, 2012). Our research to date on the English and Scottish cotton industries suggests that similar processes were at work in other industrialising localities and regions in Britain.

Conclusion: back to the future of industrial geography

Although he may not have thought of himself as such, in terms of the great body of scholarship on the first Industrial Revolution Turner was something of an iconoclast. His focus was on linen and jute, not cotton, and on Dundee and the East of Scotland rather than Lancashire and the Midlands of England. More importantly, he did not simply rely on the existing meta-narratives which then defined debates about the first Industrial Revolution, centring very firmly on the English textile regions of Lancashire, West Yorkshire and the Midlands. Instead, he sought to understand the development of mechanised industry in its local context and, in doing so, he described how it arose from a range of interactions including those between local communities, natural resources and physical geography.

This is not to suggest that he was blind to the wider forces of development and modernisation within his work: he took full account of the influence of financial, mercantile and manufacturing networks which stretched far beyond Eastern Scotland and the United Kingdom as a whole. For instance, Turner documented the development of jute and heavy linen manufacturing in and around Dundee, including the significant effects of the Union of Scotland and England on Scottish exports to its southern neighbour and the colonies; the export of Dundee's coarse linens to the Caribbean plantations as clothing for slaves, noting that its manufacturers developed a 'growing preoccupation' with the trade over the course of the eighteenth century (Turner, 1966, p. 31); and Dundee's transition to jute manufacturing and its role in the carrying trade in the nineteenth century – providing the bags that enabled goods like cotton, coffee, grain, flour and sugar to move around the world. It is not necessarily fair then to lump Turner in

with those other Scottish historians and historical geographers who stuck to their own patch, ‘refusing to engage in major British and international debates’ (Devine, 2011, p. 42). Equally, this is not to imply that Turner’s work was a direct precursor to more recent debates about the significance of colonialism and slavery on the development of Scotland, its industry and society. Turner’s emphasis is generally *from Scotland to the world* rather than the other way around. There is, for example, no strong sense that slavery or colonialism *made* Scotland, as is the case in Devine’s recent article, ‘Did Slavery make Scotia great?’, where he argues – with much greater urgency than Turner – that ‘the standards of living of countless working-class families in the eastern Lowlands of Scotland came to depend on the huge markets for cheap linen clothing among the slave populations of Jamaica and the Leeward Islands’; that ‘the Atlantic slave-based economies were indeed fundamental to Scotland’s eighteenth-century transformation’ (Devine, 2011, pp. 60 and 62 respectively).²

One factor that sets Turner’s work apart is his insistence that many of the patterns of industrialisation that we see during the classic Industrial Revolution period were shaped and moulded by anthropogenic interactions over the preceding decades and centuries, and that geography and landscape were central to them. In this, he necessarily had a very specific, often local or sub-regional, focus to his work. For most of the period during which Turner was writing only limited research had been done on the historical geography of early industrialisation. This changed to an extent in the 1980s and 1990s when Franklin Mendels’ proto-industrialisation thesis stimulated a surge of work on ‘regionalisation’ in industrial development (Gregory, 1982; Hudson, 1989; Langton, 1984; Mendels, 1972; and, more recently, Stobart, 2004). But even within the context of recent scholarship, Turner’s work offers something different. Regionalisation scholars have generally focused on broader demographic and structural factors (migration, population change, the nature of local institutions, the development and dissemination of technology, and the relative pace of industrial growth) insofar as they affected particular regions; the same factors that provide much of the context for the macro studies that preceded and accompanied them (for recent illustrations of this tendency, see Stobart’s important work on North-West England: Stobart, 1996a; 1996b; 2004). Few scholars have seriously considered the *physical* geography of industrial regions – still less of specific locations – beyond a discussion of the availability, in the broadest terms, of coal and potential waterpower, and even fewer have sought to understand how it impacted local resource use through time and later shaped later patterns of industrialisation. Yet this is precisely what Turner was doing more than sixty years ago, and in doing so he demonstrated that topography directly shaped the spatial ‘fabric’ of the textile industry, from the siting of mills to the distribution of textile processing and labour, and that this spatial fabric impacted patterns of industrialisation for decades, and even centuries, to come.

Though far from new, Turner’s approach offers us a different perspective on old debates. In emphasising the forces of local ‘industrial inertia’ – which were, for him, at least as important as any overarching deterministic or modernising forces – it requires that we revisit the physical as well as the human environment to better understand the ‘space economies’ of early industrialisation. In our own work, this approach is likely to prove highly beneficial as we seek to understand why, when and how industrialists made the shift from waterpower to steam power, and what the implications of those

decisions were for later patterns of development in the early textile industries in both Scotland *and* England. But by demonstrating the benefits of attention to local topographical as well as archival detail and insisting that we take full account of interactions between the natural environment of industrial spaces and the decision-making of early industrialists, Turner's approach may well have lessons to teach scholars across the entire landscape of the 'First Industrial Revolution' in Britain, and beyond.

Notes

1. The doctoral research of John Orbell on the British grain milling industry in the eighteenth and nineteenth centuries confirms Turner's observations. See Orbell (1977).
2. In Turner's defence, he did make a stronger case in his unpublished master's thesis that the development of Scotland's linen industry in the eighteenth century was self-consciously linked to the growth of the British colonies, noting that that the growing market for coarse linens in the plantations was specifically targeted by the Board of Manufacturers as it exerted itself to develop the industry in the east of the country (Turner, 1952a, pp. 11–16).

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