The central role of the iron industry in Britain’s industrialization is a textbook commonplace. Iron was one of those sectors in which indisputably revolutionary changes took place. The use of coke in smelting, the application of steam power, and the perfecting of coal-fired refining methods transformed the prospects of the British iron industry in the course of the eighteenth century. Perhaps not surprisingly, the historiography of iron has long been fixed upon these dramatic turning points. Ashton’s classic Iron and steel in the industrial revolution took 1775—the year of James Watt’s steam engine patent—as pivotal. Birch’s Economic history of the British iron and steel industry begins in 1784, the date at which Henry Cort patented his ‘puddling and rolling’ technique. The most important recent contribution to the literature, Hyde’s Technological change and the British iron industry, notwithstanding its methodological advance over older accounts, stands in a well-established tradition. Technological questions have always been foremost. Historians have found the organization of the iron industry a less compelling topic. Nor have they devoted much attention to the ways in which the market for iron functioned. Yet questions of industrial and commercial organization were of paramount importance. In the absence of technological transformation—something of which contemporaries only became sure in the 1780s—organizational change was the only means of meeting the rapidly growing demand for iron in the British Isles.

A conceptual shift is needed if the eighteenth-century iron industry is to be adequately understood. Indeed, our appreciation of the role of iron in British industrialization will be enhanced only if we stop speaking of an iron industry. The term is anachronistic. Contemporaries referred to the ‘iron trade’, something that embraced both the primary processing of iron and the subsequent manufacturing of metalwares. The iron trade involved a variety of actors, from the owners of blast furnaces—through forgemasters, slitting mill proprietors, wholesale ironmongers, inter-

1 This article reports the preliminary findings of the project ‘Baltic iron and the organization of the British iron market in the eighteenth century’ (Economic and Social Research Council award R000223109). Chris Evans acknowledges a Caird Short-Term Fellowship from the National Maritime Museum that enabled him to pursue research on the role of the Navy Board in the market for bar iron, and Göran Rydén acknowledges the support of Axel och Margaret Ax:son Johnsons Stiftelse för allmännyttiga ändamål.

2 Ashton, Iron and steel; Birch, Economic history.

3 Hyde, Technological change. For a survey of the historiography, see Harris, British iron industry.
national merchants, and steel manufacturers—to putting-out employers in the nail trade, quite apart from a host of artisanal workers engaged in the making of hardware. They occupied a vast and varied industrial landscape that stretched from the grit and smoke of woodland charcoal pits to the workshops of those who fashioned steel into jewellery or clock springs.

The iron trade was dominated by men of great capital, usually arrayed in partnerships with a strong dynastic flavour, such as that headed by the Foley family in the west midlands or that of the Spencers in Yorkshire. Yet the partnerships to which the Foleys or the Spencers lent their names were not firms in any recognizably modern sense. The various stages of the productive sequence (mining, smelting, refining, processing, manufacturing) were not internalized, much less integrated, within a single organization. Furnaces, forges, and processing mills were often only loosely articulated with one another. The enduring presence of the great ironmaking dynasties has lent the early eighteenth-century iron trade a rather misleading solidity. As will be seen, ironmaking partnerships are far better understood as loose, ad hoc commercial alliances, the members of which exchanged intermediate goods and semi-finished products (scrap, pig iron, bar iron, nail rods, steel, and so on) among themselves. There was an organizational fluidity about the iron trade: patterns of ownership and networks of production shifted in kaleidoscopic fashion.

This restless fluidity can only be appreciated if Britain is located within an international iron trade, for until the revolution in coal technology came to fruition in the last years of the eighteenth century the British iron market was dominated by imported bar iron, chiefly from Sweden and Russia. It was the arrival of Baltic iron in ever-mounting volumes on British quays that made organizational flux a systemic feature of the British iron trade between the Restoration and the French Revolution. Swedish and Russian iron, coming in a variety of different grades and at different prices, obliged domestic ironmasters and iron merchants to reconfigure, time and again, the production networks in which they were engaged.

This article proposes a new view of the British iron trade in the eighteenth century. It suggests that an over-concentration on issues of technological choice, together with a reluctance to acknowledge the international—particularly the Baltic—dimensions of the iron trade, has resulted in the iron industry coming adrift historiographically. The literature on iron is restricted—astonishingly so, given the salience of metal manufacturing—and takes little or no cognizance of the themes that have enlivened writing on the Georgian economy in recent years (including the centrality of the Atlantic economy, the proliferation of luxury and semi-luxury consumer goods, exuberant product innovation, and the


5 Evans and Rydén, ‘British ironmasters’.

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elaboration of specialized non-factory manufacturing networks). Much of what is written about early modern ironmaking seems parochial in outlook and theoretically under-informed. Yet the iron trade can be accommodated within a broader historiographical agenda. To do so will produce a new knowledge of the iron trade; it will also augment our understanding of the industrializing economy as a whole.

This article proceeds in the following way. First, the rise of Baltic iron on British markets is outlined, demonstrating the extent of import penetration in the eighteenth century. Secondly, new empirical evidence is presented on how the market for malleable bar iron actually operated, for a wide variety of different irons circulated on the British market, each with its peculiar qualities. Indeed, the existence of a range of niche markets, catering for highly specialized demands, is stressed here. Finally, the dynamic interaction between foreign and domestically produced iron is considered. At mid-century iron producers, merchants, and state agencies in Britain, Sweden, and Russia debated how best to respond to the burgeoning demand in the manufacturing districts of central and northern Britain. The outcome was a period of upheaval and crisis in the international commerce in iron, one that does much to reveal the inner nature of Britain’s iron trade.

I

Sweden became Europe’s leading iron exporter in the early modern period. The seventeenth century was the heyday of what E. F. Heckscher, the doyen of twentieth-century Swedish economic history, identified as the ‘monopole suédois’ over the international iron market. Swedish exports in the sixteenth century had been routed through Danzig to markets in central Europe. From the 1620s, however, the focus swung west to the Dutch Republic. A reorganization of the Swedish iron industry, overseen by the Swedish state and underwritten by Dutch capital, led to an enormous growth in exports. After 1650 a further westward shift took place as Britain supplanted the Dutch Republic as Sweden’s leading market. By 1700 nearly half of Swedish bar iron exports, some 15,000 tons, was landed at British ports; less than one-quarter went to the once dominant United Provinces.

By the 1720s British iron imports were equivalent to the entire output of the domestic forge sector. Imports continued to climb in the middle decades of the eighteenth century, although now it was iron from the distant ironworks of the Urals that proved the most dynamic element on the international market. The requirements of Russian militarism had led to the foundation of a modern iron industry along Europe’s eastern edge in the first years of the eighteenth century. By the 1720s a string of

6 Berg, ‘Factories’; Hancock, Citizens; Marshall, ed., Eighteenth century; Smail, Merchants, markets and manufacture.

7 Åström, Cloth to iron; idem, ‘Swedish iron’; Hildebrand, ‘Foreign markets’; Roseveare, Markets and merchants. On more general developments see Bogucka, ‘Role of Baltic trade’.

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massive metallurgical works, partly state-owned, partly in the hands of privileged industrialists such as the Demidovs, had come into existence. Russian iron first appeared in significant quantities at British ports in the 1730s, and by the 1760s shipments from St Petersburg had overhauled those from Sweden. The Russian export drive continued unabated in the 1770s and 1780s as Swedish exports stagnated. Total bar iron imports peaked in 1793, when nearly 60,000 tons entered British ports, but then went into steep decline. Domestic bar iron production, which had amounted to no more than 32,000 tons in 1788, surged upwards in the years around 1800. Native ironmasters took advantage of coal-based technologies such as Cort’s puddling process, while escalating tariffs denied Russian and Swedish producers access to the British market. With this, the century-old hegemony of Baltic iron on the British market was broken. Swedish iron was restricted to specialized uses on the Sheffield steel market in the post-Napoleonic years; Russian iron effectively disappeared from view.

That Swedish iron penetrated British markets very rapidly in the decades around 1700 is very clear. The distribution of that iron within the British Isles is more obscure, but it is certain that the great bulk went to England rather than to Scotland or Ireland. Of the 190,000 tons of bar iron that left Sweden for Britain and Ireland in the 1720s, just 7.6 per cent entered Scotland, and a mere 3.7 per cent was landed in Ireland. No less than 88.7 per cent was bound for English ports. And most went to London, England’s most considerable port throughout this period. Not only was the capital host to busy industrial and maritime sectors in which iron might be wrought up, it was home to two important institutional buyers. Both the Navy Board and the East India Company purchased sizable amounts of Swedish iron, for use in the Royal Dockyards or for export to Asia. The dominance of London was not absolute, however. A great deal of what was landed there was subsequently re-shipped coastwise to other centres of consumption, to Hull and Newcastle upon Tyne in particular. The giant metalware factories established on Tyneside by Ambrose Crowley in the 1690s, for example, were normally supplied with Swedish iron that had first been landed at Crowley’s wharf on the Thames. Moreover, as the eighteenth century wore on, outports such as Hull and Bristol emerged from the shadow of London and took an increasing proportion of their iron directly from Stockholm and Gothenberg.

Even so, Hanoverian London was the hub of the European iron market. Yet this is a commodity market about which virtually nothing is known:

8 The organization of the Russian industry is addressed in Ågren, Iron-making societies, and its export drive in Kaplan, Russian overseas commerce. The role of the Demidovs is discussed in Hudson, Rise of the Demidov family.
9 PRO, CO 388/30, ‘Table of ye Exports of Iron from Sweden for Eleven Years from 1720 to 1730 both inclusive’.
10 Flinn, Men of iron.
11 London accounted for 70% of Stockholm’s iron exports at the start of the eighteenth century, but no more than 40% by the century’s end: Eklund, ‘Iron production’, p. 55.
‘tantalisingly little’ it has been said, ‘has so far been found out about . . . any . . . iron importer’s dealings’.12 Some light can be shed, however, on London’s iron merchants and their imbrication with provincial manufacturing networks by tracing the activities of Josias Wordsworth (d. 1749), one of the great figures in London’s Baltic trade in the first half of the eighteenth century. Wordsworth was a member of that elite group that aggrandized the top brands of Swedish iron—Öregrund iron as it was styled. In the 1730s and 1740s he was a supplier of iron to the Navy Board, which insisted upon Öregrund for the making of anchors in the Royal Dockyards.13 He was also a partner in Harrison, Bannister & Hallett, one of the capital’s most powerful iron merchant houses in the 1740s.14 Wordsworth and his confederates were active in a number of spheres. They were dealers in Swedish and Russian iron. They were also manufacturers in their own right, being the proprietors of anchor shops at Deptford on the Thames and at Dunston on Tyneside, as well as a slitting mill and a suite of nailing shops at Bebside in Northumberland. They were wholesale ironmongers as well, buying hardware from midland manufacturers such as the Finches, the Homfrays, and the Molineuxs. Enormous quantities of this hardware were lodged in a complex of warehouses in London and Deptford, much of it—in the form of hoes, axes, machetes, nails, and chains—bound for the West Indies and the North American colonies.15

The career of Josias Wordsworth, even in this sketchy form, suggests how Baltic iron, once landed in London, was channelled through provincial manufacturing circuits and then launched out again into the wider Atlantic economy. Yet the routes that Swedish and Russian iron took through England’s industrial districts, much less their interaction with native brands of iron, are very poorly documented. If the impact of Baltic iron on the British iron trade is to be properly evaluated, a firmer empirical foundation is required. The survival of one Bristol merchant’s archive from the 1720s and 1730s permits just that.

Graffin Prankard (d. 1756) was, until insolvency struck in the early 1740s, the leading iron merchant in western Britain. His accounts and letter books allow a reconstruction of the market for bar iron in the Severn basin and around the Bristol Channel to be undertaken. They reveal a rapidly growing market for Baltic iron. More than that, they specify many of the purposes to which that iron was put. Prankard’s books disclose a variety of distinct markets for iron, illuminating a number of specialized industrial and commercial activities in Bristol and its wider hinterland. They allow the links in the commodity chains that stretched from Bergslagen (the mining district of central Sweden) to the steel furnaces of Birmingham, the boatyards of west Walian river estuaries, or the slave markets of West Africa to be put together.

12 Kent, War and trade, p. 68.
13 PRO, ADM 106/3592-8.
14 PRO, C 11/822/3, Remnant and Legas vs. Wordsworth, Hallett and Smith.

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Graffin Prankard emerged into the commercial life of Bristol in the first decade of the eighteenth century. He was engaged in the Atlantic trade, shipping ironmongery and other manufactured goods to the North American colonies. He was a Quaker, and well connected with Bristol’s Quaker business community. Indeed, he was an associate of that erstwhile Bristolian Abraham Darby, being a partner in Darby’s Coalbrookdale works and an exporter of the cast iron pots in which Darby specialized. There is no sign in the earlier part of his career that Prankard was trading to the Baltic. That changed in the 1720s as he began to import timber, hemp, and bar iron from Sweden on a large scale. By 1728, when his surviving accounts commence, he had established a pattern of trade that yoked together the Atlantic and the Baltic. His ship, the Parham Pink, would be despatched to South Carolina in the autumn, carrying nails, pots, steel, and gunpowder. Having taken on a cargo of rice and logwood at Charleston, the Parham would return to Europe, disposing of its rice at Hamburg in the spring. The Parham then headed for Stockholm, where Francis Jennings, Prankard’s correspondent, had assembled a loading of deals and bar iron. The ship was to return to Bristol in time for St James’s fair in July, the highpoint of the city’s commercial calendar.

Prankard’s entry into the Baltic trade was sudden and decisive. It is only in 1725 that the Gloucester port books begin to record the passage of Swedish iron from Bristol to river ports upstream on the Severn. Yet in 1729, the first complete year for which we have a record of Prankard’s sales, he delivered nearly 800 tons of bar iron to customers across western Britain, almost all of it Swedish. By way of comparison, the Maister family, at the head of one of Hull’s leading Baltic merchant houses, distributed just 304 tons to customers in the north and the Midlands in 1714, and 350 tons in 1715. Graffin Prankard dominated Bristol’s trade with the Baltic: he accounted for 54 per cent of the Swedish iron entering the port in 1730. He, alone among iron merchants in western Britain, won national respect. ‘The Bristoll Chester & Liverpool Traders are but Slippery’, one Stockholm factor told a Hull merchant in 1729, ‘except one Prankard of Bristoll.’ By the late 1720s Prankard was also dealing in Russian iron. Initially, he bought up supplies on the Rotterdam market, but in 1730 he established direct trading links with St Petersburg. Thereafter Russian iron assumed a major importance in Prankard’s business, making up between one-quarter and one-third of his total bar iron sales in the late 1730s.
Figure 1 presents the overall trajectory of Graffin Prankard’s sales of bar iron between 1728 and 1739. His sales breached the 1,000-ton barrier for the first time in 1732. After a slight relapse in 1733, sales moved upwards once more, exceeding 2,000 tons in 1738. The slump in sales shown in 1739 is partly real—reflecting the curtailment of iron exports of Africa that followed the outbreak of the War of Jenkins’ Ear with Spain—and partly artificial—reflecting the closure of Prankard’s extant accounts in September of that year. Data for the period 1728-32 have been drawn from a ledger that provides basic information on the identity of the customer and the volume of iron that he or she bought. But from March 1732 onwards data have been drawn from a rather richer source, Prankard’s waste books.21 These supply far more valuable information, including the location of the customer; the ‘nationality’ of iron that was purchased (Swedish or Russian); and the physical form of the commodity (¼ squares, 2½ inch broads, narrow flats, or any other of the multitude of gauges into which bar iron was hammered). Very often, the waste books specify the brand of iron concerned, recording the trademark with which the bars were stamped: the sable (or ‘rat’ as Prankard had it) that was the mark of the Demidov family; the imperial double eagle that was carried on bars of ‘Government Siberia’; or the ‘double bullets’ (two touching circles) that distinguished iron from the forge at Österby. Taken together, these data allow an analysis of Prankard’s market that discriminates between different regions, between different types of iron, and between different sorts of customer.

21 Somerset Archives (hereafter SA), DD/DN 433 (ledger 1728-32) and 438-9 (waste books 1732-9).

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Map 1. Graffin Prankard’s bar iron sales, 1732-1739

Note: The shaded circles represent the sales of bar iron made by Graffin Prankard to customers in the town in question. The area of each circle is proportionate to the volume of sales. The figure for Bristol is 1,990 tons.
Source: Somerset Archives, DD/DN 438, 439

Graffin Prankard sold iron over a wide area of western Britain. He sent iron up the Severn as far north as Shrewsbury. The river port of Bewdley provided access to the west midland plateau, and the southern midland counties could be reached via the Warwickshire Avon. The midlands formed a competitive frontier along which iron from Bristol confronted Baltic iron brought in from Hull via the Humber and Trent. John Huddesford, the Coventry ironmonger, was Prankard’s most easterly customer, William Butler of Stafford his most northerly. To the west, Prankard sold iron to customers all around the Bristol Channel. On the northern shores of the channel he had customers in the thriving industrial towns of Neath and Swansea, as well as clusters of demand in west Walian ports such as Pembroke, Carmarthen, and Haverfordwest. To the south, Prankard supplied a variety of customers in Somerset and north Devon but had no commercial presence to speak of beyond Bideford.

The failure to penetrate the mining and textile zones of Cornwall and south Devon may reflect the residual strength of Spanish iron in the region. The entry of iron imports from Bilbao to south-western ports...
had been a feature of the regional economy since the middle ages. By the eighteenth century the Basque iron industry was in its senescence, but in Prankard’s time imports to Britain persisted, organized by merchants in Plymouth, Exeter, or Weymouth. Another peculiarity of the south west that must have held back Bristolian domination was the presence of the Royal Dockyard at Plymouth. Supplies of iron for Plymouth Dock, most of it Swedish, were furnished centrally by Navy Board contractors in London. As a result, it was claimed, the dockyard officers ‘sometimes get more than they know how to make use of’. The availability of cheap, navy-surplus iron evidently kept civilian wholesalers at bay in Plymouth’s hinterland. Significantly, Prankard did have a customer base further to the east, in Dorset. West Dorset towns such as Sherborne, Bridport, or Lyme were supplied from Bristol.

Using the data from Prankard’s waste books the regional distribution of his iron sales between March 1732 and September 1739 can be mapped out. Five regional markets are distinguished: first, the west midlands (Worcestershire, Herefordshire, Staffordshire, Warwickshire, and Shropshire); second, the west country (Gloucestershire, Wiltshire, Somerset, Dorset, Devon, and Cornwall); third, the city of Bristol itself; fourth, south Wales (Monmouthshire, Glamorgan, Carmarthenshire, Pembrokeshire, and Cardiganshire); and fifth, the re-export market. Trifling amounts of bar iron were also sold in London and Ireland, and 3.9 per cent of sales (by volume) cannot be located.

The west midlands was consistently Prankard’s largest market, accounting for 37.2 per cent of sales across the period. The region had been home to a variety of specialized metalware-producing districts since the sixteenth century. Prankard supplied iron both to general purpose ironmongers-cum-manufacturers such as John Finch of Dudley, and to specialists such as John Podmore, the saw manufacturer of Broadwaters in Worcestershire, or Joseph Farmer, the Birmingham gun-maker. The re-export trade—slavers trading to Africa—ranked as Prankard’s second largest market, with 24.1 per cent of sales overall. Bristol customers were also significant, with 18.4 per cent overall, and occasionally (in 1734 and 1739) they bought more than the slave merchants. The city, with 25,000 inhabitants at the start of the eighteenth century, was an important centre of consumption in its own right, and it had a busy industrial hinterland. The west country and south Wales were comparatively small markets, taking 11.7 per cent and 4.5 per cent of sales respectively. The position is summarized in figure 2.

The dynamics of these different markets can be better understood if account is taken of the types of iron that Prankard sold. He dealt in a wide variety: Swedish, Russian, some English, a very small amount of Spanish, even a little German. Swedish iron accounted for most of his

24 Rowlands, Masters and men.
sales, yet Swedish iron was itself a plural commodity, coming in a range of qualities, and intended for specialized markets. Nearly one-third of Prankard’s sales of Swedish iron were of ‘voyage iron’. This was for the export market, a type of bar shipped to west Africa to be exchanged for slaves. Since the bars acted as a form of currency in slave markets they had to be cut to a very precise physical form and be of an exact weight (25lb.). Naturally enough, these bars were bought exclusively by Bristol’s slaving community, then at the height of its powers. This was a market that Prankard effectively monopolized. In 1738, the peak year for this branch of his trade, he supplied voyage iron to 19 of the 20 partnerships that fitted out slaving vessels in the city. Because the dimensions and weight of voyage iron were of such importance—customers demanded discounts if the bars were too heavy—Prankard had to ensure that the product was made in a thoroughly consistent way. But establishing quality control over a product made in remote Swedish iron-making communities was far from easy. To do so Prankard exploited his links with Francis Jennings in Stockholm.

By the 1730s Belfast-born Francis Jennings (1692-1754) had established himself as one of Stockholm’s leading iron exporters. Every year he received orders from Prankard about the volume and type of iron that would be required for the coming season. In turn, Jennings placed orders

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25 Richardson, ‘West African consumption patterns’.
26 A conclusion based upon cross-referencing entries in Prankard’s waste books with data in Richardson, ed., Bristol.

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with a selection of ironworks proprietors (brukspatroner). In theory, the Swedish iron industry followed a strict social division of labour prescribed by the state. Pig iron was smelted by peasant miners (bergsmän). The manufacture of bar iron, on the other hand, was carried out at specialized ironworks estates (bruk) under the aegis of brukspatroner, and the export of iron was entrusted to international merchants based in a handful of staple ports. In practice, however, the distinction between the estate owners and the international merchants tended to break down, with the former becoming subordinate to the latter. Because the iron made on ironworks estates was despatched to such distant markets, brukspatroner often needed advances of credit from Stockholm merchants in order to maintain production while they waited for returns on their overseas sales. The outcome was predictable: in time, many brukspatroner became chronically indebted. This allowed merchant-creditors such as Jennings to dictate production patterns in the forest communities of the mining district, or even to take over ironworks estates completely.27 Prankard, making use of Jennings’s good offices, was therefore able to lay claim in advance to a proportion of the annual output of specified forges where the workforce was well practised in the making of voyage or other gauges of iron.

The importance of Francis Jennings is also apparent in Prankard’s efforts to procure supplies of Öregrund iron. Öregrund brands, made at fewer than 20 bruk in the eastern county of Uppland, commanded a premium price on international markets. Just 6,000 tons of this material emerged from the specialized Vallonbruk (‘Walloon ironworks’) each year. Öregrund was made from the fine, non-phosphoric ores of the well-known Dannemora mine, using a quite distinct refining technique introduced by migrant workers from the Spanish Netherlands in the mid-seventeenth century.28 Öregrund was coveted by a few specialized users: the Navy Board deemed it essential for the manufacture of anchors in the King’s Dockyards, and English steelmakers considered nothing else worthy of conversion to blister steel. As such, it was the object of much manoeuvring by merchant groups intent on monopolizing so precious a commodity. At the start of the eighteenth century Öregrund iron was in the hands of well-established merchant houses in London and Amsterdam, the great entrepôts of the north European iron trade, but by the 1730s Graffin Prankard sought to force his way into this cartelized market, shifting the locus of the British iron market away from London.

Specifically, Prankard was determined to control the entry of iron from the forges at Åkerby and Lövsta, of which no more than 1,000 tons came to market each year. It was Åkerby and Lövsta bars that were seen as indispensable for successful steel production in the cementation furnaces of Birmingham, Sheffield, and the north east. As Prankard remarked

27 The extent of this dependence is debated. See Hildebrand, Swedish iron; Müller, Merchant houses; Samuelsson, De stora köpmanhusen.
28 Attman et al., Forsmark; Douhan, Arbete; Rydén, ‘Vallonbruk’.
to Jennings, ‘no other marks will answer here for steel’. Acting in concert with Samuel Shore of Sheffield, the dominant figure in that town’s steel trade, Prankard sought to wrest control of these key brands from London. Francis Jennings was instructed to offer long-term contracts, generous prices, and bribes (‘presents’) in order to secure success. In 1734 success duly came, when Jennings sealed a two-year exclusive contract with the De Geer family, proprietors of Lövstabruk. Prankard enjoyed monopoly rights over the supply of Åkerby and Lövsta in the south and west of Britain; Samuel Shore exercised a corresponding power in the north of England.

That Åkerby and Lövsta were destined for conversion to steel is confirmed by the regional distribution of Prankard’s sales. Figure 3 shows the distribution of sales of Swedish ‘common sorts’, the standard varieties. Major sales were fairly evenly divided between the west midlands, the west country, and Bristol. Figure 4, showing the distribution of Öregrund sales, reveals a very different pattern. Some 74 per cent of Öregrund iron went to the west midlands. In fact, almost all of this iron went to just two customers, John Kettle and Francis Homfray, steel manufacturers of Birmingham and Stourbridge respectively. Much of the Öregrund iron that was sold in Bristol, the only other market of any significance, was

30 For Shore see Hey, Fiery blades, pp. 188-91.

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probably used in steelmaking as well, since the Shallard family, owners of a cementation furnace at Keynsham, outside the city, regularly converted iron to steel on a subcontract basis for Bristol ironmongers, Prankard included.

The markets for both Öregrund and voyage iron were closely defined. Each involved a fairly small number of specialist users who bought from Graffin Prankard on a regular basis and did so in bulk. The market for Swedish common sorts was quite different. The number of customers was far larger; they were more evenly distributed through the Severn valley and the west country; and their purchases were rather more spontaneous and ad hoc. This can be seen in the seasonality of Prankard’s sales. Sales of Öregrund iron were bunched in the late summer and early autumn, the period in which Prankard’s ships usually arrived in Bristol with cargoes from the Baltic. As Öregrund iron had been ordered in advance by Prankard’s clientele of steelmakers, it could be transferred immediately on to river craft for shipment up-Severn. The sales of common sorts, as shown in figure 5, were distributed very differently. There were two distinct peaks: one in January, the other in July. The buyers of common sorts, in other words, tended to make their purchases at Bristol’s two major fairs, St Paul’s in the New Year, St James’s in high summer.
The incursion of Swedish iron into western Britain had important repercussions for domestic ironmasters. They were threatened with an unaccustomed degree of competition in the Severn valley, in what had emerged in the seventeenth century as the heartland of English metalware manufacturing. By the late 1720s, ‘being Strangely Alarmed at the coming in of so much Swedish Iron’, they were mobilizing to resist further import penetration.31 British ironmasters were well equipped to do so. Sprawling dynastic partnerships, such as the Knight family in the west midlands or the Spencers in Yorkshire, encouraged collusion among producers. Indeed, there were regular assemblies of ironmasters to deliberate upon the state of the domestic market and to set price schedules.32 The ironmasters of the west midlands, as the Swedish traveller Kalmeter reported in 1725, met every fourth Friday at Stourbridge ‘to confer on their business affaires and interests, and to agree upon the division of the market for their iron for the month’.33 The ironmasters of south Wales and the Forest of Dean held their own meetings at Bristol, and, having gathered in July 1728 for St James’s fair, they decided to take action against imports. The ‘Iron Masters of ye adjacent Countrys near us’, Prankard told Francis Jennings, ‘dropt ye price last night 20 [shillings] per ton’. This, he warned, would ‘unavoidably sink ye price of swedes’.34

32 See Evans, ‘Corporate culture’.
33 Quoted in Hildebrand, ‘Foreign markets’, p. 28.
34 SA, DD/DN 424, GP to FJ, 31 July 1728.
Six months later, another reduction was in prospect: ‘at our next fair ye Iron Masters will fall ye prices of ye English Iron from £17:10 to £16:10 per Ton’.\(^{35}\) If this was so, then ‘in proportion Swedes Iron must be down to £16 per Ton for English will always sell better than Swedes.’\(^{36}\)

Prankard’s belief that English iron would always be preferred to Swedish unless the Swedish product enjoyed a clear price advantage indicates that competition between English and Swedish iron in western Britain was far from straightforward. A variety of different grades of iron were available to buyers, and not all of these were in competition. Öregrund iron, as has become clear, was scarcely challenged in the market for steel iron. Swedish common sorts, on the other hand, did enter into competition with English bar iron, but the two products were not exact substitutes for each other. Most English iron was smelted from phosphoric ironstones, giving the refined bars that emerged from midland forges a brittle character. The standard British bar iron was, in the parlance of the trade, ‘coldshort’. Coldshort iron was incapable of being converted to steel. It was, however, perfectly well suited to nail manufacture, and it was to this purpose that thousands of tons of English iron, having been slit into nail rods, were devoted. Swedish iron, being made from non-phosphoric ores, had a different nature. It was ‘tough’, as contemporaries had it, and therefore was the proper material for those forging purposes, such as anchor manufacture, where durability was desirable. But for many smithing purposes, where durability was less important, English iron was preferred because it could be worked quicker, thereby saving labour and fuel. Critically, Swedish iron was perceived to be too resistant a material for cost-effective slitting into nail rods.

Coldshort English bar iron and Swedish common sorts were in partial, not full-blooded, competition. The same could not be said of Russian iron, which began to enter western Britain in substantial quantities in the 1730s. Russian iron, like English, was for the most part coldshort. It was an eminently suitable input for the slitting mills of the English Midlands, and therefore threatened English ironmasters directly. Moreover, well-husbanded charcoal resources and serf labour gave Russian iron a marked price advantage. In the late 1720s when Prankard was selling Stockholm common sorts at £17 5s. per ton (and Åkerby bars at a vertiginous £19 per ton), Russian iron was available on the London market for between £13 and £14 per ton.

Graffin Prankard’s sales of Russian iron can be traced in detail between 1732 and 1739 (figure 6). His sales in 1732 were modest, amounting to less than 115 tons, but in 1734 he sold more than 280 tons. After some shrinkage in 1735, sales lurched upwards to 544 tons in 1736, then to 645 tons in 1738. By far the greater part of this iron was bound for the nail-manufacturing zones of the Midlands. The regionality of Prankard’s sales is striking in this respect (figure 7). The west Midlands accounted for 66 per cent of the 2,495 tons sold. Indeed, no less than 42 per cent

\(^{35}\) SA, DD/DN 424, GP to Samuel Shore, 17 Dec. 1728.

Figure 6. Graffin Prankard’s sales of Russian bar iron, 1732-1739
Source: as fig. 2

Figure 7. Regional distribution of Graffin Prankard’s sales of Russian iron, 1732-1739
Source: as fig. 2

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of all the Russian iron Prankard sold went to a single customer, Sampson Lloyd, owner of the slitting mill at Birmingham. A further 536 tons was sold in Bristol, but much of this was to disappear into the maw of the midlands nail trade as well, having been processed at the slitting mill run by the Bristol merchant William Donne at Congresbury, a dozen miles to the west of the city.

That Russian iron was destined for the nail trade is confirmed by the seasonal distribution of Prankard’s sales, as shown in figure 8. The seasonal pattern is stark. Almost nothing was moved up the Severn valley in the spring and early summer months. Deliveries began in earnest in the late summer and accelerated during the autumn, reaching a crescendo in December. This distribution conforms to what might be expected of an industry that was water-dependent. In dry summers a slitting mill would only work intermittently; it was in the autumn and winter, with adequate water supplies, that the rolls could turn continuously.

III

The influx of Russian iron precipitated a crisis for native ironmasters in Britain. They were, so it seemed, on the brink of being deprived of their most valued market, that for nail rods. As a result, the mid-1730s saw a number of initiatives designed to nullify the effect of Russian imports. In 1736 Prankard claimed that a ‘Set of men yt Envey mee’ had launched a scheme for ‘Ingrossing all ye Comm[on] Russia Iron in Muscovy for a long term of years wch if they Succeed in must be prejudicial to private traders’. The authors of this (abortive) scheme were ‘the Iron masters in Worcester and Stafford Shire and thereabout’, intent upon preventing Russian iron arriving on the British market at a rate which undercut their

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37 Lloyd, *Quaker Lloyds*.
38 Bedingfield, ‘Congresbury’s mills’.

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own product. This audacious manoeuvre came to naught, but it signalled the opening of an era of controversy and confusion in the international iron trade. In the 1730s and 1740s ironmasters and iron merchants in both Britain and Sweden pondered new strategic directions for their trade.

Swedish policy makers were divided between those who felt that their iron exports could only be maintained by lowering prices and those who believed that the superior quality of their iron gave Swedish exporters an effective monopoly, not least in the critical English market. For the ‘monopoly’ school of thought, the price of Swedish iron could safely be ratcheted up on the international market, perhaps by restricting output. For the opposing camp, a regime of high prices would merely stimulate production in rival centres of ironmaking, most notably in Russia. From Graffin Prankard’s vantage point, it was indeed necessary that the price of Swedish common sorts be pegged if they were to compete in the markets he served. The Russians ‘having fallen into the Making of Iron & Vending it so low’, he informed Francis Jennings, ‘will be a means to keep Down the Sale of so much Sweeds’. Swedish officials made several investigative trips to Russia in the 1730s and 1740s in order to assess the Russian threat, but the ‘monopoly’ party, then in the ascendant, was sceptical about its magnitude. ‘The notion that England may be furnished with Iron elsewhere, (Muscovy and America are named) is treated as a wild thought’, Edward Finch, the British resident in Stockholm, told his superiors.

The Swedes were mistaken. Russian iron poured onto the British market. Moreover, the second prospect held out by Edward Finch, that of bringing North American iron to British ports, was taken quite seriously by metalware manufacturers in England. Petitions to encourage colonial iron production had first been laid before Parliament in 1718 when a diplomatic crisis had led to the suspension of trade between Britain and Sweden. The abundant forests of North America were contrasted with the meagre coppice woods from which English ironmasters drew their charcoal supplies. Given this imbalance, would it not make sense to foster colonial production? The scheme was revived in the mid-1730s at a time when the Swedes were trying to maintain a regime of high prices on the international market. American iron, so its advocates claimed, could be substituted for Swedish and Russian iron, wiping out Britain’s negative trade balance with the Baltic, and rendering ‘us independent of our Northern neighbours for a supply of a commodity so essential to the support of our fleet, and of our Navigation in general’.

But the prospect of colonial iron entering British ports duty-free did not meet with approval among many of the ironmasters who gathered at...
Stourbridge or Bristol. They regarded American iron as another coldshort product. It would not contest the niche markets dominated by tough Swedish brands; it would only intensify competition on the market for nail rods, a market that British ironmasters were already forced to dispute with Russian imports. Opening the British market to colonial iron would hasten England’s own iron industry to extinction. Some ironmasters retaliated by pressing for higher import duties on Baltic iron. ‘Our English Iron makers & Wood Gentlemen’, Sampson Lloyd reported from Birmingham, ‘are very busy to form a Strong Interest this Sessions to get a further Duty laid on Foreign Iron in order to advance their own.’

Such arguments were rehearsed before committees of the House of Commons in 1737-8 and again in 1750. The British market for bar iron became the subject of bitter political contention.

The ‘ironmasters in both furnace and forge branches of the industry’, as Ashton wrote when reflecting on this controversy, were ‘anxious to shield their product from the rude breath of American competition.’ In fact, the reaction of the iron trade to the spectre of American iron was fairly ambivalent; necessarily so, because ironmasters could not be easily distinguished from ironmongers and merchants. All found a refuge in the capacious partnerships that characterized the iron trade. The seamlessness of the iron trade is well illustrated from among Graffin Prankard’s customers. The Homfrays of Stourbridge were simultaneously steel manufacturers, bar iron makers, buyers of Baltic bar iron, iron slitters, and putters out in the nail trade. Their attitude to Baltic iron was correspondingly mixed. As steel manufacturers they depended completely upon Öregrund imports; as the owners of a forge at Swindon (Staffs.) they should, on the face of things, have been opposed to Baltic bar iron imports; but as proprietors of a slitting mill, the Homfrays required regular supplies of bar iron, and if they could not produce it themselves they would buy Baltic iron from Prankard. The same multi-faceted mode of operation was true of the Stour Partnership, the largest grouping of west midland ironmasters in the 1730s. The Stour partners had command of an archipelago of furnaces, forges, and mills, yet among their number was Abraham Spooner, the region’s leading ironmonger and a major importer of Baltic iron. Moreover, the capacity of the furnaces they ran was insufficient to keep their forges supplied with pig iron, so they bought American pig iron imported by the Bristol tobacco merchants Lyde and Cooper & Co.

From this perspective, ironmasters had a rather fugitive identity, appearing more as a set of loosely articulated traders than as the industrial titans they were to be painted in the nineteenth century. Given this, it is not to be wondered at that their opposition to colonial iron was

46 Ashton, Iron and steel, p. 117.
47 Ince, Knight family.
48 See the records of forges operated by the Stour partners in the 1730s: Worcestershire Record Office, Knight MSS, 899: 310, Stour works general accounts.

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compromised and uncertain. While some pleaded for continued protection against American imports, others, recognizing their inability to supply their own home market, were prepared to contemplate a thoroughgoing re-division of labour within their industry. They would accept the importation of pig iron—but not bar iron—from the plantations. ‘All the Ironmasters in these parts have met and consulted about this affair’, it was reported from Yorkshire in 1737, ‘and desire the Metal [pig iron] may come in Duty free.’ If the colonists would supply pig iron to the mother country, then British ironmasters could devote themselves to the high value-added link in the production chain: the making of bar iron. The thought had already occurred to Edward Finch in Stockholm. Parliament should respond to Swedish discrimination against British goods, he argued in 1735, by setting a higher tariff on Swedish iron: ‘the produce to be appropriated to pay such a Premium to Plantation Pigg Iron, which may then be furnished to the Forges in England’.50

This was to recommend the fostering of a truly imperial iron industry, one that spanned the Atlantic. It was also to countenance the end of smelting in the British Isles, redeploying the charcoal that had once been consumed at blast furnaces to a rejuvenated and expanded forge sector. If ironmasters were to ‘Distroy the furnaces in England’, two representatives of the Yorkshire iron trade reckoned, ‘& consume the wood now used by them at Forges in making american pigg Iron into barr Iron . . . this Nation would be able to make near double the quantity of Bar Iron it dose at present’.51 By doing so, English ironmasters would be doing no more than extending a spatial logic that was already at work, pushing smelting to ever more westerly, seaboard locations. The last generation of charcoal blast furnaces in the British Isles, built between the 1720s and the 1750s, were almost all located in the far north or west, at remote coastal sites where wood was abundant and from which pig iron could be shipped to forges in central England.52 If pig iron could be freighted from Craleckan in Highland Scotland, why not from the Chesapeake, especially when it could serve as ballast to a cargo of tobacco?

These considerations undercut ironmasters’ opposition to the free importation of colonial iron. As a result, legislation in the 1750s opened the British market to American producers, while prohibiting hardware manufacture in the colonies. But the transatlantic division of labour that many in the iron trade had envisaged never came to pass. A few American ironworks were dedicated to supplying the English market, it is true, and some new-built processing plants of the 1760s appear to have been premised upon the exploitation of American pig iron, but overall imports

49 West Yorkshire Archive Service, Bradford, SpSt/5/5/1/4, John Watts to William Spencer, 9 March 1737.
50 PRO, CO 388/34, Edward Finch to Lord Harrington, 22 April 1735.
52 Riden, ‘Final phase’.

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remained at a low level.\textsuperscript{53} The rapid expansion of the colonial economy provided American ironmasters with lucrative local markets, and the American Revolution closed off any possibility that colonial ironmasters could be subordinated to their British cousins.\textsuperscript{54} Instead, imports from the Baltic continued apace. By the 1780s Russian and Swedish bar iron imports exceeded native British bar iron production by a two-to-one ratio.

Salvation for the British iron industry came in the shape of Cort’s puddling technique. That, at least, was the verdict of Cort’s propagandists. Cort’s method, in tandem with the Boulton and Watt engine, so one supporter reckoned, would ‘give the command of the iron trade of the world to Britain, and take it forever, or, at least, as long as the industry and liberty of Britons remain, from the northern kingdoms, and from America’.\textsuperscript{55} So it proved, but it is well to recall the circumstances in which coal technology won out. It was, for one thing, a belated victory, for the iron industry did not pioneer the use of coal as a heat source. On the contrary, primary ironmaking was a laggard in the use of mineral energy. Almost every other heat-using industrial sector (brewing, glass making, non-ferrous metallurgy, lime burning, dyeing, and others) had converted to coal in the sixteenth or seventeenth century.\textsuperscript{56} The forge sector, far from leading the way for others to follow, was anomalous in its loyalty to vegetable fuel. That the forge sector eventually switched to coal-burning methods, and did so with such success, is often attributed to the insistent demand for malleable iron within the British economy. Demand there was, but it was not inevitable that it should be satisfied by domestic bar iron, forged with coal. After all, spiralling demand had for over a century been met by the import of Baltic iron. It should also be remembered that the expulsion of Baltic iron from British markets, which occurred with such rapidity in the years around 1800, was not solely due to the cost superiority of Cort’s iron. It was also a matter of policy. The tariff on foreign bar iron was more than doubled in the course of the wars with revolutionary France. Now that the domestic forge sector had escaped the fetters imposed by vegetable fuel, Baltic iron, for so long the mainstay of metalware manufacturing in Britain, could be ruthlessly suppressed.

IV

The interpretation of the British iron trade given here is intended to re-situate the iron industry within the economic historiography of the eighteenth century. By setting the iron trade—broadly defined—within a system of commodity flows that extended around the northern hemisphere, its importance for other developments in the Georgian economy comes to the fore. The iron trade was one of the great engines of the Atlantic

\textsuperscript{53} Robbins, \textit{Principio Company}; Evans, ‘Global commerce’.
\textsuperscript{54} Bining, \textit{British regulation}, pp. 132-3.
\textsuperscript{55} Dalrymple, \textit{Address}, p. 8.
\textsuperscript{56} Harris, ‘Skills’; Nef, \textit{Rise}.
economy, bringing semi-processed materials from the Baltic and dis- 
gorging manufactured metalwares into the Atlantic basin. The iron 
imported by a Josias Wordsworth or a Graffin Prankard was transformed 
into everything from mattocks for Caribbean slaves to harpoons for New 
England whalers. So wide a range of products demanded a great diversity 
of inputs. As the accounts of Graffin Prankard reveal, the market for bar 
iron was, in fact, a sequence of interlinked but distinct markets, some 
regional, some sectoral, each of which moved to its own particular 
rhythm. The market for Öregrund iron, constituted by a handful of 
steelmakers, called for elaborate strategies of monopoly control. Demand 
for voyage iron was likewise confined to a select group of slave traders. 
In both cases Prankard had to ensure that the product he supplied met 
the exacting standards of his customers. That was why the extension of 
credit to producers in the Swedish countryside was so critical: it allowed 
British merchants to enforce their own product specifications on a 
brukspatron and his forgemen. Prankard did not buy a generic industrial 
commodity; he bought a bespoke product. We are accustomed to the 
thought of the European East India Companies intervening in production 
networks in Asia in order to ensure that textiles were finished in a way 
that conformed to European expectations or African tastes, but the same 
processes can be detected in the Baltic.

Bar iron, as a prosaic industrial input, lacked the exoticism of eastern 
fabrics, but it came in an equally wide variety of forms. Iron merchants 
had to match particular brands to the technical requirements of their 
customers. Without this form of quality control, the luxury and semi-
luxury goods that proliferated in eighteenth-century Britain could not 
have been manufactured. Not only were the end products made from 
good-quality materials, but the new tools and instruments with which 
they were fabricated—precision lathes, stamps, files, etc.—required ferrous 
components of a high and consistent quality. The zest for novelty, the 
aesthetic propellant of consumer demand, that was so marked in the 
Georgian economy found in the iron trade the material underpinning 
needed for its success. In this way, the iron trade contributed handsomely 
to the ‘world of goods’ that flourished in Britain and its colonies.

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Footnote references


Aström, S-E., From cloth to iron: the Anglo-Baltic trade in the late seventeenth century, 1: The growth, structure and organization of the trade (Helsinki, 1963).
Kaplan, H. H., Russian overseas commerce with Great Britain during the reign of Catherine II (Philadelphia, 1995).
Rowlands, M. B., Masters and men in the west midland metalware trades before the industrial revolution (Manchester, 1975).
Weatherill, L., Consumer behaviour and material culture in Britain, 1660-1760 (1988).