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A Skilled English Tradesman and the Early International Diffusion of Steamboat and Railway Technology: The life and career of William Harman (1804–1890), a study of individual adaptability and mobility

Robb Robinson

Mobile British artisans played a key role in the global diffusion of industrialization, taking their skills to Continental Europe and the USA. While research in recent decades among those who might be classed as minor innovators or tweekers has increased our knowledge and understanding of their contribution to this process, less is known about those skilled tradespeople who might be classed as implementers, in other words, those who proved capable of constructing, installing and operating new industrial plant and machinery but are not noted for their innovations. This article is the study of the life and context of William Harman, a highly mobile individual involved in the construction of steamships and locomotives and whose career took him from his home near Hull to France and across the United States as the frontier moved westwards.

Key words Mobility, migration, shipbuilding, steamships, locomotives, Hull, Charenton Ironworks, West Point Foundry, Chicago, Oregon Steam Navigation Company.

Britain was the first industrial nation and so many other states have subsequently followed along the pathway it forged. The adoption, adaptation and exportation of British innovation and skills were especially crucial to making industrialization a global process, particularly during the initial stages. Britain's early technological lead manifested itself in many ways, most notably in terms of the quantity and range of modern machinery that the country manufactured but also in the level of skills possessed by a section of its workforce. Those countries intent on following the route towards a modern industrial nation not only sought to embrace and emulate the hardware associated with Britain's technological lead but also to harness the expertise of the sectors of its workforce which possessed, in comparative abundance by contemporary standards, the much sought after skills of the new industrial age.¹

The role of British people and machinery in the global spread of industrialization has attracted the attention of historians and researchers for many decades. Traditionally,

¹ This article has been developed to some extent from a presentation about the life and times of William Harman, made as part of the Kings Maritime History Series in 2022 and the author would like to thank those who made a range of useful comments and suggestions. I would also like to thank Peter Chapman of the East Yorkshire Family History Society for his invaluable help in researching various aspects of Harman's life and also Sandy Grieser and Valerie Naughton who are both descendants of William Harman and have kindly shared the results of their researches with me. Belated thanks also to Maggie Pando of The Dalles Wasco County Library, The Dalles, Oregon for access to a range of key materials. Thanks also to the anonymous referees for their comments.

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the emphasis was very much on the role of a limited number of significant inventors, whose lives were often well documented and whose key roles in fundamental inventions seemed evident. However, in more recent times Meisenzahl and Mokyr and others have focussed on 'highly skilled, mechanically able craftsmen who were able to apply, adapt, implement, improve and tweak the new technologies'.²

Indeed, historians now look beyond just the major inventors and increasingly examine the contribution of the overall top 3 to 5 per cent of the workforce, the engineers, mechanics, millwrights and the like, who have been described as the 'practical carriers of technological progress'. Yet within this still select, if very significant, group, attention has perhaps more often than not still concentrated on inventors and innovators, albeit now quite often those involved in small- as well as large-scale technological innovation, frequently at the micro as well as macro level, individuals described in some studies as tweekers and implementors as well as inventors. Yet, as Meisenzahl and Mokyr also point out, other skilled workers who they refer to as implementers, less noted for their innovations but capable of constructing, installing and operating new and complex plant and machinery, are perhaps the least recognized.³

This article is the case study of the career of a very geographically mobile nineteenth-century skilled artisan who certainly possessed many of the traits that would be associated with being an implementer. It will consider his role more in terms of the deployment of his comparatively scarce and seemingly sought after skills in facilitating the distant diffusion of technology rather than in his actual impact as an original innovator and will also attempt to place his activities in their wider economic, and sometimes social contexts. William Harman, or Harmon as he was sometimes known, began life on the outskirts of Hull in the first years of the nineteenth century; he was an ironworker by trade and employed his skills in what proved to be some globally significant nineteenth-century transportation initiatives before passing away in Oregon as the 1890s opened. Access to a range of family documents gathered by some of his descendants as well as various additional genealogical and other primary and secondary sources relating to the different places where he lived and worked during his long career has made it possible to reassemble a broad outline of his livelihood and life. The biographical details which have emerged shed an interesting light on some aspects of the contribution that skilled but sometimes comparatively anonymous artisans must have made to the early diffusion and embedding of nineteenth-century shipping and railway technology on both sides of the North Atlantic.

William Harman (figure 1) was baptized in the parish of Drypool on the outskirts of Hull in September 1804.⁴ His parents, John and Hannah Harman (nee Ramsey), had married in the East Yorkshire village of Patrington, a couple of years before,⁵ but by the time of their son's birth they had moved closer to Hull where John worked

2 Meisenzahl and Mokyr, 'The Rate and Direction of Invention in the British Industrial Revolution', 443–8.

3 Meisenzahl and Mokyr, 446.

4 William Harman (Christening, 1804). The Parish Register of Drypool, 1572–1812. Church of England, Parish Church of Drypool, Yorkshire.

5 Patron Ordinance Submission Sheets, 1961–1991. Church of Jesus Christ of Latter-day Saints, Genealogical Society.



Figure 1 William Harman, 1804–90 (Author's collection)

as a milkman, probably keeping a herd of cows, and by the 1810s ran his business from the then small and still relatively rural hamlet of Thistleton, a short distance from the eastern bank of the River Hull where they were well placed to supply the nearby town which was about a mile away.⁶ The port of Hull loomed large in his youthful life and as an old man in Oregon he recalled the wild celebrations of his fellow townsfolk when news of Wellington's victory at Waterloo filtered through.⁷ By the time William Harman was growing up in Thistleton, the nearby banks of the River Hull were already occupied by a range of manufactories engaged in cutting-edge engineering and commercial activities and by the mid-nineteenth century, not long after his family had moved on, the last vestiges of countryside surrounding the small settlement had more or less succumbed to the adjacent port's encroaching urban and industrial sprawl.

6 *Hull Packet*, 14, Jul. 1808 and 23 Jul. 1816.

7 *The Dalles Weekly Mountaineer*, 29 Sep. 1884.

The tradition of technological development was already well embedded along the banks of the river before the Harman household was established in Thistleton. It has been claimed, for example, that some of the earliest experiments with a steamboat had already taken place less than a mile from Thistleton. What seems clear is that in 1788 Robert Fourness of Gainsborough and a physician, James Ashworth of Eland, were granted two patents for what were basically steamboats. Indeed, they were reported to have built a steamboat on the banks of the River Hull. Legend has it that they constructed a second and larger such craft propelled by paddles and sold it to the Prince of Wales.⁸ If such accounts could be verified then this nearby stretch of river, not far from the Harman household, would be able to lay claim to being a cradle of early steamship technology but, apart from these patents, and a couple of nineteenth century accounts about the early history of Hull steamships, no substantive contemporary evidence has ever emerged to support such assertions.

But what we can say with certainty is that within a further few years these nearby districts by the banks of the river were at the centre of local developments in steam and iron technology. By the mid-1790s, and possibly much earlier, John Todd was operating a brass and iron foundry close to what is now called Cannon Street in Sculcoates within a few hundred yards of the river and in 1799 he joined forces with James Witty to build steam engines.⁹ Although they soon went their separate ways, both continued to pursue their specialist interests. Witty remained involved with steam engine ventures while Todd joined forces with Duncan Campbell and made castings for machinery, ships, mills and manufacturing at his foundry.¹⁰ A strong ironworking and engineering base was thus established in the area by the time young William Harman was reaching working age in nearby Thistleton. Steam vessels had also begun operating on the nearby Humber estuary within a couple of years of Henry Bell's *Comet* entering service in Scotland, thanks to the arrival of the Clyde-built *Caledonia* in 1814, and in 1821 the port's first seagoing steamship, the paddle steamer *Kingston*, was registered, its steam engines constructed by Messrs Overton and Smith, at their 'Foundry and Steam Engine Manufactory' which they had set up on Scott Street in Sculcoates by the banks of the River Hull in 1812.¹¹ A number of shipyards, most notably that established by William Gibson on the eastern bank of the River Hull in 1804, were no doubt also supplied with metal fittings by nearby engineering firms.

In later life William Harman was known variously as an ironworker, blacksmith or shipsmith and was often involved in making castings and forgings. It is uncertain with which firm he started work but the closeness of major centres in this line of business strongly suggests that it was within the Sculcoates area on the western bank of the River Hull that he learned his trade. Though the juxtaposition of a supportive rural family household and nearby industrial workplace were possibly helpful in the successful acquisition of the skills of his trade, they clearly did not deter him from

8 Oldham, 'On the Rise and Present Position of Steam Navigation in Hull'. Oldham claimed his father had known those involved. See also Pearson, *The Early History of Hull Steam Shipping*, 206.

9 Jackson, *Hull in the Eighteenth Century*, 206.

10 Bellamy, 'Some Aspects of the Economy of Hull', part 2, III, 5.

11 Oldham, 'On the Rise and Present Position of Steam Navigation in Hull', 47. Also *Hull Advertiser*, 4 Jul. 1812.

then moving much further afield as subsequent events would illustrate.

By the end of 1824, and certainly before his twentyfirst birthday, William Harman had departed the Hull area and found employment in France working for Aaron Manby who had recently taken over running the Charenton Ironworks outside of Paris. Manby, whose story is quite well known, was an innovator and ironmaster from the Birmingham area. He had a considerable interest in marine steam engines and in 1821 was granted a patent for an oscillating steam engine and also fabricated an iron steamboat at his Horseley works, by then a major Midlands centre of ironworking near Tipton. The various sections of the vessel had been taken to London by canal before being assembled at Rotherhithe. Known as the *Aaron Manby*, this pioneering iron-hulled steamship was around 106 feet long and powered by a 30-horsepower steam engine connected to what were described as 'Oldham's Propelling Oars'. The vessel was put through its paces on demonstration runs between London and Battersea bridges before steaming out of the Thames, on a voyage to Paris, carrying a cargo of clover seed and iron, completing the trip in about 55 hours.¹²

The voyage of the *Aaron Manby* was perhaps the first ever foreign sea trip by a steam-powered iron-hulled vessel and attracted a great deal of contemporary attention.¹³ The French were certainly interested, as the Gallic iron industry was regarded as much less advanced than its British counterpart. Manby had worked closely in this shipping venture with Captain Charles Napier, the distinguished naval officer who had a great interest in promoting iron-hulled warships. The pair formed a company to operate steamships between Rouen and Paris on the Seine and over the next few years several steamships were constructed.¹⁴

Meanwhile, Manby also worked with his partner David Wilson in operating the ironworks at Charenton and they later ran an additional manufactory at Chaillot.¹⁵ Their works grew rapidly and by 1827 the Charenton plant was reported to have included forges, foundries and rolling mills, many of which had been imported from the United Kingdom.¹⁶ Manby and Wilson also looked back across the Channel for personnel skilled in operating British machinery and processes. Several hundred British workers were recruited and made the journey to France, thanks principally to the promise of high wages. They were part of a broader trend which, as Bensimon points out, saw many thousands of skilled British artisans emigrate to France in the first half of the nineteenth century.¹⁷

These initiatives were not always greeted with unalloyed enthusiasm in Britain, where various earlier laws attempted to limit the outward movement of home-grown technology and meant the export of various kinds of machinery was an offence and also ostensibly placed prohibitions on the overseas movement of skilled artisans.¹⁸ Such restrictive legislation does not seem to have deterred many British tradesmen taking advantage of the opportunities offered by Manby and Wilson at Charenton

12 *Liverpool Mercury*, 7 Jun. 1822 and 28 Jun. 1822.

13 Canfield, 'Aaron Manby', 432.

14 Napier, *The Life and Correspondence*, 122–8.

15 Belhoste and Woronoff, 'The French iron and Steel Industry', 84.

16 Henderson, *The Industrial Revolution on the Continent*, 98–9.

17 Bensimon, 'British Workers in France', 148.

18 For a discussion of the restrictions and their effectiveness see Jeremy, 'Damming the Flood', 1–34.

in the first half of the 1820s but Manby was reportedly prosecuted for the 'seduction of English artisans abroad' and threatened with a year's imprisonment and a fine of £1,000 for every workman he recruited to his French enterprises. According to the report of a British government select committee in 1824 he had to enter into a bond of several hundred pounds and promise not to repeat the offence.¹⁹ Such laws proved difficult to enforce and by the 1820s the economic ideas that underpinned such a protectionist approach were certainly at variance with the contemporary spirit of free trade prevalent among the so-called Liberal Tory Cabinet of Lord Liverpool (1822–7) and many of them were soon repealed.

It is not clear whether Harman moved to Paris before or after the repeal of the restrictive legislation; he probably migrated shortly afterwards but he was soon earning sufficient income to bring his girlfriend, Phoebe Spencer, over from Hull and the couple were married in the British Embassy Chapel in Paris on 17 January 1825.²⁰ Her sister, Mary Spencer, then aged 15, accompanied her on the trip and in February 1827 she married George Marshall, another ironworker, from Staffordshire, also in the British Embassy Chapel.²¹ They were part of a growing immigrant community. In 1824, there were said to be 248 British workers at Charenton and together, with their families and a few others, there in total around 640 Britons there. By October the following year, half of the 700 workers by then at the plant were said to be British.²²

It seems likely that Harman gained much in terms of skills and experience during his time at the Charenton Ironworks though he recalled in later life that there was sometimes friction between the British and French workmen and this was also reported at the time in the British press.²³ Other contemporary reports spoke about the culture of heavy drinking common among the British workers there and certainly excessive alcohol consumption was to pose challenges for Harman later in life.

Despite such personnel issues, Manby's manufactures gained a positive reputation in France. A mid-1820s British House of Commons Select Committee on Trade and Manufactures was told that Manby had 'established steamboats on almost every river in France',²⁴ some of those vessels working on the Seine were possibly immortalized in a series of paintings made by J. M. W. Turner later in the decade.²⁵ A commentator writing in 1827 drew attention to the 'extraordinary influence exercised by the Charenton Ironworks'.²⁶ The firm was also said to have taken many orders for gasworks equipment from across France.

William and Phoebe Harman appear to have stayed on in Paris for several years. Their daughter, Sarah Anne, was born in 'Carriers' on 15 October 1825, and baptized almost a month afterwards, as later recorded in the Methodist Register of Births and

19 BPP, 1824, (51) Select Committee on Artisans, *Minutes of Evidence*, 8 and 118.

20 Certificate of Marriage Between William Harman and Phoebe Spencer signed Edward Forster, chaplain to the British Embassy, 17 Jan. 1825 (copy in possession of author).

21 Marriage of George Marshall and Mary Spencer 26 February 1827., Marriages Solemnised in HBM House, Paris, 180, NA 33/63.

22 Bensimon, 'British Workers in France', 40–1.

23 *Bristol Mercury*, 3 May 1824.

24 BPP, 1824 (51) Select Committee on Artisans and Machinery, *Minutes of Evidence* 8–12.

25 Rodner, 'Humanity and Nature', 457–9.

26 Henderson, *The Industrial Revolution on the Continent*, 98.

Baptisms.²⁷ According to family records, a second daughter, Hannah Marie, was born in France in 1827. William Harmon said he joined the Masonic fraternity while in France, probably in 1825/6, and considered himself part of the Masonic brotherhood for the rest of his life.²⁸

Manby and Wilson's *Compagnie Anglaise*, as it was known, continued into the 1840s but, according to later recollections, the Harman household had probably returned to England by early 1828 where a third daughter, Mary, was baptized in May of that year in Sutton-on-Hull, the parish which included Thistleton.²⁹ This return to East Yorkshire proved to be comparatively brief, various sources indicate that he subsequently voyaged to America with what was often claimed to be the first locomotive to be shipped across the Atlantic.

Today the *Stourbridge Lion* is often regarded as the first locomotive to be steamed in North America,³⁰ though another locomotive, built by Robert Stephenson and Company, is also a contender. Both locomotives were part of a batch of four ordered by Horatio Allen, a young engineer with the Delaware and Hudson Canal Company who arrived in Liverpool in January 1828 with the intention of placing orders for steam locomotives. He travelled extensively in England, meeting George Stephenson and Henry Booth of the Liverpool and Manchester Railway, then under construction, as well as various ironmasters whose works he visited.³¹ During the course of his travels he ordered the four locomotives. Three of these were from Robert Stephenson and Company's works in Newcastle upon Tyne, the other was the *Stourbridge Lion* from Foster, Raistrick and Company in Stourbridge. The first Stephenson built engine, *Pride of Newcastle*, later known as the *America*, arrived in New York by way of London, in January 1829. The *Stourbridge Lion* was also shipped in pieces from Liverpool and arrived there in May 1829.³²

There is no actual evidence that Allen met William Harman, though few skilled artisans seem to have a mention in his surviving diary entries but his journeys around Britain coincided with the Harman's short return to England from France and he does seem to have moved on to the USA around the same period these two locomotives were exported but it is not really that clear which one he was involved in reassembling. One later newspaper account says he worked on the first Stephenson locomotive but that was assembled in Abeel and Dunscombe's New York foundry while the *Stourbridge Lion* was assembled at the West Point Foundry's New York City base on Long Island.³³

The Stephenson locomotive appears to have been steamed a day before the Raistrick engine but the *Stourbridge Lion* was the first locomotive to actually run on tracks, having been shipped by canal to Honesdale, Pennsylvania where, on the 8 August 1829 it, driven by Horatio Allen, was run on the rails of the Delaware

27 England Births and Christenings, 1538–1975, FamilySearch, <https://www.familysearch.org/ark:/61903/1:1:C6YB-LKZM>, accessed 4 Feb. 2023).

28 *The Dalles Mountaineer*, 4 Oct. 1884.

29 Robinson, *Agnes to Zebedee*, 179.

30 Though a model steam locomotive had been constructed and run in his back yard by inventor John Stevens of Hoboken in 1825. See Young, 'Historical Notes', 16.

31 Allen, 'Diary of Horatio Allen', 112–16.

32 State, 'The Truth behind the Pride of Newcastle', 78–81.

33 Ibid.

and Hudson. Thereafter, the *America* disappears from records, possibly due to a catastrophic failure of its boiler.³⁴

Family records certainly link Harman to West Point Foundry operations and thus to the *Stourbridge Lion* around this time as another daughter, called Phoebe, is said to have been born in Cold Springs, the main base of the West Point Foundry, in 1829.

The *Stourbridge Lion* was not a commercial success as it proved too heavy for the wooden rails it was expected to run on.³⁵ A remedy for the rail problems seems to have been devised by Robert L. Stevens, president of the Camden and Amboy Railroad, who is said to have designed the first flanged T Rail, now in common use on railways across the world, on a voyage to England to purchase another locomotive from Robert Stephenson and Company in 1831. Stevens returned to the USA aboard the sailing ship *Allegheny* which sailed from Liverpool carrying the parts of the locomotive *John Bull* and some early examples of T Rails which Stevens had had fabricated. Once again Harman was possibly involved, it was later claimed he had made the dies for the first T Rail.³⁶ Stevens later recalled that the first of the T Rails were manufactured for him at the Dowlais Ironworks near Merthyr Tydvil. Whether Harman travelled to Britain with Stevens or indeed made the first working dies for the T Rails cannot be proven. A newspaper account in the 1880s also says Harman was involved in the assembly of the *John Bull*, but the reporter involved may have mixed up this locomotive up with the *Stourbridge Lion*.³⁷ The *John Bull* was actually reassembled at Bordenstown for the Camden and Amboy Railroad while Harman was later reported to have found longer term employment at the West Point Foundry in Cold Springs³⁸ and his first son, William, was also baptized there in March 1834.

The West Point Foundry also played a formative role in the genesis of American steamships during the years Harman worked there. The plant had been set up in 1817 by General Joseph Swift and Gouverneur Kemble primarily to remedy the shortage of US armaments which had been all too apparent during the 1812–1814 war with Britain. In addition to the main foundry at Cold Springs it also had until 1838 a fitting and assembly shop in the vicinity of Beach Street in New York City. During the foundry's early years Kemble had sought to circumvent the UK's restrictions on skilled artisan emigration which were then still in force, on one occasion reportedly substituting mechanics for labourers at the last moment on a ship leaving Belfast for the USA.³⁹ He also provided a Catholic church for workers,⁴⁰ and schools for their

³⁴ Ibid.

³⁵ Young, 'Historical Notes on Locomotive Design', 9.

³⁶ *The Dalles Times Mountaineer*, 17 May 1890.

³⁷ *The Dalles Mountaineer*, 4 Oct. 1884.

³⁸ Kemble, *The West Point Foundry*, 189–91.

³⁹ Kemble, 'The West Point Foundry', 194–6.

⁴⁰ The architect of the Catholic Chapel was 18-year-old Thomas Kelah Wharton, a painter and architect whose family had emigrated to the USA from Hull in much the same period as the Harmans and had previously lived in the parish of Sculcoates the base for the engineering works described above. Wharton had apparently encountered Gouverneur Kemble while on a journey up the Hudson Valley. See Walton and Armstrong (eds), *The Majestic Nature of the North*, 79–80 and Robinson, *From Agnes to Zebedee*, 161–2.

children at Cold Springs.⁴¹ Although the works mainly produced armaments it also manufactured a range of other fittings and parts including castings for the Erie Canal and water pipes for various US cities. The West Point Foundry won contracts for manufacturing many steamship engines and for the first iron ship built in the USA.⁴²

The foundry was, of course, also noted for the building of early steam locomotives, among the first to be manufactured in the United States,⁴³ and according to his obituary in a Chicago newspaper, Harman was apparently involved in the construction of six of these in the early 1830s.⁴⁴ These engines were among the first of tens of thousands of locomotives subsequently turned out by engineering works across North America. Among the many marine steam engines also made by the West Point Foundry and assembled in their shop in New York City were the *Victory*, *De Witt Clinton*, the *Erie*, the *Champlain*, the *Highlander* and the *Rochester*.⁴⁵ The West Point Foundry where Harman worked at a crucial time in its history thus occupies a key place in not only the emergence of the United States as a first-line industrial power but also in providing the means of communication – steamboats and locomotives – capable of helping consolidate the vast North American territories into a single nation.

Harman and his family did not finish their travels in New York State but after a few years moved westwards. According to one account he became interested in opportunities opening up further west and on saving sufficient funds he took his young family to Chicago while in another account the reason for the move was said to be because of his wife's health.⁴⁶ Certainly, sometime between late 1834 and mid-1835 the Harmans joined other contemporary migrants, many of whom travelled westwards by way of the Erie Canal which connected the Hudson River with Lake Erie and thus vessels voyaging through the Great Lakes. What is clear is that when the Harman family arrived in Chicago it was still very much a frontier post.⁴⁷ The Blackhawk War had only finished in 1832 and the township, overseen by an army fort, consisted mainly of scattered log cabins with just a drawbridge over the river at Dearborn Street. Everything about the settlement was then quite basic and the aftermath of the recent war still very apparent, the newly laid out streets were covered in mud and the Blackhawk tribe made annual visits to the settlement each year until 1836. Harman recounted in old age seeing the whole of the river from Wolf's Point to Fort Dearborn covered in tepees.⁴⁸ But the Harman family arrived around the time when economic conditions in both the east and west of North America were particularly conducive to the emergence of Chicago as a frontier town.⁴⁹

After arriving, Harman initially busied himself making horseshoes but was soon

41 Dunwell, *The Hudson, America's River*, 73.

42 Ibid., 72.

43 Fisher, 'The West Point Foundry', 37.

44 *Chicago Daily News*, 10 Sep. 1890.

45 Kemble, 'The West Point Foundry', 196–7.

46 Andreas, *A History of Chicago*, 80.

47 For a description of Chicago in the mid-1830s see Pratt, 'John Dean Catton's Reminiscences,' 5–9.

48 *Chicago Daily News*, 10 Sep. 1890.

49 For a discussion of some of the reasons for the early growth of Chicago see Haeger, 'Eastern Money and the Urban Frontier', 267–72.

back to his main line of business and to shipbuilding. According to the *History of Chicago*, he was the port's first shipsmith, establishing his initial shop there in 1835 to manufacture heavy forgings for vessels.⁵⁰ A major draw for Harman and settlers like him were plans to improve the harbour and water access to Chicago and make the place the port to serve the Midwest.⁵¹ Ship construction commenced there in 1835 with the construction of the *Clarissa* which was launched the following year. In 1838 the steamer *James Allen* was completed, followed by the *George W. Dole*.⁵² Although no details of Harman's specific work with individual shipyards have come to light, his skills would clearly have been in great demand and indeed his business is said to have taken him over much of the Midwest and was to make him financially comfortable. By 1839 he was living in North Water Street not far from the Chicago River and a number of important early shipyards.⁵³ Judging from the Harman family history they became very much part of the emerging Chicago maritime scene,⁵⁴ and even had connections to the introduction of the first locomotive to the city.⁵⁵ By 1848 some 47 ships had been built by Chicago shipyards and a few steam as well as sailing vessels were turned out.⁵⁶ Harman certainly seems to have benefited from the growth of Chicago as a shipbuilding centre and major port. In 1839 he voted for W. B. Ogden for Mayor on the Democratic ticket and he also became an American citizen in August, 1844.⁵⁷

The Harman family grew but by 1840 he was struggling with alcohol, a problem which perhaps dated back at least to his time at the Charenton Ironworks where commentators had noted the hard drinking habits of the British workmen there. In 1841 he left for Buffalo to try and break what he later described as his cycle of 'hard drinking and wild association'. He returned to Chicago the following year having joined the Washingtonians, an American temperance society founded in 1840 and an early precursor of the later moves which led to Prohibition in the twentieth century.

50 Andreas, *A History of Chicago* vol. 2, 80.

51 Pierce, *A History of Chicago* vol. 1, 47–8.

52 Andreas, *A History of Chicago* vol. 1, 242.

53 North Illinois University Digital Library, *Fergus' Chicago Directory* 1839. Alphabetical Listing of Workers. <https://digital.lib.niu.edu/islandora/object/niu-lincoln%3A34907> accessed 11 Jun. 2024.

54 His daughter Mary married Redmond Prindiville who with his brother John owned a fleet of tugs between 1855 and the mid-1860s while his son William, after serving his time in an early Chicago foundry and machine shop, became chief engineer in a line of Tugs belonging at least in part to the Prindiville family and later acquired a couple of their tugs and by 1884 owned four tugs which were part of the Union Line. See Andreas, *History of Chicago* vol. 2, 80.

55 Another daughter Sarah (1825–54) married John Ebbert in 1844. Ebbert is regarded as the first engineer of the *Pioneer*, the first locomotive to be brought to Chicago which arrived by ship in 1848 and is today on display in the Chicago History Museum. Chicago History Museum, 'The Pioneer: The Little Locomotive That Could' <https://www.chicagohistory.org/the-pioneer-the-little-locomotive-that-could/>, accessed 12 Jun. 2024.

56 *Encyclopaedia of Chicago*, <http://www.encyclopedia.chicagohistory.org/pages/1140.html#:~:text=The%20first%20ship%20built%20in,city%20in%20the%20United%20States> accessed 12 Jun. 2024.

57 Fergus, *Fergus' Chicago Directory*, 1839, 45. American Citizenship, Circuit Court, Cook County, affidavits by Samuel J. Lowe and Richard J. Hamilton, microfilm #0350244 at LDS, Salt Lake City, copy in possession of descendants.

He also joined the Baptist Church and remained a prominent member for the rest of his life. His mother Hannah, by then a widow, also made the journey out from England to join her son and is recorded as dying in Chicago aged 72 in 1848.

In 1850 William and Phoebe's daughter, Emeline, aged 13 and son George aged 11, died of scarlatina and during the following year Phoebe also succumbed to cholera. A few months later, in February 1852, William married her sister, Mary, in Dupage County, Illinois.⁵⁸ Mary had accompanied Phoebe to Paris back in 1825 and had later married ironworker George Marshall, but was by then a widow and had made the long journey to Chicago from Southampton, England, where her husband had died, accompanied by her three sons and a daughter. A few months after their marriage, the couple embarked on a further westward trek, Harman later citing the unhealthy conditions in Chicago as the principal reason for their decision to move. Another incentive must have been the Oregon Land Donation scheme which meant those who arrived in 1852 were entitled to 160 acres each, providing they worked and cultivated the land they received; this being one of the first US laws that allowed married women to hold property under their own name. Though Mary's children travelled west with them, only William's youngest son, Charles, born 1849, joined him on the Oregon Trail. All his older children, most by then young adults, remained in Chicago and he was not to see them again for 20 years.

Until the opening of the transcontinental railroads the 2,000-mile-long Oregon Trail was the main overland route for would-be migrants to the Oregon Territory. The numbers of migrants heading there from the rest of the USA was already increasing yearly even before the settling of the border dispute with the British in 1846 along the 49th Parallel. Around 1,000 pioneers had reached there in 1843 and by 1860 some 53,000 people had traversed the 2,000 miles using wagons hauled by oxen to carry their household possessions. The peak year for crossings was 1852 and the Harman household were part of the estimated 10,000 people who made their westward journey that year.⁵⁹ All accounts by migrants of the trail emphasize the arduous and sometimes tragic nature of the journey and William and Mary's experience was probably by no means untypical. Their trek, using covered wagons, was to take six months and ten days. Their horses were stolen by native tribes along the way and many of their draft oxen died from want of water. They were eventually reduced to one yoke of cattle and had to abandon their less essential possessions. Mary, who was by then injured, rode with young Charles on the last remaining wagon which was packed with iron making equipment, while William and the older children covered the last 600 miles on foot. They were apparently down to the scantiest of provisions by the time they reached The Dalles, then a fort with a small military garrison on the Columbia River, but unlike so many other families they all survived the crossing and although exhausted were otherwise in reasonable health. After a short break to gather strength, they embarked down the Columbia River on a log raft which unfortunately began to come apart as they approached the confluence with the Wind River. They were forced ashore on the opposite bank and remained marooned there for ten days until picked up by the *Lot Whitcomb*, the first Oregon

58 Copy of Marriage Licence for William Harman and Mary Marshall, State of Illinois, Dupage County. In possession of author.

59 Emigrants to Oregon in 1852, Surnames A–I compiled by Stephanie Flora, http://www.oregonpioneers.com/1852_AI.htm accessed 10 Jun. 2024.

built steamer on the Columbia river system.⁶⁰ After a short stay in Portland they moved to Oregon City where they set up household.⁶¹

Although the discovery of gold in California in 1849 proved an irresistible magnet for so many who headed westwards, the Oregon Territory was also to benefit indirectly in the years after the Harmans arrived. A number of Oregon settlers made their fortunes selling flour and timber to California and the subsequent economic prosperity helped the territory to move rapidly to statehood – it was admitted to the Union as the thirty-third state in 1859. The associated prosperity also created an increased demand for steamboats and port facilities along the river systems of the north-west.

William and Mary claimed their Donation land in July 1853, each allocated a separate but adjacent 160 acres. Their property was close to Beaver Creek in Clackamas County and around 6 miles from Oregon City.⁶² Although their land was worked and the household was based there for around six years, the demand for steamboats meant William's scarce iron working skills were soon in great demand in the nearby port. He subsequently fabricated the ironwork for some of the best-known nineteenth-century vessels to ply the Columbia River and its tributaries; these included the *Willamette*, *Washington*, *Hoozier* and *Gazelle*, though the boiler of the latter blew up in 1854 killing several people on board. During his time working in Oregon City, David Preston Thompson, in later years a prominent railroad surveyor in the US Northwest and afterwards the US overseas minister to the Ottoman Empire, was his helper.⁶³ In 1859 the Harman family moved upriver to The Cascades and here William produced the ironwork for the *Idaho*, *Spray* and *O Kanagan*.⁶⁴

The family soon moved again, residing at Celilo and finally in The Dalles where in 1863 Harman was mentioned as the blacksmith at the opening of new workshops constructed there for the Oregon Steam Navigation Company or OSNC as it was commonly known.⁶⁵ This highly successful company was formed in 1860 and reaped a fortune during the inland gold rush which struck Oregon in 1861.⁶⁶ By 1865 the OSNC was operating a fleet of almost 30 passenger and freight steamboats as well as a number of barges and schooners further downstream.⁶⁷ Among the most successful vessels on the 38-mile run between the Cascades and The Dalles was the *Idaho*, the vessel, which according to some accounts, later gave its name to the state. For much

60 Shaver, *History of Central Oregon*, 223.

61 Ibid.

62 Oregon City Donation Certificate no. 2872, William Harman and Wife, copy in possession of family.

63 David Preston Thompson, later Governor of the Oregon Territory (1875/6) and US Minister to the Ottoman Empire (1892/3) was described as at one time William Harman's helper but apparently also served his time as an apprentice blacksmith. No other information relating to individuals trained by William Harman have come to light. *The Dalles Weekly Mountaineer*, 17 May 1890.

64 *The Dalles Weekly Mountaineer*, 29 Sep. 1884.

65 Shaver, *History of Central Oregon*, 223; Abdill *This Was Railroading*, 18. Later the Oregon Railroad and Navigation Company constructed added substantial railroad facilities in the vicinity of the original OSNC workshops.

66 Sehantes, *The Pacific Northwest*, 185.

67 Winther, *The Old Oregon County*, 236–7.

of this period William Harman ran the OSNC blacksmith's shop and was indeed to reside in The Dalles for much of the rest of his life. However, when he was in his seventies and early eighties, he took advantage of the new transport connections across the west to make visits to Chicago to see his family.⁶⁸ His first journey back eastwards began in 1876 when he was in his early seventies and took him across a whole swathe of North America at a time when transcontinental links with Oregon were still by no means easy. This mammoth journey by contemporary standards, probably utilized stagecoach, railroad and steamboat travel and also took him across parts of Canada where he visited a relative and onwards as far eastwards as Montreal, then over to Portland in Maine on the Atlantic coast of the USA. Here he attended the Worthy Grand Lodge meetings where issues concerning organization of Lodges in North America were discussed. Afterwards, he travelled westwards again and overwintered in Chicago with members of his family before returning to The Dalles late the following summer by way of San Francisco and Portland, Oregon.⁶⁹ When he had embarked on the journey, the local newspaper in The Dalles noted that he hadn't seen his Chicago family for more than 20 years.⁷⁰

In old age he reportedly retained much of the vigour of youth, returning to his tools for a three-week spell in the foundry at Celilo when 73 years old in 1877, after the resident blacksmith there was taken ill.⁷¹ This, probably his final commission, was at the personal request of Reuben Smith, a member of a family well known for their work with early Oregon steam shipping, who was then installing new machinery in a vessel in the township.⁷² Further trips to Chicago were undertaken and he became a member of the city's Old Settlers Club.⁷³ Known in later life as Father Harman, he was very much a revered member of the community, remaining a fervent supporter of the Temperance Movement as well as a prominent member of the local Baptist Church. Mary Harman died in October 1889⁷⁴ and William followed her in May 1890.⁷⁵

By the time William Harman died his native town of Hull was known as Britain's Third Port, the little log frontier post of Chicago had grown into the second city of the USA, steamboats and railroads had opened up and connected virtually all of the United States. The remains of the old *Stourbridge Lion* also survive, after a spell as a stationary boiler in Carbondale and, now owned by the Smithsonian Institution, they are currently on display at the Baltimore and Ohio Railroad Museum in Baltimore, Ohio.

68 Andreas, *A History of Chicago* vol. 2, 80.

69 Letter from William Harman to E. T. Sturgis, February 1878, copy in possession of author.

70 *The Dalles Weekly Mountaineer*, 24 Jun. 1876.

71 *The Dalles Weekly Mountaineer*, 20 Oct. 1877 and also letter from William Harman to Edward Marshall, 2 Feb. 1878, copy in possession of author.

72 The engines for the *Columbia*, the first steamboat built in Oregon in 1850, had been brought to the state by Thomas V. Smith, the father of Reuben Smith. Reuben Smith and his brother Thomas Junior had then assisted their father in fitting the machinery in the hull. Reuben Smith subsequently installed the steam engines in many Oregon vessels. Wright, *Lewis & Dryden's Marine History*, 28.

73 Letter from William Harman to Edward Marshall, 26 May 1885, copy in possession of author.

74 *The Dalles Times and Weekly Mountaineer*, 4 Oct. 1889.

75 County Court, State of Oregon, for Wasco County. 'In the Matter of the Estate of William Harman Deceased. Document dated 14th June 1890'. Photocopy supplied by The Dalles Public Library, Jan. 2009.

Conclusion

The primary intention of this article has been to consider something of the life of nineteenth-century skilled artisans involved in the diffusion of transport innovations by focussing on the career, life and times of one internationally mobile individual.

The overseas travels and career of William Harman commenced around the very time that the United Kingdom began the process of liberalizing its skills and technology transfer laws. His working life, which encompassed Hull, Paris, New York State, Chicago and Oregon, provides a somewhat unusually detailed, rather unique and certainly interesting example of the human dimension of technology transfer as seen through the career of a skilled artisan.

Harman seems not to have been noted for any personal innovation but was very adaptable and evidently effective in applying his skills in different projects in different places and at different times. His career encompassed the construction of sailing ships, steamboats and locomotives as well as latterly the utilization of industrial process and technology in frontier situations. A long-term freemason, he clearly had the wherewithal to establish contacts with and support some key individuals and innovators at crucial times and in different places during the nineteenth-century diffusion of transport innovations on both sides of the Atlantic. His motives for moving onwards were clearly linked to a willingness to take risks and a mixture off attraction to distant opportunity as well as personal and family concerns. He certainly qualifies as one of the 'practical carriers of technological progress'. From birth to death, whether living or working, his was life spent mainly by rivers.

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