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Trading Nations: Architecture, Informal Empire, and the Scottish Cast Iron Industry in Argentina

Volume I

By

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List of Abbreviations

Institutions

AF	Archivo Follett (Follett Archive)
AGN	Archivo General de la Nacion (Argentina National Archive)
AySA	Agua y Saneamientos Argentinos S.A. (Water and Sanitation Museum)
BASC	Biblioteca America Santiago Compostela (America Library of Santiago de Compsotela, Spain)
BL	British Library
BMVB	Biblioteca Max Von Buch (Max Von Buch Library)
BTA	Biblioteca de Transporte Argentino (Transport Library)
BTO	Biblioteca Tornquist (Tornquist Library)
FMF	Fundacion Museo Ferroviario (Railroad Museum Foundation)
IGMTL	Ironbridge Gorge Museum Trust Library
MFA	Museo Ferroviario Argentino (Argentine Railroad Museum)
MLG	Mitchell Library Glasgow
NLA	North Lanarkshire Archives
NLS	National Library of Scotland
NRS	National Records of Scotland
RCAHMS	Royal Commission on the Ancient and Historical Monuments of Scotland

RIBA	Royal Institute of British Architects
SCA	Sociedad Central de Arquitectos (Central Society of Architects)
WPL	William Patrick Library

Railway Companies

FCBAyR/FCR	Buenos Aires and Rosario Railway
FCBByNO	Bahia Blanca and North Western Railway
FCBE/FCE	Buenos Aires and Ensenada Railway
FCBP/FCP	Buenos Aires and Pacific Railway,
FCCA	Central Argentine Railway
FCCC	Central Cordoba Railway
FCCyR	Cordoba and Rosario Railway
FCN	Buenos Aires Northern Railway
FCNEA	North East Argentine Railway
FCSSFyC	Santa Fe and Cordoba Great Southern Railway

Abstract

Bridges, railways stations, warehouses, bandstands, fountains, shop fronts, lamps, gates and other cast-iron elements can still be found throughout Argentina. Some of these elements are impressive, others humble; some are abandoned, others are still in use. Many are part of important monuments; others are so incorporated into the urban landscape that they almost go unnoticed. When one's attention is drawn to these features, however, a company nameplate and place of origin – 'London', Liverpool', 'Glasgow' – is usually visible. These elements are so far from Argentina that their appearance begs several questions: why are most of the visible nameplates British? Are they the same as those found in London, Liverpool and Glasgow, or in former British colonies like India, South Africa or Australia? If so, why? Can we think of these elements as British imperial architecture in Argentina? In what context can their arrival in Argentina be understood? Who commissioned and designed them? Are there more Scottish nameplates than English, or any other? Does it matter? Did these elements act as models that were later copied or imitated by local manufacturers? Did they affect architecture and urban development in Argentina? If architecture reflects the view of a society, what do these elements reflect?

Considering the wider context of British cast iron manufacturing, this dissertation asks what role Scotland's burgeoning cast iron industry played in the export of British iron products to Argentina during the late nineteenth and early twentieth centuries. If in recent years historians have reconsidered the specific contributions of Scotland and its people to the growth and expansion of Great Britain as an imperial power, this dissertation takes this analysis into the realm of cast iron as an export industry. If British cast iron was ubiquitous throughout the developed world during this period, how do we begin to understand the Scottish cast iron industry as a major contributor to this trade? Here Argentina is used as a micro-study in an attempt to measure and understand that contribution. In addressing some of the above questions, the dissertation attempts to form a coherent analysis of the architectural, historic, cultural and economic dimensions of the phenomenon of Scottish architectural ironwork in Argentina. In so doing,

the study hopes to shed light on larger questions concerning British ‘informal’ imperialism, considering exports of cast iron as a significant component in Britain’s attempts at economic leverage and coercion in Argentina during that country’s most dramatic period of development and urbanisation.

The dissertation arrives at the conclusion that British cast-iron elements found in Argentina are the same or similar to elements found in Great Britain and its colonial empire because they arrived in Argentina through a process of commercial expansion that involved imperial trade routes, global networks, cooperation between British architects and engineers, as well as migration and the assistance of the pro-British elite in Argentina. It is argued that British iron in general, and Scottish in particular, contributed to the expansion of British power and influence in the region through helping shape the architectural and urban environments of Argentina.

To reach this conclusion, the thesis is structured in three sections dealing with the three most significant aspects of the thesis: informal empire in Argentina, the iron trade, and Scottish cast-iron architecture in Argentina

Preface

I moved to the United Kingdom in February 2008. While living in England I began inquiring into the relationship between the architectural heritages of the United Kingdom and Argentina, as the latter was a target for British investment in industrial building at the end of the nineteenth and beginning of the twentieth centuries. It is a well-known and much-studied topic but through working with prestigious researchers in Argentina and a continuous exchange of information, I discovered that most of the conclusions on the subject relied on very limited data. The data archived in Argentina about the elements and constructions during that period was limited and there was a clear need for a complete study that would fill in the historical gaps by crosschecking archival references.

To illustrate, the discovery of a Walter Macfarlane & Co.'s nameplate on a cast-iron gate in a school in Tucuman, where I was born, piqued my interest as the school is located on one of the busiest roads in the city, so is part of the city's landscape heritage. After inquiring into the origins of the gate, I discovered that the gate was a donation from an Argentinian sugar mill. What the school authorities did not know, however, was that the gate itself had come all the way from Scotland. Just the thought of being surrounded by such valuable, yet unnoticed, pieces of industrial heritage, reinforced for me how important the topic is. When I consulted the database of The Scottish Ironwork Foundation and found over 1,000 entries, but only two references to Argentina – neither of which was from Tucuman – it was clear just how much work needed to be done.

In addition, in 2010 Jorge Tartarini, director of the Water and Sanitary History Museum, asked me to collaborate on researching records relating to the Palace of Running Waters, built in 1887 by Bateman, Parsons and Bateman and the terracotta suppliers Doulton and Burmantofts, whose pieces were used in the eclectic façade. The building is a central piece of the sanitary system of Buenos Aires. Bateman, Parsons and Bateman was based in London but had an office in Buenos Aires directed by John Frederick Bateman, who also worked on water supply systems in Glasgow, Belfast, Bolton, Chester and Dublin, amongst many others. I believed at that point that he might provide an important connection between Scottish ironwork

and Argentina as the cast-iron gate and caryatids located in the main entrance were made by Walter Macfarlane & Co. None of these were in the database of The Scottish Ironwork Foundation, which is the most complete database for Scottish ironwork. This revealed to me once more the need to crosscheck references and make connections.

At the start of my PhD I moved to Edinburgh. Living in Scotland motivated and encouraged me even more to carry out in-depth research and discover the shared parts of Scotland and Argentina's histories by finding architectural ironwork and establishing the links amongst it.

My curiosity was enriched by my supervisor's knowledge of networks of empire and the Four-Nations approach to imperial history, which showed how Scotland made a distinct contribution to the British Empire.

The results of this study have gone beyond my expectations, as I have discovered a new way to understand the history and architecture of my own country. This thesis – *Trading Nations: Architecture, Informal Empire and the Scottish Cast Iron industry in Argentina* – represents my journey towards understanding the British influence on Argentina's architecture and environment, a journey on which I was led by those Scottish ironwork elements found in Argentina.

Acknowledgements

I would like to express my sincere gratitude to my supervisor Dr. Alex Bremner for his continuous support, patience and motivation during my PhD studies. His immense knowledge helped widen my research from various perspectives and I cannot imagine a better advisor or more supportive supervisor.

Ali Davey was one of the people who motivated my research and without her encouragement this project may not have materialised in the first place. I am immensely grateful to her for putting me in touch with other members of Historic Scotland – some of the most knowledgeable people I have known. My sincere thanks also go to Dr. David Mitchell for his generosity in sharing both his support and knowledge, and Dr. Miles Oglethorpe and Mark Watson, on whose team I gained so much experience and knowledge as an intern.

This thesis work was supported by Historic Scotland and the Arts and Humanities Research Council [grant number 1085060]. In addition, a Short-term Scientific Mission travel award granted by COST (European Cooperation in Science & Technology) funded a trip to Argentina in 2014.

I would like to thank Paul Dobraszcyk and Peter Sealy for inviting me to contribute to their book, *Function and Fantasy: Iron Architecture in the Long Nineteenth Century*, which was an amazing experience and encouraged me to examine new perspectives in my own research.

I would like to thank Monica Ferrari for her recommendations on local bibliography, and Jorge Tartarini, who generously shared material and provided constant help on topics related to the railway and sanitary systems in Argentina. I would like also to thank Patricia Favre for sharing material related to Scottish cast iron in Mendoza and Pablo Marzilio for sharing photographic material related to railways in Argentina.

I would like to thank everyone that helped me in archives and libraries in the UK and Argentina, especially Janice Miller at William Patrick Library, Kirkintilloch and Patricia Leon at Tornquist Library in Buenos Aires. I would also like to thank Kay Celtel and Gordon Corrigan for helping with proofreading and comments.

I would like to thank my colleagues from ‘The Vaults’, especially Delia, Stella and Pablo, and those who have already graduated – Dimitra, John, Tarek and Ernesto – for their company, support and all the fun we have had over the last years.

Thanks too to my very close friend Patricia, who has supported me greatly, not only as a friend but also as a former PhD student, sharing her experiences and motivating me to complete mine. I would also like to thank my friends Lucre A., Anita L. and Cecilia L. for helping me by taking pictures and collecting material in Argentina.

I would like to thank my parents, brother and sister for assisting with any books I needed from Argentina, but principally for believing in me and giving me their unconditional love and support throughout my life.

I also owe thanks to my family-in-law for their constant support. I especially want to thank my mother-in-law, Olga Paterlini, who has supported me both professionally and personally. I was lucky to have her as a teacher when I was an undergraduate student and she encouraged me to continue my postgraduate studies. She even travelled to Edinburgh to help me with family duties while I was writing, filling our house with care and love. I greatly appreciate her support.

More importantly, I could not have completed this thesis without the love and support of my husband Fernando, who did everything possible to encourage and motivate me throughout the process. He has been an amazing husband and father to our son Ben, taking on extra duties when I needed more time for my studies. I would like to thank both of them for understanding how important this research project was to me; for being next to me when I needed them most; and for helping re-charge my batteries with their love, care and laughter. Undoubtedly, they were my main source of strength and motivation during my PhD. They are the most important people in my life and words could never express how grateful I am to both of them. My thesis truly is dedicated to them.

Introduction

The relationships established by the British in Argentina were mostly geared towards the expansion of Britain's worldwide economic empire, in which the Scots played a particularly active role. As part of their strategy to expand the empire in Argentina the British tried to secure the consumption of their manufactured goods while using the country as a producer of raw materials. Indeed, Argentina imported most of the goods it needed to boost its urban development. It also lacked effective transport structures, such as railways, port and urban facilities, and Britain thrived economically by supplying these elements.

In the following dissertation, my overarching aim is to explore cast-iron architecture introduced into Argentina by the British in general, and the Scots in particular, under the policies of what may be identified as 'informal empire' between 1853 and 1948.

Argentina's liberal constitution began in 1853 and with it free trade was officially established, opening the door to massive British imports, including iron. The constitution provided the legal framework used by the British in setting themselves up in business in Argentina. The most important British business, in terms of informal imperial influence, was the construction and management of the railways. In 1948 the railway system was nationalised, resulting in less business, less investment, less trade, less iron, less immigration and consequently less British influence.

Cast-iron structures were very common in the period between 1853 and 1948, and they characterised one of the most splendid architectural periods in Argentinian history. Cast iron was imported on a massive scale to promote the country's rapid development at a time when there was no time or infrastructure to develop local industry. Between 1873 and 1889 the UK exported more iron and steel to South America than it did to China, Japan, South Africa, Australia, Canada or India.¹ In 1913, Argentinian iron consumption reached a peak of 200,000 tons – a great amount

¹ D.L. Burn, *The Economic History of Steelmaking, 1867–1939: A Study in Competition* (Cambridge, 1961), p. 80.

compared with the average iron consumed in the rest of the world.² Most of the iron came from Great Britain and was used mainly in the railway system. Many varied and important structures used iron technology, yet there have been no specific studies aimed at truly understanding the mass introduction of British iron and its effect on architecture in Argentina.

There are several excellent studies on informal empire and Argentina, many studies on the iron trade, a few related to Scottish influence within the empire, a few related to the Scottish cast iron industry, and others related to iron industries in Argentina.³ However, no one study has attempted to put all of these factors together in order to understand how and why the mass importation of British iron into Argentina occurred. A comprehensive and precise study that widens our understanding of iron architecture and its incidence in the evolution of Argentinian cities has been long overdue.⁴ This study presents an attempt to gather together information for the first time, while providing a critical analysis of the introduction of British, and especially Scottish, iron into Argentina, focussing on how imperial networks operated, how they affected the local iron industry, and how they impacted on the design and social expectations concerning architecture. It should not, however, be understood as the last word on the subject, but rather as a specific but limited contribution to knowledge within a new and wider analytical framework.

Foundation Work

In recent years, imperial, transnational, and ‘global’ history have become essential to understanding processes of imperial expansion. Moreover, the study of global architectural history, and those processes behind globalisation that characterised the modern world in which we now live, can be better understood from a wider perspective. In order to realise this, it is necessary to study buildings and other

² S. Wässman, *Sobre las posibilidades de una industria siderúrgica en la República Argentina* (Buenos Aires, 1927), pp. 8–9.

³ The Literature Review chapter will consider in more detail and analyse the most important literature related to these topics.

⁴ For the literature on these topics see Literature Review.

architectural products not only through architects, engineers, and styles, but also through a broader historical framework that considers the aspirations, actions, agents and global networks at work behind such buildings, as these made possible the materialisation of Argentinian cities while contributing to imperial expansion.⁵

A history of imperial dependence characterised Argentina from its early years: first as a formal colony of the Spanish crown and later, less evidently, under the British empire, through a new form of ‘informal’ economics that exerted a strong cultural and material influence over the country. But what do we mean when we refer to the ‘British empire’ in this context? Britain was itself created out of various nations and cultures including England, Wales, Ireland and Scotland. Each of these nations contributed on different levels to colonisation throughout the British empire. However, it is sometimes difficult to distinguish the input of one from the other during the imperial process. When Scotland politically became part of Great Britain (1707), it began to play a major role within the British empire, with the Scots developing a remarkable reputation as settlers, traders, soldiers, botanists, engineers, missionaries, teachers, bankers and enthusiasts in all forms of economic enterprise.⁶ Moreover, heavy industries related to transport systems and infrastructure, and products such as iron and steel, were essential parts of the Scottish economy.⁷

Iron was an influential material. The industrial development of Great Britain was inextricably linked to the advanced manufacture and use of iron. In the second half of the nineteenth century the iron industry was considered ‘the most important staple manufacture of the United Kingdom’.⁸ Scotland in particular occupied a significant

⁵ S. Zandi-Sayek, ‘The Unsung of the Canon: Does a Global Architectural History Need New Landmarks?’, *ABE Journal.European Architecture beyond Europe*. <http://dev.abejournal.eu/> (2015)

⁶ J.M. MacKenzie and T.M. Devine, *Scotland and the British Empire* (Oxford, 2011).

⁷ M.S. Moss and J.R. Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland* (London, 1977), p. 3.

⁸ S. Griffiths, *Griffiths’ Guide to the Iron Trade of Great Britain* (London, 1873). Preface.

place in Britain's economic and industrial development, with Glasgow – one of its principal centres of industry – considered not only the 'workshop of the world.'⁹

British expansion overseas, including the spread of informal control, coincided with a growing need for new markets and sources of supply as industrialisation progressed.¹⁰ Steam engines and coal were the main sources of power for ships and railway locomotives, and these drove the production of textiles, iron and other manufactured goods. These industries linked imperial and transatlantic trade that was crucial to the development of the British global capitalist system.¹¹ Scots were among the first within the British Isles to have an imperial mentality, earning them a reputation as 'empire builders'.¹² They contributed greatly to shaping what we understand as the modern world.¹³ In Argentina, many Scots appear to have been influential players in the exertion of British influence over the River Plate area of South America (what is now Argentina and Uruguay), which was considered an area of huge economic potential. By 1711 the River Plate was already considered by some as 'the best place in the World for establishing a British Colony'.¹⁴

The British attempted to invade the area in 1806 and 1807 as a prelude to colonisation. They failed, but over the following years they turned to a more convenient, and more successful, approach to exert their influence by building a commercial and diplomatic relationship that amounted to a form of 'informal' empire. The invasions may have been unsuccessful, but they still represented the end of Spain's monopoly of the region. During the first invasion, Admiral Sir Home Popham and General Beresford had brought ideas of free trade to the area and had

⁹ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*

¹⁰ P.J. Cain and A.G. Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914* (Essex, 1994), p. 8.

¹¹ MacKenzie and Devine, *Scotland and the British Empire*, p. 237.

¹² Ibid.

¹³ A. Herman, *The Scottish Enlightenment: The Scots' Invention of the Modern World*, (London, 2003), Introduction.

¹⁴ C.M. Lewis, 'Klaus Gallo. Great Britain and Argentina: from Invasion to Recognition, 1806–26', *Albion*, no. 2 (2003), p. 15.

been able to promote a temporary trade policy that benefited British commerce. In fact, commercial ships carrying textiles and luxury goods, such as soap, accompanied the invaders.¹⁵ In return, they found a potential source of hides, tallow, bullion, flour, meat, wood, and hemp.¹⁶ Some Britons decided to stay in Buenos Aires, where they established some of the first mercantile houses to flourish after independence from Spain. Thus, the British essentially organised trade in Buenos Aires, establishing in short time a solid commercial community. These businessmen became involved in local activities and became so influential¹⁷ that they were able to secure economic treaties with the government, such as ‘The Treaty of Friendship, Commerce and Navigation’, signed in 1825. These treaties favoured Britain over other nations, giving the British privileges that were supported years later by the Constitution of 1853, providing an arena in which the British business network could flourish. The Constitution encouraged free trade (an idea promulgated by Scotsman Adam Smith), industry, railways, canals, colonisation of lands and investment – all areas of British expertise.¹⁸

Although the British were a minority in relation to the Italians and Spanish, they wielded far more influence and power.¹⁹ The number of Britons in Argentina peaked at 60,000 in 1930, when they formed the largest group outside the formal empire, excluding the United States.²⁰ The British were seen by the Argentinians as more ‘civilised’ and skilled than their European counterparts. Indeed, Juan Bautista Alberdi (1810–1884), the mastermind behind the Constitution, thought that ‘the English[man] is the most perfect of men ... Without the cooperation of that race it is

¹⁵ A. Miranda, *Invasión, Reconquista y Defensa de Buenos Aires* (Buenos Aires, 2007), p. 106.

¹⁶ V.B. Reber, *British Mercantile Houses in Buenos Aires, 1810–1880* (Cambridge, 1979), p. 16.

¹⁷ *Ibid.*, p. 4.

¹⁸ *Constitucion Nacional Argentina de 1853* (1853).

¹⁹ D. Rock, ‘The British of Argentina’, in A. Bickers (ed), *Settlers and Expatriates: Britons over the seas* (Oxford, 2010).

²⁰ D. Rock, ‘The British of Argentina’, in A. Bickers (ed), *Settlers and Expatriates: Britons over the seas* (Oxford, 2010).

impossible for liberty and material progress to prevail and prosper'.²¹ This view of British people, along with Argentina's need for material progress, its desire for economic growth, the expectations of a resurgent British-friendly liberal class or 'collaborative elite',²² and the network of British professionals and traders, helped to reinforce British economic dominion in Argentina.

As a growing country Argentina represented an exceptional market for British exports, which permanently exceeded Argentina's own manufacturing output.²³ Moreover, the British were working with very low manufacturing costs, an abundance of commercial capital, as well as vast commercial experience and connections.²⁴ These connections were not only formed by traders, professionals and 'collaborators', but also by all the elements that helped distribute British goods, like the railway system that was designed and built by British engineers, ran on duty-free coal, iron, and locomotives imported from Great Britain on British ships,²⁵ and was majority owned and managed by the British. Essentially, the British created in Argentina a similar pattern of development that they employed in their formal colonies elsewhere in the world.²⁶

The British empire, both formal and informal, left a material legacy all over the globe. It is generally understood that industrial processes in Britain during the

²¹ J.B. Alberdi, *Bases y puntos de partida para la organización política de la República de Argentina* (Valparaíso, 1852), p. 76.

²² R. Robinson, 'Non-European foundations of European imperialism: sketch for a theory of collaboration', *Studies in the Theory of Imperialism* (1972), pp. 117–142.

²³ Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, pp. 290–297

²⁴ H.S. Ferns, *Britain and Argentina in the Nineteenth Century* (Oxford, 1960), p. 113.

²⁵ Locomotives, iron and steel used for railways were duty free, while iron ingots for foundries and manufactured iron paid 5 per cent duty ad valorem. See: *The Argentine Year Book* (Buenos Aires, 1903). Railway companies were also exempted from all import duties, as well as all municipal and provincial taxes for forty years by the Mitre Law (1907). The majority of locomotives used in Argentinian railways were also British. See: D. Purdom, *British Steam on the Pampas: the Locomotives of the Buenos Aires Great Southern Railway*. (London, 1977). Today it is still possible to see on a wall in the Railway Museum in Buenos Aires some nameplates from British locomotives used on Argentina's railway lines, such as the North British Locomotives, Vulcan Foundry, Kitson, Robert Stephenson, Naymyth Wilson.

²⁶ J. Gallagher and R. Robinson, 'The Imperialism of Free Trade', *The Economic History Review, New Series*, vol. 6, no. 1 (1953).

nineteenth century contributed significantly to development and innovation in architecture. The mass production of industrial materials was key to this change. Wrought and cast iron in particular had a dramatic effect on the type and scale of building that could be produced. The wide-span capacity of iron (and later steel) transformed the urban environment by allowing the erection of buildings such as railway stations, factories, warehouses, exhibition buildings, museums and covered markets on a scale and at a speed not seen before. As structure and ornament came to be combined, industrially produced iron became a fundamental component not only in the underlying structure of buildings but also in their decoration.²⁷

In Argentina, there was not a proper ‘industrial revolution’: machinery used to develop local industry was imported from abroad, especially from Great Britain. Foreign manufactured products were cheaper and more advanced; materials – like iron – needed for industry, new buildings, and railways were also imported, resulting in a form of technological dependence that made it very difficult for entrepreneurs to develop local industries. Moreover, iron was so important for Argentina’s development that it gave Britain enormous power. British, and especially Scottish, iron foundries that made and shipped a wide range of cast-iron elements played an important role in Argentina’s development, as did the networks of British engineers, architects, and designers who collaborated on projects in Argentina.²⁸

Many of the cast-iron elements discovered during the research for this dissertation were manufactured by the most important Scottish foundries, including: Carron Company, Walter Macfarlane & Co. (the Saracen Foundry), Lion Foundry, and George Smith & Co. (the Sun Foundry).²⁹ Steel work was also uncovered and is

²⁷ P.Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment* (Surrey, 2014), pp. 5–10.

²⁸ L. Juarez, ‘Documenting Scottish Architectural Cast Iron in Argentina’, *ABE Journal.European architecture beyond Europe*. <http://dev.abejournal.eu/>, no. 5 (2014).

²⁹ It is worth mentioning that, although sometimes the name of the company and the name of the foundry (or ironworks) are used indistinctly, Walter Macfarlane & Co. was actually the name of the firm, while Saracen was the name of its foundry. Similarly George Smith & Co. owned the Sun Foundry. During this thesis the name of the company will be used more frequently, as it is better known by the general public. Some companies, for example, such as Carron Company and Lion Foundry, shared their names with their foundries. Thus, when needed, I will clarify by saying for

worth including because cast iron, wrought iron, and steel were sometimes used in combination to strengthen their properties. Some of these elements were designed, pre-fabricated, and exported for sale in Argentina; others were designed in Argentina and sent to Scottish foundries to be built; while some were chosen from catalogues by professionals or directly by clients and ordered from Britain.³⁰ In fact, the use of trade catalogues was so popular that local architects designed according to the options presented in them and elaborated their plans and drawings according to the dimensions and information given.³¹ This practice followed certain imperial patterns that also affected the way professionals worked in Argentina. Spanish-language trade catalogues were also essential for promoting business in South American countries.

Aspirations of this Study

This thesis hopes to establish a new and different perspective on British iron architecture in Argentina, one that situates the iron trade, as well as architectural componentry and knowledge, in the wider context of British and Atlantic history. In so doing, it also aims to understand the nature and extent of the Scottish ironwork industry and the role it played as part of Britain's 'informal empire' in Argentina.

In addition, the built environment in Argentina is constantly changing, buildings are regularly being altered or demolished without adequate assessment. It is therefore imperative that the remaining buildings of known and outstanding quality are properly documented and valued, before it is too late. Such documentation might even lead to their listing and protection. This study will certainly help to determine the historic significance of the Scottish architectural iron industry to the economies of Glasgow, Scotland, and the UK. The study's international nature might also strengthen ties between heritage agencies in Scotland and Argentina, as well as

instance, Walter Macfarlane of Saracen Foundry. Also 'ironworks' is used synonymously for 'foundry', while 'ironwork' refers to the iron element or structure.

³⁰ Juarez, 'Documenting Scottish Architectural Cast Iron'.

³¹ M. Ferrari, 'Los Catalogos de Fabricacion en Hierro', in *Estudio de arquitectura Follett, 1891–2008 Conder, Follett, Farmer* (Buenos Aires, 2008).

supporting academic research and the transfer of knowledge with regard to architectural history.

Limitations

Documenting industrial heritage is generally a very difficult task, mainly because so many company archives have been lost. The iron industry was so important in Scotland that one would have hoped that company records would have been preserved. Sadly, most iron company archives have disappeared, even those from very significant firms like Walter Macfarlane & Co. When industrial heritage is transnational – involving more than one country – the difficulty of documenting it becomes far greater. Long distances, differences in language, and different ways of managing information force us to re-think our techniques for discovering information in order to fill the gaps. This usually leads to long and expensive fieldwork trips to gather primary and secondary information, survey sites, and strengthen transnational professional networks.

Another challenge in trying to document Scottish cast iron in Argentina is the fact that one sometimes finds Scottish cast-iron pieces without nameplates that are so important when trying to identify the manufacturing company. Some firms, such as Walter Macfarlane & Co., always used trademarks to avoid copying. However, when a big project was contracted to more than one iron foundry, they sometimes avoided using trademarks in order to unify design criteria. In addition, some iron elements – for example, cast-iron pipes – rarely had nameplates, making it near impossible to identify them except with the evidence of archival documents.

The documentation process is also made difficult by the fact that in Argentina there was no distinction between Welsh, Scottish or Irish. To Argentinians, they were all considered ‘English’, and ‘England’ is often used as a synonym for Great Britain. In shipping records of entry to Argentina, ships could be recorded as coming from England when, in fact, they started their journey in Glasgow. Thus, when dealing with historical documentation one needs an awareness of what the author might have meant.

The lack of surviving business documentation means that, as David Mitchell points out, trade catalogues are an essential source of information for identifying Scottish cast-iron elements.³² Although some old trade catalogues can be found in local libraries or archives in Scotland and other parts of the UK, information is uneven and fragmented, making the identification and study of cast-iron elements extremely challenging.

Each section of this thesis also had its own limitations. These will be explored more in each section, but it is worth mentioning briefly some of the inconveniences. For Section 1, for example, one of the limitations was that most of the literature relating to informal empire in Argentina has been written by non-Argentinian writers. Section 2 had several limitations around quantifying British and Scottish iron imports to Argentina. Finally, in spite of presenting most of the examples found during my research in Section 3, many more examples may have been demolished and many others yet to be discovered.

Thesis Structure

The dissertation is divided into three sections ‘Section 1: Informal Empire and the British System: Britain, Scotland and Argentina’, which includes four chapters that demonstrate, from a theoretical point of view, how the British global system and networks of empire worked, how the Scots contributed to the empire, and how colonial patterns of investment, migration, and involvement in the railways and public works were followed in Argentina. This section provides the whole historical and economic background to the establishment of informal empire in Argentina, along with some insight into the relationship with Scotland.

‘Section 2: Iron Trade and Production in Britain and Argentina’ focuses on the significance of the iron industry for the British empire. It discusses iron production and trade, showing the development of the industry that made Great Britain a leader

³² D. Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland* (PhD thesis, University of Edinburgh, 2012). Introduction.

and Argentina a dependent customer. It highlights the role of the Scottish foundries within the empire, and the importance of Spanish trade catalogues in boosting trade between Britain and Argentina.

‘Section 3: Scottish Cast Iron in Argentina: Case Studies’ presents examples of Scottish ironwork found in Argentina. These examples are developed with the aim of providing proof of how involved the Scottish iron foundries were in the supply and maintenance of cast-iron products in Argentina, but also how the arrival of these products was facilitated by an imperial system.

Due to the coverage of the thesis and quantity of figures, the dissertation has been divided into two volumes, with Volume II containing all figures. Tables and graphs have been kept within the text of Volume I.

Literature Review

As this thesis is structured into three different sections, the literature considered for the development of these sections will follow a similar scheme. Throughout the course of this thesis, I make use of a number of primary source materials kept in archives and libraries in Argentina, Spain and the UK. Information regarding these sources can be found in the dedicated section in the bibliography at the end of Volume I and in the notes in the body of the text. Here I will cover only those secondary sources that relate to the scope and positioning of this study.

Literature Review for Section 1

Informal Empire

The literature dealing with informal empire is the most extensive and complicated. Indeed, the British empire has been researched for many years and continues to be debated and examined. Its ‘informal’ aspects have, however, proved even more difficult to define and characterise. By its very nature, it is difficult to define the scope, extent and even existence of Britain’s informal imperial reach in Argentina in the nineteenth and twentieth centuries. Here, I will try to summarise the most important contributions to the topic of empire – both formal and informal – in relation to Britain’s relationship with Argentina.

Informal empire is a relatively new historical concept. C. R. Fay used it for the first time in 1940³³, but it was not until 1953, when John Gallagher and Ronald Robinson wrote their seminal essay ‘The Imperialism of Free Trade’, that the term gained currency.³⁴ The significance of their paper was that it established the importance of re-thinking the characteristics of British imperialism by suggesting that it was

³³ C.R. Fay, ‘The Movement Towards Free Trade, 1820–1853’, in J. H. Rose, A. P. Newton, and E. A. Benians (eds.) *The Cambridge History of the British Empire: The Growth of the New Empire, 1783–1870*, vol. 2 (1940), p. 399.

³⁴ Gallagher and Robinson, ‘The Imperialism of Free Trade,’.

unrealistic to define imperial history without considering its ‘informal’ aspects.³⁵

Gallagher and Robinson argued that the main objective behind Britain’s empire was its economic development. They found that, regardless of whether or not Britain had a formal imperial relationship with a particular country, similar patterns with respect to trade, investments, migration and culture could be identified. Moreover, when new regions did not satisfy the conditions for formal colonialism, and when their weakness allowed it, Britain used its power in a domineering manner to adjust those conditions, meaning that ‘the difference between formal and informal empire’ was ‘a matter of degree’.³⁶

Gallagher and Robinson’s belief in informal empire as an important aspect of British imperialism, along with their ideas on trade, investment, migration and culture as following similar patterns to those found in formal colonies, including the influence of ‘collaborative elites’ – a local group who eased the introduction of informal power structures – provides the basic parameters for helping identify informal imperialism in Argentina.

However, Gallagher and Robinson’s view of empire has not gone unchallenged. In 1968, D. C. M. Platt contested their view in ‘The Imperialism of Free Trade: Some Reservations’,³⁷ later returning to the topic in ‘Further Objections to Imperialism of Free Trade’³⁸ and in his book *Latin America and British Trade 1806–1914*.³⁹ Platt questioned whether there was an actual imperial plan for British overseas trading. He argued that there was not, and that Gallagher and Robinson had overestimated the economic relationship and the significance of the trade between Britain, Argentina, and other Latin American nations. According to Platt, the British ‘were indifferent to

³⁵ Ibid., pp. 8–9.

³⁶ Ibid., p. 7.

³⁷ D.C.M. Platt, ‘The Imperialism of Free Trade: Some Reservations.’, *Economic History Review*, vol. 21, no. 2 (1968).

³⁸ D.C.M. Platt, ‘Further Objections to an ‘Imperialism of Free Trade’, 1830–60’, *New Series*, vol. 26, no. 1 (1973).

³⁹ Platt, *Latin America and British Trade*.

this distant overseas market'.⁴⁰ He argued that since the Latin American nations, and Argentina in particular, benefited greatly from their economic relationship with Britain, Britain could not have imposed any imperial policies. Moreover, he claimed that the British had a policy of no governmental or political intervention over Argentina's sovereignty.

Platt's theoretical perspective directly confronted that of Gallagher and Robinson, but it garnered fewer followers, perhaps because he focused on government intervention and economic gains without examining the cultural aspects of empire. Also, as Ferns pointed out in his review of Platt's 'Finance, Trade, and Politics in British Foreign Policy, 1815–1914'⁴¹, Platt insisted on a 'no intervention' policy that was not entirely true, and failed to analyse closely enough issues such as the Baring Crisis.

H. S. Ferns was one of the first to study the relationship between Argentina and Great Britain deeply and systematically. However, his position with regard to informal empire remains unclear. In spite of writing an article entitled, 'Britain's informal empire in Argentina, 1806–1914' in 1953, which would lead one to think that he would address Robinson and Gallagher's position, he in fact made no reference to any earlier articles on informal empire, nor attempted to present informal empire as a new concept.⁴² Instead, Ferns tried to demonstrate that there was a 'low degree of political tension' between Great Britain and Argentina (compared with Egypt, for example) due to the fact that the economic interests of the *estancieros* (ranchers) fitted into the developing patterns of the British economy – an argument that actually corresponds with Gallagher and Robinson's 'collaborative elite' theory.⁴³

Before then Ferns had attempted to measure the imbalance in the trade relationship between Argentina and Great Britain, wherein British investment in Argentina's

⁴⁰ Platt, 'Further Objections to an 'Imperialism of Free Trade', 1830–60,' , p. 86.

⁴¹ H.S. Ferns, 'Review of D. C. M. Platt: Finance, Trade, and Politics in British Foreign Policy, 1815–1914', *Journal of Latin American Studies*, vol. 1, no. 1 (1969).

⁴² H.S. Ferns, 'Britain's Informal Empire in Argentina, 1806–1914', *Past and Present* (1953).

⁴³ *Ibid.*, p. 74.

railways, banks and processing plants led to an increase in the sale of British products in Argentina with no immediate increase in the sale of Argentine goods in Britain. In spite of the clear asymmetrical benefits for both countries, Ferns believed that in a free international trading system ‘there is no reason why the exchange of commodities between any two countries should ever be in balance’.⁴⁴ Later, in 1960, he thought that Britain exerted no control through political power in Argentina and therefore there was no informal empire – a position that he maintained in his book *Argentina* in 1969.⁴⁵

Ferns’s tremendous contribution was not based on theories of informal empire but on the study of the trade, diplomatic, political and historical relationships between Great Britain and Argentina, which yielded a great amount of information that has made a major contribution to my research. Ferns stands in Platt’s camp with Andrew Thompson, who insists that the *estancieros* ‘co-operated’ not ‘collaborated’, and that ‘British diplomacy might on occasions therefore have induced forces in Argentina to take decisions that favoured British interests, but this did not amount to the “indirect political hegemony” to which Robinson and Gallagher refer’.⁴⁶

Thompson believed that Britain had some influence over Argentina, but that it was different from ‘a pattern of imperial control’.⁴⁷ In 1992 he concluded that informal imperialism in Argentina was ‘a myth’.⁴⁸ However, this was not his last word on the subject. In 2008, in an article entitled ‘Afterword: Informal Empire: Past, Present and Future’, Thompson had come to accept that ‘the concept of informal empire needs to

⁴⁴ H.S. Ferns, ‘Investment and Trade between Britain and Argentina in the Nineteenth Century’, *The Economic History Review*, vol. 3, no. 2 (1950), p. 218.

⁴⁵ H.S. Ferns, *Argentina* (New York, 1969)..

⁴⁶ A. Thompson, ‘Informal Empire? An Exploration in the History of Anglo Argentina Relations’, *Journal of Latin American Studies*, vol. 24, no. 2 (1992), p. 424.

⁴⁷ *Ibid.*, p. 426.

⁴⁸ *Ibid.*, p. 436.

be “refashioned” with an interdisciplinary scope to give the concept greater analytical precision, as well as to relate it to the “new” Imperial history’.⁴⁹

Thompson’s article was the last chapter in the book *Informal Empire in Latin America: Culture, Commerce and Capital*, which was a compilation of essays written by the best scholars in the field.⁵⁰ The book remains the single most important piece of scholarship on informal empire in Latin America. It highlights the need to consider not just the financial and commercial aspects of imperial formations but also the cultural. Thus, for informal empire to exist there must be evidence of these variables supporting an asymmetric relationship; if one of these conditions is missing, informal empire cannot be considered. However, as cultural factors may vary from place to place, the result will be a variety of informal imperialisms determined by local conditions and relationships.⁵¹ Every contributor to the book (Alan Knight, David Rock, Colin Lewis, Charles Jones, Fernanda Peñaloza, Jennifer L. French) explored the notion of informal empire from a different perspective, with each adding to our understanding of this complex subject. All of these scholars accept Robinson’s idea of ‘collaborating elites’, as Argentina’s political leaders clearly collaborated with the British,⁵² but there is no consensus on how strict the definition of informal empire should be in order to consider Argentina part (or not) of such an ‘empire’.

For example, Alan Knight observed that there was a need to provide more precise definitions because, if imperialism requires coercion or fear of coercion, in the case of Argentina there was a ‘pallid imperialism’; but, if coercion is not considered, then

⁴⁹ A. Thompson, ‘Afterword: Informal Empire: Past, Present and Future’, in M. Brown (ed.) *Informal Empire in Latin America: Culture, commerce and Capital* (2008), pp. 229–241.

⁵⁰ M. Brown, *Informal Empire in Latin America: Culture, Commerce, and Capital* (Oxford, 2008)..

⁵¹ M. Brown, ‘Introduction’, in *Informal Empire in Latin America: Culture, Commerce, and Capital* (Oxford, 2008), p. 8.

⁵² D. Rock, ‘The British in Argentina: From Informal Empire to Postcolonialism’, in M. Brown (ed.) *Informal Empire in Latin America: Culture, Commerce and Capital* (Oxford, 2008).

it is clear that the relationship between Great Britain and Argentine involved an asymmetry of power and influence.⁵³

David Rock insists that the idea of British informal empire in Argentina could be better applied in the twentieth, rather than the nineteenth century, especially around the 1930s when pressure was more evident. In 1933, for example, the Roca-Runciman treaty protected British companies in Argentina, particularly the railways, and lowered duties on British goods.⁵⁴

Colin Lewis thinks that the British involvement in the construction of Argentina's railways just helped to unify the country and was not an instrument of British control or exploitation.⁵⁵ While I agree that the railways contributed to the development and unification of the country, their construction involved an element of control that followed imperial patterns in which British businesses were the most closely involved.

While Fernanda Peñaloza⁵⁶ focuses on interpreting nineteenth-century British travel narratives in Patagonia, and Jennifer L. French analyses the novel *El Inglés de los Güesos*⁵⁷, both chapters reveal the variety of factors that might be considered when studying informal empire, providing an original perspective on informal imperial behaviour.

The diverse essays of Brown's book ultimately present a heterogeneous vision of informal empire in Latin America rather than a consensus of the concept. That is not necessarily a bad thing as it reinforces the idea of informal empire as a 'working concept' that needs to be reviewed to bring 'British imperial history' and 'Latin

⁵³ Knight, *Rethinking British Informal Empire in Latin America (Especially Argentina)*, p. 45.

⁵⁴ Rock, *The British in Argentina: From Informal Empire to Postcolonialism*, pp. 70–77.

⁵⁵ C.M. Lewis, 'Britain, the Argentine and Informal Empire: Rethinking the Role of Railway Companies', in M. Brown (ed.) *Informal Empire in Latin America: Culture, Commerce and Capital* (Oxford, 2008), pp. 104–107.

⁵⁶ F. Peñaloza, 'Appropriating the Unattainable: The British Travel Experience in Patagonia', in M. Brown (ed.) *Informal Empire in Latin America: Culture, Commerce and Capital* (Oxford, 2008)

⁵⁷ J.L. French, 'Literature Can Be Our Teacher: Reading Informal Empire in *El inglés de los guesos*' in M. Brown (ed.) *Informal Empire in Latin America: Culture, commerce and Capital* (Oxford, 2008), p. 199.

American Studies' closer together.⁵⁸ The authors do more than simply position themselves on either Gallagher and Robinson's side or Platt's. They each try to consider new aspects, such as the cultural, to widen our understanding of the 'informal imperial' idea in general and in Latin America in particular. This thesis aims to contribute to the understanding of informal empire by exploring a never-before-considered cultural factor in this context – Argentina's architecture.

This thesis has also been inspired by Robin Winks' idea that the supremacy of an empire was closely related to technology.⁵⁹ Winks believes that an imperial relationship usually emerges as the result of the higher-technology society exerting influence on a lower-technology one. Britain was thus able to create a body of expertise in manufacturing, which created areas of high demand in overseas markets. This in turn led to an asymmetrical power relationship. When other nations rose to industrial prominence, Britain turned increasingly to finance and trade, preferring informal to formal expansion, using a model based on entrepreneurial and capital resources, especially in four areas: railways, loans, banking and extractive staple-related industries.⁶⁰

Winks' argument is a powerful one and provides some basis for this thesis' focus on the Scottish iron industry. However, I also explore the significance of Scottish professionals in expanding and fortifying the British empire, following R.A. Buchanan's identification of the role of British engineers as agents who brought the diffusion of technology through imperial expansion.⁶¹

The scholarly perspective on imperial matters changed in 1986, with the publication of P. J. Cain and A. G. Hopkins's essay 'Gentlemanly Capitalism and British Expansion Overseas I. The Old Colonial System, 1688–1850'. In this research,

⁵⁸ Brown, *Introduction*.

⁵⁹ R.W. Winks, 'On Decolonization and Informal Empire', *The American Historical Review*, vol. 81, no. 3 (1976).

⁶⁰ Ibid.

⁶¹ R.A. Buchanan, 'The Diaspora of British Engineering', *Technology and Culture*, vol. 27, no. 3 (1986), p. 502.

which ultimately led to the publication of their book *British Imperialism: Innovation and Expansion, 1688–1914*, Cain and Hopkins decided to focus on ‘non-industrial forms’ of capitalism, putting into consideration social agents of the capitalist enterprise. They developed a new concept called ‘gentlemanly capitalism’, which was a form of capitalism run by a financial elites based in London who influenced policy decisions relating to British imperial expansion (formal or informal).⁶² They argued that the financial services sector played the most important role in British imperial expansion and that, ultimately, power was more related to social and financial relationships than to government decisions.⁶³ Argentina is thus presented as ‘a prime example of the extension abroad of the financial and service interest centred on London and the Home Counties, and their alliance with provincial export industries’.⁶⁴ This was how British expansion – even beyond the formal empire – was possible; it worked thanks to an ‘extended network of personal contacts based on mutual trust and concepts of honour’.⁶⁵ This, in effect, amounted to what can be described as informal ‘imperial’ influence.

More recently, the significance of agents and networks of empire has been developed in a wider perspective by G. B. Magee and A. S. Thompson in their book *Empire and Globalisation: Networks of People, Goods and Capital in the British World, c.1850–1914*. Here they try to demonstrate that, although there was a basic structure facilitated by government, the ultimate success of the British imperial ‘system’ – both formal and informal – relied extensively on private interests and was essentially carried forward by social networks. Exploring the relationship between migration, trade, and finance, as well as the informal ties of culture and networking,⁶⁶ they conclude that one of the main consequences of the expansion of British power in the

⁶² P.J. Cain and A.G. Hopkins, ‘Gentlemanly Capitalism and British Expansion Overseas I. The Old Colonial System, 1688–1850’, *The Economic History Review, New Series*, vol. 39, no. 4 (1986).

⁶³ Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, p. 21.

⁶⁴ *Ibid.*, p. 288.

⁶⁵ Cain and Hopkins, ‘Gentlemanly Capitalism and British Expansion Overseas I. The Old Colonial System, 1688–1850,’ , p. 507.

⁶⁶ G.B. Magee and A.S. Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914* (Cambridge, 2010)., p. 199.

years before the First World War was the creation of a group of settler societies with distinct economic characteristics that occupied a privileged position in the first ‘global’ economy conducted by free-traders during the nineteenth century.⁶⁷

John Darwin asserts that no other power developed more varied and far-reaching imperial relationships than Victorian Britain, which relied upon the links created by trade, investment, and diplomacy, often supplemented by unequal treaties, and periodic armed intervention, to draw new regions into the world-system of an imperial power.⁶⁸ He presents an integrated approach in *The Empire Project*, which has proved a major influence on my thesis. Darwin does not present one factor as being more significant than any other in the expansion of British power. Rather, he believes that every element – financial, technological or cultural – played a different role and all helped to form a British ‘world-system’.⁶⁹

John Darwin also believes that British expansion was driven more by the pluralism of British private interests rather than by any official design. Nonetheless, the government also had a role in the system in guaranteeing free trade.⁷⁰ That was the merchants’ main demand, and it could be achieved by agreeing commercial treaties that allowed them to trade in overseas markets on the same terms as locals and that encouraged investments (usually in canals, roads or railways, as happened in Argentina).⁷¹

According to Darwin, commercial and imperial force provided the foundations of the British world-system. The massive scale of British trade, the fleets of merchant shipping, overseas investment, and the resources it dominated, were not only the manifestations of British power, they also contributed to the economic dynamism that sustained the empire. They ‘formed the invisible chains that bound the visible

⁶⁷ Ibid., p. 40.

⁶⁸ J. Darwin, ‘Imperialism and the Victorians: The Dynamics of Territorial Expansion’, *The English Historical Review*, vol. 112, no. 447 (1997), p. 614.

⁶⁹ J. Darwin, *The Empire Project. The Rise and Fall of the British World-System, 1830–1970* (Cambridge, 2009), preface.

⁷⁰ Darwin, *The Empire Project: The Rise and Fall of the British World-System, 1830–1970*, p. 3.

⁷¹ Ibid., p. 39.

empire’. They provided the means to expand the spheres of British influence and turn ‘the “undeveloped” estates of empire into imperial assets’.⁷² The idea that Argentina was part of that ‘invisible chain’ is also considered in this thesis.

Private and public activity were combined to encourage the growth of a vast network centred on Britain that distributed credit, capital, goods, information, manpower and protection on a global scale. At the same time, in non-British territory, railways, shipping and property provided an income that sustained high levels of imports.⁷³ In addition, the nineteenth-century world, now linked by fast and regular communications (railways, shipping, mail), made easier the establishment of ‘white dominions’.⁷⁴ British settlers enjoyed opportunities for business, power, and prestige that helped them to share a new sense of nationality – a ‘Britannic nationalism’ – that supported the commitment of all the white dominions to the imperial enterprise, at least until its eventual disintegration in the 1940s and 1950s. That ‘British’ nationality served to cohere Scots, Irish, Welsh and English even more abroad than at home.⁷⁵

Many scholars take Benedict Anderson’s book, *Imagined Communities*, as the basis of their understanding of ‘nationalism’. In it, Anderson defines nationalism as ‘an imagined political community – and imagined as both inherently limited and sovereign... It is imagined because the members of even the smallest nation will never know most of their fellow-members, meet them, or even hear of them, yet in the minds of each lives the image of their communion’.⁷⁶ Even though ‘nationalism’ is not a topic that will be developed in depth in this thesis, it is necessary to understand the behavior of British, especially Scottish, people in Argentina, where that sense of nationalism contributed to imperial expansion. In fact, the term ‘Great Britain’ was chosen as a ‘unifying title’ following the 1707 Act of Union that

⁷² Ibid., p. 142.

⁷³ Ibid., pp. 145–146.

⁷⁴ Ibid., pp. 146–147.

⁷⁵ Ibid., p. 178.

⁷⁶ B. Anderson, *Imagined Communities* (London, 1983), p. 6.

combined the kingdoms of Scotland and England into one.⁷⁷ The creation of ‘Britishness’ was a construction⁷⁸ distinctly related to empire building overseas since it helped people from different nations to feel that they had something in common – a ‘Greater Britain whose empire brings prosperity and stability to all’.⁷⁹ This of course had an effect within the empire but it also affected how, for example, the Scots in Scotland saw themselves as both Scottish and British.⁸⁰ That idea of being ‘British’ is considered in this thesis to be a common denominator that evoked feelings of unity related Great Britain at home and abroad and served as motivation for the expansion of British power.⁸¹

Today there is a much better understanding of the British empire in both its ‘formal’ and ‘informal’ capacities. However, as the Mexican Garcia Vargas once rightly pointed out, most literature relating to the British empire, formal or informal, is mainly written in English by British scholars.⁸² So, what do Argentinians think about informal empire?

Informal Empire by Argentinians

Pre-dating Gallagher and Robinson’s work, the idea of Argentina being affected by British imperial influence dates back in Argentinian literature to the 1930s. Just after the Roca-Runciman commercial pact had left Argentina in a very unfavourable position, Rodolfo and Julio Irazusta in their book *Argentina and British Imperialism* (1933) accused the Argentinian oligarchy of collusion with the British.⁸³ Two years

⁷⁷ E. Breitenbach, *Empire and Scottish Society: the Impact of Foreign Missions at Home, c.1790 to c.1914* (Edinburgh, 2009), p. 13.

⁷⁸ The idea of Britishness as a creation is usually attributed to Linda Colley. L. Colley, *Britons: Forging the Nation, 1707–1837* (New Haven, 1992).

⁷⁹ Breitenbach, *Empire and Scottish Society: The Impact of Foreign Missions at Home, c.1790 to c.1914*, pp. 13–14.

⁸⁰ *Ibid.*, pp. 2–5.

⁸¹ H.F. Kearney, *The British Isles: a history of four nations*. (Cambridge, 2006), p. 5.

⁸² E. V Garcia, "Imperio informal" La Política Británica hacia América Latina en el Siglo XIX’, *Foro Internacional* (Mexico, 2006).

⁸³ R. Irazusta and J. Irazusta, *La Argentina y el Imperialismo Británico* (Buenos Aires, 1934).

later, a journalist by the name of Raul Scalabrini Ortiz asserted that Argentina and its economy were behaving as a ‘semi colony’, stating that Argentina was in effect a ‘fictional nation’ because ‘we enjoy the appearance of a nation so far as we do not prejudice the interests of England... We have a shield, a flag and even a Constitution, but our political wiliness, our financial behaviour, our social organisation, our economic path and even the interpretation of our history, is dictated from London’.⁸⁴ Neither the Irazusta brothers nor Scalabrini Ortiz used the term ‘informal empire’, but they were referring to the same kind of asymmetric relationship. In the 1970s Julio Irazusta traced the beginning of British influence in the River Plate to the 1713 Treaty of Utrecht (a series of agreements that put an end to the War of Spanish Succession), by which British imports of African slaves to Buenos Aires and other South American places gave Britain its first commercial link with the Rio de la Plata.⁸⁵

However, even though early Argentinian literature mentions a concept similar to ‘informal empire’, then as now, there is no consensus with regard to the concept and its definition. This comes in part, as Rory Miller has identified, from the fact that many historians in the UK were not aware of the Latin America literature on the subject and vice versa. Ideas such as ‘dependency theory’, developed in the 1950s in particular by the Argentinian economist Raul Prebisch,⁸⁶ were unknown until the 1980s in British debate and, similarly, the Gallagher and Robinson disputes were unknown to Latin America writers.⁸⁷ Even though the international symposium

⁸⁴ R.S. Ortiz, *Historia de los Ferrocarriles Argentinos* (Buenos Aires, 2006), p. 9. Translation by author.

⁸⁵ J. Irazusta, *Influencia Economica Britanica en el Rio de la Plata* (Buenos Aires, 1972), p. 9.

⁸⁶ R. Miller, *Britain and Latin America in the Nineteenth and Twentieth Centuries* (London, 2014), pp. 16-20. Prebisch suggested that the reason Latin American countries were poorer was because they exported primary products to the rich countries, whose manufactured goods were then sold back to the poorer countries. So, while the manufactured product cost more than the primary products, poorer countries would never be earning enough from their exports to pay for their imports. The main solution for that problem would be import substitution. Thus, poorer countries would still sell their primary products on the world market, but their foreign exchange reserves would not be used to purchase manufactured products from abroad. V. Ferraro, ‘Dependency theory: An introduction’, in: (ed) G. Secondi, *The Development Economics Reader*, vol. 12, no. 2 (2008), introduction.

⁸⁷ R. Miller, *Britain and Latin America in the Nineteenth and Twentieth centuries* (London, 2014), pp. 16-20.

‘Rethinking Imperialism’ held in Buenos Aires in 2000 laid the groundwork for new approaches to the conceptualisation of empire,⁸⁸ the concept of informal empire is still much debated by both British and Argentinian scholars. As a native Argentinian living and studying in the UK, I hope in this thesis to contribute a new and more integrated perspective.

Scotland and the British Empire

If industrialisation, advanced transportation, technology and manufactured goods, ‘capitalism’, financial instruments, banks, engineers, insurance companies, and British settlers were so important in the imperial system, the question arises of who were the people that drove it and where did their ideas come from? Do the roots of modern capitalism lie with the Scot, Adam Smith, and industrialisation with James Watt’s steam engine? What about transport and manufactured goods? Glasgow was not called the ‘workshop of the empire’ for no reason. What was the role of iron in all this – in shipbuilding, munitions, engineering, manufacturing and architecture?

Although many enterprises were managed from the City of London, it does not mean that there were only Englishmen working there. The majority of Scottish companies were headquartered in London, but that does not mean they were not Scottish, or not spreading Scottish ideas, materials and goods. So, to what extent did Scotland boost or contribute to Britain’s empire? John M. MacKenzie and T. M. Devine in ‘Scotland and the British Empire’ have developed many of these themes.⁸⁹ However, the relationship between Scotland and Argentina has not yet been properly investigated.

From the Enlightenment onwards, Scots were considered ‘agents of imperial expansion’, contributing to imperial expansion as engineers, builders of infrastructure and railways, disseminators of all the advances in tropical medicine, microbiology, entomology and veterinary science, as missionaries and geographers.

⁸⁸ R.D. Salvatore and R. Ortiz, *Culturas Imperiales: Experiencia y Representación en América, Asia y África* (Buenos Aires, 2005)..

⁸⁹ MacKenzie and Devine, *Scotland and the British Empire*.

Their expertise was in serious demand overseas. Moreover, the military contribution of Scots to the Empire was also crucial.⁹⁰

Breitenbach attempts to demonstrate that the Scots contribution to the empire not only had an impact overseas but also in Scotland. Personal connections, returned emigrants, scientific interest, the coverage of imperial issues in the press and public debate, and the profile of the foreign mission within the churches, combined in various ways to impress upon the minds of Scots that they were part of an ‘imperial enterprise’.⁹¹

Scotland and Argentina

Scots that lived in Argentina, and Argentinian descendants of Scots, have shown more interest in exploring the Scottish-Argentinian relationship. The Scottish Mulhall Brothers, who founded *The Standard* in Buenos Aires in 1861, for example, later wrote *The Handbook of the River Plate*,⁹² contributing greatly to the information relating to British people and activity in the River Plate area. In 1898, the Scotsman James Dodds wrote *Scottish Settlers in the River Plate and their Churches*, in which it is possible to find some impressions of Scottish life in Argentina and some interesting information relating to the empire. For instance, ‘in 1828 the number of British residents in the City of Buenos Aires had become so considerable that it was thought advisable to take advantage of the Imperial Act, that so wisely and generously provides for the erection and maintenance of churches and hospitals in foreign ports’.⁹³ That was how the British government contributed to the construction of the Presbyterian Church and the British Hospital. He also described in detail the formation, development, and dissolution of the Monte Grande colony.

⁹⁰ Breitenbach, *Empire and Scottish Society: The Impact of Foreign Missions at Home, c.1790 to c.1914*, pp. 10–11.

⁹¹ Ibid., p. 179.

⁹² M.G. Mulhall and E.T. Mulhall, *Handbook of the River Plate Republics. Comprising Buenos Ayres and the Provinces of the Argentine Republic and the Republics of Uruguay and Paraguay* (London, 1875)..

⁹³ J. Dodds, *Records of the Scottish Settlers in the River Plate and their Churches* (Buenos Aires, 1897), p. 207–208.

Later in 1925, Cecilia Grierson, an Argentinian descendant of Scottish settlers who lived in that colony, wrote *The Monte Grande Colony: Primera y unica colonia formada por Escoceses en Argentina*.⁹⁴

The 1966 article ‘Argentina and Scotland’⁹⁵ highlighted the significance of Scots in the country but mainly in relation to agricultural and sporting activities. In 1981 Andrew Graham-Yooll wrote *The Forgotten Colony: A History of the English-speaking Communities in Argentina*.⁹⁶ In a similar fashion to Ferns, his book contributed greatly to our understanding of British and Argentinian relations. The main difference, in my view, is that Graham-Yooll focuses more on the social rather than economic aspects of British life in Argentina and distinguishes between Scottish, Irish and English people, perhaps because he was born in Argentina to a Scottish father and English mother and knew that there was a difference that was worth mentioning.

In 2005 Maxine Hanon compiled her extremely useful *Dictionary of the British in Buenos Aires (First Era)*,⁹⁷ which gives very helpful bibliographical information on Scottish, English, Irish, Welsh and English settlers in Argentina. Unfortunately, it describes only those who arrived in the country before 1852 – the starting point of the period analysed in this thesis.

*From Caledonia to the Pampas*⁹⁸ focuses on the voyage of the *Symmetry*, the ship that brought the first Scottish colony to Argentina, and the diary of one of its settlers.

More recently, Gordon Bridger published *Britain and the Making of Argentina*,⁹⁹ in which he highlights the contribution of the British in Argentina, as those involved in

⁹⁴ C. Grierson, *Colonia de Monte Grande. Primera y Unica Colonia Formada por Escoceses en Argentina* (Buenos Aires, 1925)..

⁹⁵ A. Craig, ‘Scotland and Argentina’, *The Scottish Field Magazine* (1966).

⁹⁶ A. Graham-Yooll, *The Forgotten Colony: A History of the English-Speaking Communities in Argentina* (London, 1981)..

⁹⁷ M. Hanon, *Diccionario de Británicos en Buenos Aires (Primera Epoca)* (Buenos Aires, 2005)..

⁹⁸ I.A.D. Stewart, *From Caledonia to the Pampas: two Accounts by Early Scottish Emigrants to the Argentine* (East Linton, 2000)..

⁹⁹ G. Bridger, *Britain and the Making of Argentina* (Southampton, 2012)..

economics, trade, railways, shipping, and sports. Bridger's book represents a good overview of British activity in the River Plate, although it gives no further consideration to theories of imperialism.

The British railway in Argentina

One area of enterprise that helps to shed further light on both the iron industry and British economic and political influence in Argentina is the development of British railways in the country. This is a topic that has attracted many writers: Scalabrini Ortiz,¹⁰⁰ Mario Justo Lopez,¹⁰¹ and Jorge Waddell¹⁰² from Argentina; and from Britain, Wright,¹⁰³ Goodwin,¹⁰⁴ and Colin Lewis, who agrees with the Argentinian scholar Eduardo Zalduendo that the controversy about British investment in Argentina's railway had motivated the production of critical work that 'is far from finished'.¹⁰⁵

From my own point of view, one of the most revealing sources is a book written in 1978 by Zalduendo¹⁰⁶ – *Libras y Rieles: Las inversiones Británicas para el desarrollo de los ferrocarriles en Argentina, Brasil, Canadá e India durante el siglo XIX* [*Pounds and Rails: British Investments for the Development of Railways in Argentina, Brazil, Canada and India in the Nineteenth Century*]. Zalduendo

¹⁰⁰ Ortiz, *Historia de Los Ferrocarriles Argentinos*.

¹⁰¹ M.J. López, *Ferrocarriles, Deuda y Crisis: Historia de los Ferrocarriles en la Argentina, 1887–1896* (Buenos Aires, 2000).

¹⁰² M.J. López and J.E. Waddell, *Nueva Historia del Ferrocarril en la Argentina* (Buenos Aires, 2007)..

¹⁰³ W.R. Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948* (Texas, 1974).

¹⁰⁴ J. Goodwin Paul B, 'Anglo-Argentine Commercial Relations: A Private Sector View, 1922–43', *The Hispanic American Historical Review*, vol. 61, no. 1 (Durham, 1981), and 'The Central Argentine Railway and the Economic Development of Argentina, 1854–1881', *The Hispanic American Historical Review*, vol. 57, no. 4 (2008).

¹⁰⁵ C.M. Lewis, 'Britain, the Argentine and Informal Empire: Rethinking the Role of Railway Companies.', in M. Brown (ed.) *Informal Empire in Latin America: Culture, Commerce and Capital* (Oxford, 2008), p. 117.

¹⁰⁶ E. Zalduendo, *Libras y Rieles: Las Inversiones Británicas para el Desarrollo de los Ferrocarriles en Argentina, Brasil, Canadá e India Durante el Siglo XIX* (Buenos Aires, 1975)..

examined the impact of railway construction in these four countries, which fit into formal (India and Canada) and informal empire (Brazil and Argentina), using maps, schemes and comparative tables to make a rich contribution. For example, his ‘Typical scheme of promoting railways’,¹⁰⁷ showing the interconnection of contractors, banks, speculators, building materials and workforce, and his maps showing how railways lines connected British estancias are very revealing of the complexity of the British railway network.

Jorge Tartarini is the main scholar to have examined Argentina’s railway architecture, along with researching the Buenos Aires water supply and pumping stations. His books and articles show the relations between British agents and the wider British empire, but do not analyse Argentina’s architecture as part of an imperial network.¹⁰⁸

British Professionals in Argentina/ Networks of Empire

In 2008 the CEDODAL (Documentation Center of Latin American Architecture) published a book about the architectural firm Conder, Follet, Farmer Conder between 1891 and 2008. It is mainly about architecture but also mentions some cultural connections in education, sports and the press, provides biographical contributions on engineers and architects, and descriptions of works made by the company. The chapter closest to this research project is Monica Ferrari’s ‘Catalogues of prefabrication’,¹⁰⁹ where she gives a brief explanation of the use of catalogues in Argentina and identifies some Scottish iron elements, such as Alex Findlay & Co. in Plaza Constitution (Argentina’s second most important railway station) and Macfarlane’s elements in Cordoba Stations, but does not discuss the connection

¹⁰⁷ Ibid., p. 63.

¹⁰⁸ For railway architecture see: J. Tartarini, *Arquitectura Ferroviaria* (Buenos Aires, 2000). And J. Tartarini, *Ferrocarriles Provincia Buenos Aires* (2009). For Aguas Corrientes Palace see: E. Radovanovic, J. Tartarini, and A.A. Firm, *Agua y Saneamiento en Buenos Aires, 1580–1930: Riqueza y Singularidad de un Patrimonio* (Buenos Aires, 1999) And J. Tartarini, *El Palacio de las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional* (Buenos Aires, 2012).

¹⁰⁹ M. Ferrari, ‘Los Catalogos de Fabricacion en Hierro’, *Estudio de arquitectura Follett, 1891–2008 Conder, Follett, Farmer* (Buenos Aires, 2008)

between these elements and the British world system. Similarly, Florencia Barcina¹¹⁰ has highlighted the close relationship between architectural firms and the British community in Argentina, but she does not relate this to theories of empire. Thus, these great sources of information still reflect the need for new literature wherein British architecture in Argentina can be understood from a wider global perspective.

Literature Review for Section 2

Iron Trade / Britain

In 1854 Henry Scrivenor wrote his *History of the Iron Trade*, believing that ‘there is no subject more important to the country than the success of the iron trade’.¹¹¹ In doing so, he laid the groundwork for the history of the iron trade, which Samuel Griffiths developed with his contribution on iron trade activity in general.¹¹²

Not much has been written, however, on the relationship between the iron trade and the economics of empire. In 1933 Arthur Cecil Bining explained how the Iron Act (1750) restricted iron-manufacturing activities in British colonies, particularly in North America. The need to regulate and control the colonial iron industry arose as the development of the industry in colonial America began to interfere with British production and manufacture.¹¹³ This was deemed unacceptable as the ‘colonies were expected to serve in the general scheme of the British empire’.¹¹⁴ Bining’s book serves to illustrate Great Britain’s interest in iron as an element of power but it only focuses on North American colonies. Other works, similarly neglect Latin America. Burnham’s *Iron and Steel in Britain 1870–1930*,¹¹⁵ for example, analyses worldwide trends in iron and steel but fails to show exports to Argentina or any other Latin

¹¹¹ H. Scrivenor, *History of the iron trade. From the earliest records to the present period* (London, 1854), preface.

¹¹² Griffiths, *Griffiths’ Guide to the Iron Trade of Great Britain*.

¹¹³ A.C. Bining, *British Regulation of the Colonial Iron Industry* (New York, 1933), pp. 1–3.

¹¹⁴ Ibid.

¹¹⁵ T.H. Burnham and G.O. Hoskins, *Iron and Steel in Britain, 1870–1930* (London, 1943).

American country. Carr and Taplin's *History of the British Steel Industry*¹¹⁶ shows, for example, that 'between 1830–1847 Scottish pig iron production multiplied nearly 15 times' and that 'trade in the early eighties British overseas market were growing, especially in Canada, India, Australia and South Africa, and the Argentine was certainly prominent among these', but does not give specific data in relation to the iron trade to Argentina.

More recent scholars have mentioned the idea of iron as a fundamental element in Britain's imperial economy, but again they do not analyse it in detail. For instance, in *Understanding the Victorians: Politics, Culture, and Society in Nineteenth Century Britain*,¹¹⁷ Susie L. Steinbach merely notes that Argentina is considered by historians to be part of Britain's informal empire without developing the topic. Although, interestingly, she does mention Scottish iron in particular as a source of power and as a building material and the 'new uses' of cast and wrought iron in machinery, water and gas pipes, beams in buildings, iron bridges, the first iron ships, and railway rails, locomotives, etc. Steinbach also mentions that by the 1850s the iron and steel industry employed forty per cent of the work force. By the 1870s Britain dominated the international iron and steel trade. Scottish iron foundries were particularly efficient at using new techniques to reduce costs.¹¹⁸ Over the course of the nineteenth century British engineers were able to figure out how to use iron, steel and steam engines effectively to build cost-effective railways and ships. These two were then used to create networks of transportation and communication, including telegraphs.¹¹⁹

¹¹⁶ J.C. Carr and W. Taplin, *History of the British steel industry* (Oxford, 1962)..

¹¹⁷ S. Steinbach, *Understanding the Victorians: Politics, Culture, and Society in Nineteenth-Century Britain* (Abingdon, 2012), p. 63.

¹¹⁸ Ibid., pp. 84–95.

¹¹⁹ Ibid., p. 237.

The Iron Trade / Argentina

In Argentina very little has been written about the iron trade. In fact, the most important literature comes from primary source reports. The oldest one dates from 1892, in which Dimas Helguera highlighted the fact that ‘the deficiency of our transportation is a real enemy of mineralogical industry in Argentina’.¹²⁰ In the same report he also included a survey of the number of establishments working in iron. In the 1930s, when the idea of import substitution took hold, several reports on the possibilities of the development of iron production in Argentina were commissioned by the government and undertaken mainly by Sven Wässman.¹²¹

In the course of this thesis, customs statistics and other official documents will be used to analyse the iron trade between the UK and Argentina. However, as mentioned earlier, they will be cited when used in the body of the text.

Literature Review for Section 3

British Cast-Iron Architecture

Published in 1945, Richard Sheppard’s *Cast Iron in Building*¹²² is one of the earliest books on the topic. It represents a general overview of the use of iron in buildings. Interestingly, Plate 20 shows a cast-iron window made by the Scottish Lion Foundry for the Argentinian railway’s Station Plaza Constitucion, while plate 37 shows a footbridge with a cast-iron frame, of a type used extensively in Argentina, *in situ* in Britain. These examples will be analysed in more detail in the last section of the thesis. Then, in 1948, J. Gloag and D. L. Bridgwater published *A History of Cast*

¹²⁰ D. Helguera, *La Produccion Argentina en 1892, Descripcion de la Industria Nacional* (1893), p. 197.

¹²¹ S. Wässman, *Sobre las Posibilidades de una Industria Siderúrgica en la República Argentina* (Buenos Aires, 1927).. S. Wässman, *La Base de una Producción de Hierro en las Provincias de Salta y Jujuy* (Buenos Aires, 1930). And Wässman, *El Hierro Viejo y su Aprovechamiento en la República Argentina*.

¹²² R.H. Sheppard, *Cast Iron in Building* (London, 1945)..

Iron Architecture,¹²³ an essential text for those working on the history of cast iron architecture.

This was followed in 1978 by *Pioneers of Prefabrication: the British Contribution in the Nineteenth Century* by G. Herbert,¹²⁴ which gives a good overview of prefabrication in general and considers cast iron as a means of ‘expanding colonial and financial empire’.¹²⁵ Herbert observes that ‘British investments in South America and the high reputation of British engineers opened the doors for a lucrative trade with Latin American republics’, encouraging specialisation in buildings for export.¹²⁶ Among his examples of prefabricated iron buildings is the Buenos Aires gas works, erected in 1856 by the English engineering and iron foundering company E. T. Bellhouse and Co.¹²⁷ This building has not been analysed by Argentinian scholars.

In 1994 *Cast Iron Decoration: A World Survey* by Graeme and Joan Robertson¹²⁸ appeared, providing good insight into design and materials, pattern books and catalogues. Here there is a chapter entitled ‘Empires and Influences’ covering Bombay, Cape Town, Bermuda, Toronto, Montreal and Quebec, Tahiti, Mauritius and one Latin American city – Mexico City. The book suggests that ‘Mexico City gained its most remarkable example of cast iron through imperial connections’ and uses the example of the Moorish kiosk in the Alameda de Santa Maria.¹²⁹ However, this is wrongly considered to be an imperial Spanish contribution. Even though the style is compared with the Alhambra of Spain, it was in fact designed by Mexican engineer Jose Ramon Ibarrola and cast in the United States. More interestingly, the

¹²³ J. Gloag and D.L. Bridgwater, *A History of Cast Iron in Architecture* (Wales, 1948)..

¹²⁴ G. Herbert, *Pioneers of Prefabrication: the British Contribution in the Nineteenth Century* (Baltimore, 1978)..

¹²⁵ Ibid., p. 53.

¹²⁶ Ibid., p. 69.

¹²⁷ Ibid. p. 71 and p. 170.

¹²⁸ E.G. Robertson and J. Robertson, *Cast Iron Decoration: A World Survey* (London, 1994)..

¹²⁹ Robertson and Robertson, *Cast Iron Decoration: A World Survey*, p. 78.

kiosk was cast in iron by Union Mills Foundry of the Keystone Bridge Company, owned by the Scot Andrew Carnegie.¹³⁰

That kiosk was actually made for the International Exhibition of Cotton Industry in New Orleans (1884–1885) and was later reused for the 1904 St. Louis Exhibition, before moving to its current location in Santa Maria in 1908. New studies are trying to demonstrate that the Moorish style – especially when seen in structures made for international exhibitions – when seen outside Spain was more connected to the ‘orientalist’ and exotic styles than to the Spanish. The exotic style was in fashion after the Crystal Palace Exhibition, where Owen Jones presented the ‘Alhambra Court’. In addition, exotic styles were disseminated through Owen’s book *The Grammar of Ornament* and through cast iron trade catalogues.¹³¹ Nevertheless, Robertson’s book is a beautiful compilation of black and white illustrations and shows some examples of Scottish cast iron in London, Edinburgh, Glasgow and other places such as Leningrad and Moscow. With this in mind, it is important to analyse architectural examples in a wider historical context, rather than just on the basis of their superficial style. This is a common mistake that this thesis attempts to redress.

In 1985 the photographer John Gay captured some beautiful examples of cast iron in Edinburgh, Glasgow, and other places, with an emphasis on particular iron foundry producers. From my point of view, the most important part of his book, *Cast Iron: Architecture and Ornament, Function and Fantasy*,¹³² is its revealing introduction written by the architectural historian Gavin Stamp. In a brief text, Stamp ably summarises cast iron production, trade, aesthetics and criticism; more especially, he

¹³⁰ Andrew Carnegie (1835–1919), like many other Scots, migrated in search of his fortune to America. He believed iron and steel was very important for America’s development. He established many iron and steel factories from the 1870s, making rails for many of the country’s railroads. See: D. Karwatka, ‘Andrew Carnegie—America’s steel giant’, *Tech Directions*, vol. 56, no. 5 (1996).

¹³¹ Rodrigo Gutiérrez Viñuales, ‘El Orientalismo en el Imaginario Artístico y Urbano de Iberoamérica. Exotismo, Fascinación e Identidad’, in J. González Alcantud (ed.) *El Orientalismo desde el Sur* (Sevilla, 2006).

¹³² J. Gay, *Cast Iron: Architecture and Ornament, Function and Fantasy*. (London, 1985).

highlights the extent to which cast iron was the only thing in common in the vast British empire. This idea has certainly inspired my own research.

David Mitchell's 2012 thesis *Development of the Architectural Iron Founding Industry in Scotland*¹³³ represents the best source on the subject and includes a history of the most important iron foundries in Scotland, including Carron, George Smith, and Walter Macfarlane. He discusses the greatness of the Scottish industry and the significance of the extent of the Scottish iron trade, providing many examples from outside the empire. He includes a database of thousands of cast-iron elements produced or found in Scotland, based on the work done by the Scottish Ironwork Foundation. The database includes items found in South America but none from Argentina. The main impact of Mitchell's work is in affirming the significance of Scottish foundries and Scottish mastery of the industry. Mitchell's commitment to the importance of Scottish foundries inspired deeply my own research.

In 2014 Paul Dobraszczyk brought together many of the relevant topics in *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity*.¹³⁴ The book presents the best literature to date with regard to Victorian cast iron and considers cultures of display, cast iron typologies, and buildings typologies, such as seaside architecture, arcades, markets and railways structures. However, it goes further in terms of cultural concepts, covering notions of morality, architectural expressions of pleasure and leisure, the meaning of the civic, what ornament in iron might mean in relation to the built environment, and in stressing the relationship between theorisation, design and its reception. However, Dobraszczyk acknowledged that the export market was not within the scope of his research and was in need of further study. This gap is addressed in the third section of this thesis, where many cast-iron items made in Scotland and shipped to Argentina are identified and analysed.

The export of cast iron has been explored in some markets. However, none of those works cover Argentina in depth or in the period considered in this thesis, although

¹³³ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*.

¹³⁴ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*.

their findings often resonate for Argentina. Pedro Guedes has written the most significant articles about British prefabricated cast iron outside Britain. His 2006 article on the cast-iron market in Santiago, Chile, which was manufactured by a Scottish firm,¹³⁵ contains some wonderful images of the process of construction and packing for shipment overseas, and much of what he says is applicable to cases in Argentina. In his thesis *Iron in Building, 1750–1855: Innovation and Cultural Resistance*,¹³⁶ he discusses inventions and design in iron, with a focus on Africa. He states in the introduction that he noticed that ‘similar episodes of iron building had occurred’ in several Latin American countries, and he considers some aspects of informal empire, but this last aspect is not in the main focus of the thesis and the period he analyses only reaches 1855, decades shy of the period covered here. However, in his 2011 article ‘Firm Foundations or Shaky Ground? Unraveling Tangled Threads of Attribution’, Guedes does examine the case of C. D. Young, a Scottish iron foundry, revealing important discoveries, such as the bilingual catalogues made for the firm for trade with South American countries.¹³⁷

In Brazil, Gomez da Silva made the first approach to iron architecture in 1988, showing its relationship with trade but focusing on the advantages of material, style and typology.¹³⁸ In 1994 Cacilda Texeira da Costa¹³⁹ wrote mainly about the contribution of the Scottish iron foundry Walter Macfarlane & Co. in Brazil. However, Texeira da Costa also went further, suggesting that cast iron elements symbolised progress and were thus received with enthusiasm. She also considered some examples of cast iron found in Argentina, Peru, Chile, Uruguay, Paraguay, Mexico, Egypt and Australia.¹⁴⁰ She also mentioned the significance of the use of the

¹³⁵ P. Guedes, ‘El Mercado Central de Santiago antes de su Embarque a Chile/Santiago Market before it sailed to Chile’, *ARQ*, no. 64 (2006).

¹³⁶ P. Guedes, ‘Iron in Building, 1750–1855: Innovation and Cultural Resistance’ (PhD thesis, Queensland, 2010).

¹³⁷ P. Guedes (Brisbane, 2011)..

¹³⁸ G. Gomes da Silva, *Arquitetura Do Ferro no Brasil* (Sao Paulo, 1988)., p. 83.

¹³⁹ C. Texeira da Costa, *O Sonho e a Tecnica: A Arquitetura de Ferro no Brasil* (Sao Paulo, 1994)..

¹⁴⁰ *Ibid.*, p. 9.

illustrated catalogue as a powerful sales instrument¹⁴¹ and uncovered the fact that in Brazil, as in Argentina, there was a close relationship between commercial activity, the railways and finance.¹⁴² Her work is important in helping us to better understand the kind of relationship Britain could have had with Argentina and other South American countries with respect to the iron trade. Texeira's idea of cast-iron architecture as an element of modernity and power is also taken into account in this thesis.

Cast-iron Architecture in Argentina

In Argentina there is no scholarship similar to that on Brazil or Chile. O. Iolita and R. Vassallo have written one of the most specific books related to the topic in Argentina, but unfortunately it has not been translated from Italian.¹⁴³

For general literature on architecture and the iron industry in Argentina, we can turn to *Revolución industrial y equipamiento urbano* and *Arquitectura de la revolución industrial* by Gazzaneo and Scarone¹⁴⁴ and *La arquitectura en la Argentina del siglo XX: la construcción de la modernidad* by Francisco Liernur.¹⁴⁵ Although these three authors mention the relationship between architecture, iron and British influence, they fail to develop a link with empire or theories of informal empire.

The clearest attempt to connect iron, informal empire, and architecture in Argentina is in Rosa Araceli León's *La Arquitectura de Hierro en Tucumán a fines del Siglo Pasado*.¹⁴⁶ She affirms that there 'was a relationship between iron and the "British Economy"' and that 'new technologies of iron and steel made possible a new

¹⁴¹ Ibid., p. 12.

¹⁴² Texeira da Costa, *O Sonho E a Tecnica. A Arquitectura de Ferro No Brasil*, p. 40.

¹⁴³ O. Iolita and R. Vassallo, *L'Architettura del Ferro. L'Argentina 1850–1930* (Roma, 2003).

¹⁴⁴ J.O. Gazzaneo and M.M. Scarone, *Revolución industrial y equipamiento urbano* (Buenos Aires, 1967) and J.O. Gazzaneo and M.M. Scarone, *Arquitectura de la Revolución Industrial* (Buenos Aires, 1969)..

¹⁴⁵ J.F. Liernur, *La Arquitectura en la Argentina del siglo XX: la Construcción de la Modernidad* (Buenos Aires, 2001)..

¹⁴⁶ R.A. León, 'La Arquitectura de Hierro en Tucumána fines del Siglo Pasado', *Revista CET. Facultad de Ciencias Exactas y Tecnología U.N.T.* (2000).

“colonialism””, characterised as being ‘masked’ under ‘bilateral trade’, ‘forming a new tool of power, more efficient from the economic point of view, than old forms of classical colonialism.’ Unfortunately, this paper lacks references, especially for these assertions, which are only mentioned in the introduction and never developed in the text.

In 2015, Scottish cast iron in Argentina was considered in Patricia Favre’s book entitled *Escenarios del Poder. La Escultura en el Parque General San Martin*. She analyses in detail all the imported cast-iron sculptures located in San Martin Park in Mendoza. She exposes new and important information about the known Macfarlane’s gate and reveals new Scottish cast-iron elements such as a bandstand (demolished) and lamps.¹⁴⁷ Her findings, although limited to San Martin Park, are nonetheless significant and arouse interest in Scottish cast-iron art and architecture in Argentina.

The most recent publication related to iron architecture was published in 2016 by P. Dobraszczyk and P. Sealy. The second section of *Function and Fantasy: Iron Architecture in the Long Nineteenth Century*¹⁴⁸ considers the exchanges between Britain’s formal and informal colonies with reference to iron buildings. These are covered by Jonathan Clarke, who contributes examples from Africa and Peru; and myself presenting examples in Argentina. This book represents the first attempt to include iron architecture within the sphere of informal empire.¹⁴⁹

Conclusion

While the significance and consequences of the British empire have been the subject for much scholarship, it has been established that the concept needs to be re-examined and the phenomenon of British imperialism needs to be understood as a whole, with a greater interdisciplinary framework that considers the contributions of,

¹⁴⁷ P. Favre, *Escenarios del Poder. La Escultura en el Parque General San Martin* (Mendoza, 2015)..

¹⁴⁸ P. Dobraszczyk and P. Sealy, *Function and Fantasy: Iron Architecture in the Long Nineteenth Century* (Abingdon, 2016)..

and implications for, different nations. This thesis represents an opportunity to explore the subject from the standpoint of architectural history, as a way of shedding light on our understanding of the British world between 1852 until 1948.

As yet there is no middle ground between British and Argentinian scholars. As the concept of informal empire has been analysed mainly by British scholars, there is a demand for new, more 'local' perspectives, which I consider in this thesis, although this will not be the only topic developed. Imperial theories and networks of empire will span the main body of the thesis in order to analyse how the British empire worked as a complex 'world system', and to determine who its agents were in Argentina, what the role of iron was, and what the implications for Argentina and its architecture were.

During the Victoria era, the most significant changes in technology – including in the iron industry– in the economy and in society coincided with the expansion of the British Empire and affected not just Britain but also the rest of the world. Railways facilitated massive population growth, urban change, and improvements in canal, river, road, and sea transportation that were connected to trade. In turn trade changed consumption, modes of production, trends and aesthetics, all of which affected architecture in Britain and the wider British world. A great amount of literature on these topics has been written, but it lacks interconnection, with none of it systematically linking Argentina and Great Britain, and Scotland in particular.

Whether Great Britain and Argentina's relationship was a positive or negative experience for Argentina is not what this thesis intends to determine. Instead, following John Darwin's view of the British empire as a system, I intend to analyse the role of Argentina as a trade 'partner', however asymmetric its relationship with Britain, and consider the role of the iron trade and Scottish cast iron and its architectural impact on Argentina.

In summary, the Scots had a huge impact in Argentina. Scottish Highlanders were part of Britain's invasion force that attempted to make the River Plate part of the formal British empire in 1806. Scots were the first merchants and Scottish immigrants formed the first organised European 'colony' or enclave in Argentina.

They introduced tools to work the land, they also introduced their churches and societies and freemasonry, which was connected to the political elite. Scots introduced football, as well as Angus and Aberdeen cattle to improve the quality of meat in Argentina. Railwaymen, engineers and architects born in Scotland or trained there constructed lines and railway stations. They worked with other Britons, using British investments, bringing material from Britain, in British ships, thus reinforcing the networks that Magee and Thompson talk about in their study.¹⁵⁰ In this thesis I attempt to connect those people that contributed to Argentina's development with British imperial expansion to uncover the 'invisible' networks of empire that have left such a visible and material mark on Argentina's heritage.

¹⁵⁰ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*.

Section 1: Informal Empire and the British System. Britain, Scotland and Argentina

1.1 Introduction

The British imperial system was much more than a formal territorial empire. Its extraordinary geographical extent necessarily incorporated and maintained a wide range of constitutional, diplomatic, political, commercial and cultural relationships. Much recent research has supported the idea that Britain attempted to incorporate Latin America, especially Argentina, within its sphere of imperial influence. While informal empire is difficult to classify as it varied from country to country, with different implications and consequences, the relationship between Great Britain and Argentina was demonstrably asymmetrical. While general theories and concepts of informal empire were discussed in detail in the Thesis Introduction and Literature Review, in the following chapters I will explore those that best explain the British world-system,¹⁵¹ reflect upon its nature, and provide a key to understanding the ‘imperial’ relationship between Great Britain (including Scotland) and Argentina.

The ‘imperialism of free trade’ model presented by Gallagher and Robinson¹⁵² highlighted the significance of trade and economic expansion. Free trade, inspired by the Scot Adam Smith, was certainly introduced into Argentina through the British commercial relationship. Gallagher and Robinson also identified certain imperial patterns in both formal and informal colonies, especially in the areas of investment, migration and culture, which will be described later. Other informal empire concepts such as Cain and Hopkins’s ‘gentlemanly capitalism’¹⁵³ can also be applied in Argentina, confirming the role of services and private businesses, along with diplomacy, which – in connection with the local ‘collaborative elite’ proposed by Robinson – helped to expand imperial power and influence over Argentina.¹⁵⁴

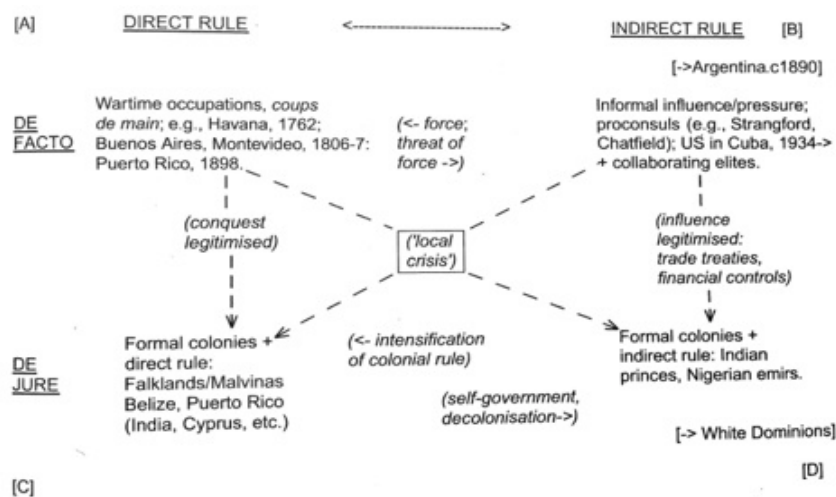
¹⁵¹ J. Darwin, *The Empire Project. The Rise and Fall of the British World-System, 1830–1970* (Cambridge, 2009), p. 1.

¹⁵² Gallagher and Robinson, ‘The Imperialism of Free Trade,’.

¹⁵³ P.J. Cain and A.G. Hopkins, ‘Gentlemanly Capitalism and British Expansion Overseas I. The Old Colonial System, 1688–1850’, *The Economic History Review, New Series*, vol. 39, no. 4 (1986).

¹⁵⁴ R. Robinson, ‘Non-European Foundations of European Imperialism: Sketch for a Theory of Collaboration’, *Studies in the Theory of Imperialism* (1972).

Although it remains doubtful whether a satisfactory theory of imperialism can ever really be advanced,¹⁵⁵ there are some basic elements common to all imperial relationships. While *formal* empire involves direct rule by the metropolis and *informal* depends on less formal pressures and influences, both are based on an asymmetrical exercise of power by one group over another. Alan Knight considers that the formal/informal dichotomy indicates *de jure* (legitimately recognised) against *de facto* (not formally recognised) authority.¹⁵⁶ Yet the imperial relationship can change with the passage of time, and many imperial relationships begin with *de facto* occupation and obtain *de jure* validity later. Moreover, countries can move from direct to indirect rule as illustrated in the following graph (Graph 1–1), which shows *de facto* authority in Argentina move from direct rule following the 1806–7 British invasion to indirect rule around the time of the Baring crisis in the 1890s.¹⁵⁷



Graph 1–1. Categories of the empire. Source: A. Knight, 'Rethinking British Informal Empire in Latin America (Especially Argentina)', in M. Brown (ed.) *Informal Empire in Latin America: Culture, Commerce and Capital* (Oxford, 2008), p. 30

¹⁵⁵ H. Daalder, 'Empire,' *International Encyclopedia of the Social Sciences* (2008)..

¹⁵⁶ A. Knight, 'Rethinking British Informal Empire in Latin America (Especially Argentina)', in M. Brown (ed.) *Informal Empire in Latin America: culture, commerce and capital* (Oxford, 2008), pp. 28–30.

¹⁵⁷ Knight, *Rethinking British Informal Empire in Latin America (Especially Argentina)*, p. 30.

Imperialism is defined by John Darwin as the sustained effort to assimilate a country or region to the political, economic or cultural system of another power. 'Formal' imperialism aimed to achieve this objective by the explicit transfer of sovereignty and, usually, the imposition of direct administrative control. Its 'informal' counterpart relied upon the links created by trade, investment or diplomacy, often supplemented by unequal treaties and periodic armed intervention, to draw new regions into the world-system of an imperial power.¹⁵⁸

Some scholars believe that Britain's economic policies were guided by laissez-faire principles, which meant limited opportunities for government involvement. Hence, the course of economic development was driven mainly by the self-interest of individuals operating in the markets. Others believe that Britain's imperial economy was part of a design wherein economic development was based on dependency, exploitation and coercion. However, these theories do not take into account how individuals adopted certain behaviours to achieve their goals within the system.¹⁵⁹

Even though government actions and policy could be said to have provided the formal structural foundations of the imperial economic system, the government functioned only as a 'guiding state' that provided the basic infrastructure of the system to ensure efficiency. The lack of strong political direction certainly did not stop the British world-system from surviving, developing and expanding. Indeed, government policy alone cannot make an economic system: it is the actions of those who utilise it for private interests, whether individual, organisational or institutional, that shape the system. Self-interest alone may or may not support imperial economic ties, so a sense of attachment to the empire and Britishness were crucial in the British world-system.¹⁶⁰

Thus, while British expansion was driven not by official design but by the chaotic pluralism of British interests at home and of their agents and allies' interests abroad,

¹⁵⁸ Darwin, 'Imperialism and the Victorians: The Dynamics of Territorial Expansion,' .

¹⁵⁹ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 11–13.

¹⁶⁰ Ibid., pp. 11–13.

the result was not a homogeneous empire but a chaotic and complex one. As Darwin concludes, the British empire was an ‘unfinished’ project that ended up imposing a system on this chaotic expansion, but the emergence of the imperial global system was beyond the power of the British government in London.¹⁶¹

¹⁶¹ Darwin, *The Empire Project. The Rise and Fall of the British World-System, 1830–1970*, p. 3.

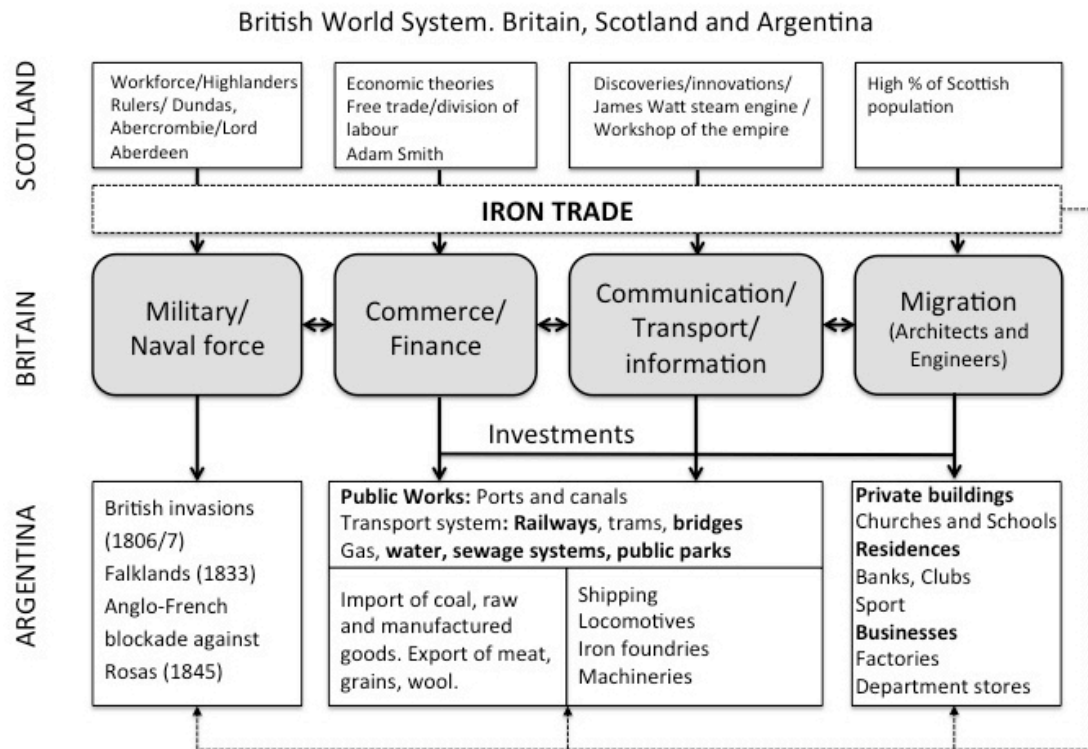
1.2 The British Global System and the Networks of Empire

The nature of informal imperialism could produce different results even across different regions with the same political, economic and social conditions. However, there was a global phenomenon in which it is possible to identify some similarities: the development of free trade, the undertaking of treaties of commerce, the expansion of British business and British settlements, the development of ‘collaborative elites’, the establishment of British banks, the increase in British loans and investments, and the development of some degree of financial control. Local economies affected by monoculture, local handicrafts, and industries affected by massive imports also featured. In addition, the imperial process was reinforced by the construction of public works and services: hydraulic works, canals, railways, ports and bridges, among others.¹⁶²

The existence of this informal element means we should understand the British empire as in part a flexible and integrative system, formed by networks of relationships, not one that in every instance was characterised by direct imperial rule. The British ‘system’ rested on the much broader framework of how wealth and power were distributed globally, in which British actions formed just a part. Thus, the British world-system was not self-sufficient, but was formed by inter-dependent parts, each of which had a role in making the system work. Among these interconnected components, four were absolutely essential: military and naval force, commerce, communication, and migration.¹⁶³ Graph 1–2 illustrates the connection between the many components of the ‘British World System’, which will be discussed in different stages of the thesis. The four essential elements are highlighted in grey (these will be explored in more detail in the following sub-chapters).

¹⁶² P. Morris, *Africa, America and Central Asia: Formal and Informal Empire in the Nineteenth Century* (Exeter, 1984), p. 7.

¹⁶³ Darwin, *The Empire Project. The Rise and Fall of the British World-system, 1830–1970*, p. 3.



Graph 1–2. Main aspects of the British system. Source: Author.

1.2.1 Naval and Military Force

Britain's ability to provide naval protection and to send reinforcements to the scene of a conflict was crucial. It gave the country control and allowed the settlement of strategically important sites. The Cape Colony, for instance, had secured the naval entrance to Asia from European waters until the opening of the Suez Canal in 1869, while the occupation of Egypt in 1882 preserved British use of that canal for imperial communications. Bases in Malta, Aden, Ceylon, Singapore, Hong Kong, Esquimalt (on Vancouver Island), the Falklands/Malvinas and Halifax (Nova Scotia) formed a network from which the Royal Navy could patrol the world's sea-lanes, while India secured the British system in Asia. After the Battle of Trafalgar (1805), Britain gained naval supremacy and, with it, broke down the barriers of restricted trade.¹⁶⁴ Military force, moreover, provided perhaps the one way by which the British

¹⁶⁴ Ibid., p. 4.

government could apply more direct policies, playing a crucial part in making the networks of empire safer.¹⁶⁵ At the same time, demand from the military and naval forces helped to develop local British companies. Carron Company in Scotland, for example, supplied guns, munitions, and the famous ‘carronade’ to the British navy.¹⁶⁶

1.2.2 Commerce

In the late eighteenth century, revolutionary ideas about commercial society began to cause momentous change in Western political thought. Adam Smith’s *Wealth of Nations* (1776) systematised new theories of political economy with far-reaching effects on ideas of society, international relations, and politics. It changed the conception of empire and restructured the transatlantic relationship.¹⁶⁷ (Adam Smith’s contribution to the empire will be described in more detail later).

Both colonial territories and informal colonies had to compete for investment and credit from London in order to expand their economies. They had to find and meet an external demand in order to earn the overseas income needed to fund their borrowing. They had to produce the specialised exports (staples) that would command the best prices in London’s commodity markets. In return, British capital was transferred by the City of London between the various sectors of the country’s commercial empire (both formal and informal) – Canada, Argentina, India, Australia, Southern Africa, China and the Middle East.¹⁶⁸

A ‘commercial republic’ centred on the City of London became one of the vital constituents of the British world-system. Britain’s prosperity appeared to rise in direct proportion to the scale of its overseas trade and the increase of its invisible income. Income tax, estate duty, excise and postal receipts increased government

¹⁶⁵ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 131–133.

¹⁶⁶ R.H. Campbell, *Carron Company* (Edinburgh, 1961), Prologue.

¹⁶⁷ A. Hamilton, *Trade and Empire in the Eighteenth-Century Atlantic World* (2008), p. 32.

¹⁶⁸ Darwin, *The Empire Project. The Rise and Fall of the British World-system, 1830–1970*, p. 5.

revenues by nearly 50 per cent between 1870 and 1897. The favourable balance of payments (largely the product of invisible income) kept sterling strong and replenished the sources of investment abroad. By the 1890s the income that was drawn from these overseas assets and the invisible income from shipping and services was equivalent to between 70 and 80 per cent of the earnings from Britain's domestic exports.¹⁶⁹ Britain was trading with the whole world (see **Figures 1–1** and **1–2**).

Individual traders and the government worked together with a strong commitment to the empire that they both benefited from. They created economically valuable networks based on trust and reciprocity that people were prepared to invest in, and this in itself was a significant determinant of economic activity. It is possible to think of empire as the interconnection of networks that operated beyond the jurisdiction of one national government, bridging British societies at home and abroad. These global networks were built on kinship institutions, religious institutions, ethnic societies and fraternal organisations, and connected private and local interests with the interests of the empire. Thus the empire was an interconnected zone constituted of multiple points of contact and circuits of exchange, forming a field of enterprise for the whole of British society (at home and abroad).¹⁷⁰

1.2.3 Communication

Excellent communication was needed to fuel overseas commercial connections, help military expeditions, and sustain the flow of migration. The electric telegraph had proved a success in England before going worldwide, its benefits heralded by *The Times* on 19 January 1850:

Bankers and merchants transit advices to their branch
establishments, manufacturers receive orders or give notice

¹⁶⁹ Ibid., p. 5.

¹⁷⁰ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 13–15.

of their progress or completion, ship owners and insurance brokers learn the arrival or loss of ships, solicitors receive answers to inquiries, give instructions, and summon witnesses; travellers correspond with firms, recover lost property, and money remittances are made.¹⁷¹

Indeed, London's network of telegraph and undersea cables made Britain the information hub of the world.¹⁷² **Figure 1–3** illustrates the extent of British telegraph cable across the world.

The outposts of British expansion were increasingly linked by a complex system of communication that, from the 1840s, included subsidised mail services, telegraph wires, undersea cables, an expanding rail network, fast passenger steamers and (in the twentieth century) imperial air routes. They catered for, and stimulated, the growing volume and frequency of the traffic in news, information, private correspondence, personnel and ideas that flowed between Britain and other parts of the system. The supply of magazines, newspapers and books from Britain was supplemented by a flow of teachers, academics and scientific experts, and imperial connections linked the experiences of businessmen, doctors, surveyors, engineers and architects, foresters, agronomists, teachers and journalists.¹⁷³

British expertise in the railways also spread from Great Britain to different parts of the world. British-owned railways in both formal colonies, like India and Canada, and informal colonies, such as Argentina, played an important role within the Empire.¹⁷⁴ Even if they were not owned by the British, as was the case during the first years of the Western Railways (FCO), they still used British coal, locomotives, iron and other materials, and employed British professionals, creating a kind of dependency on Britain for capital, technology, materials and workforce that reinforced the asymmetrical relationship identified by Winks.¹⁷⁵ That dependency

¹⁷¹ Cited in R. Cain, 'Telegraph Cables in the British Empire, 1850–1900' (PhD thesis, 1971)..

¹⁷² Darwin, *The Empire Project. The Rise and Fall of the British World-system, 1830–1970*, p. 113.

¹⁷³ Ibid, p. 5.

¹⁷⁴ Ibid, p. 5.

¹⁷⁵ Winks, 'On Decolonization and Informal Empire,' .

with technology affected also the iron industry. For an illustration of the lines of communication built by the British across the Atlantic see **Figure 1–4**.

Commerce and communication were, of course, very well connected. In Argentina the telegraph, newspapers, magazines and trade catalogues helped to promote British businesses. National and international exhibitions were a good source of publicity and grew in popularity after the Great Exhibition of the Works of Industry of all Nations held at Crystal Palace in 1851. Indeed, exhibitions had such impact that they could increase sales by up to 45 per cent.¹⁷⁶ Finally, the development of catalogues and other forms of advertisement opened up new channels of business, especially long-distance trade.¹⁷⁷

After the 1850s, consumerism intensified with the growth of bourgeois society in Britain. The new ‘needs’ and habits of this social class marked a type of identity that the middle-classes in the dominions wanted to emulate and, with the help of marketing, this lifestyle affected trends in consumption.¹⁷⁸

The gathering and distribution of commercial information to traders was crucial in allowing British businesses to flourish.¹⁷⁹ The British government created overseas trade departments that provided traders with market analysis, advice and information on trade, credit and payment systems, competition, rights and laws, tariffs, trade fairs and exhibitions, and the creation and distribution of trade catalogues.¹⁸⁰ An economic orientation towards the empire was more likely when the empire itself moulded the sources of information and knowledge, and British producers, consumers and investors were blessed by a rich flow of information about commercial and financial opportunities in the colonies. Private business and the state interacted to shape an

¹⁷⁶ J.L. Suárez, *Los Agregados Comerciales en la Representación Argentina* (Buenos Aires, 1924), p. 27.

¹⁷⁷ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 150–155.

¹⁷⁸ *Ibid.*, pp. 150–155.

¹⁷⁹ Suárez, *Los Agregados Comerciales en la Representación Argentina*, pp. 23–24.

¹⁸⁰ *Ibid.*, pp. 23–24.

economic system¹⁸¹ and this system helped promote iron trade between Great Britain and Argentina.

From 1850 to 1914 the British empire expanded at a greater rate than in the previous fifty years because it was able to improve the quality and quantity of information flow. This helped to link producers and consumers. As a result, trans-national imperial networks contributed to a growth in trade, which in turn fuelled an increase in the income levels of the whole British community at home and abroad.¹⁸²

An important characteristic of transnational social networks is their capacity to communicate. Successful networks survive by adapting to new technology that allows communication barriers to be overcome. If networks are able to communicate not only within their own regions and countries but also internationally, then they can easily expand.¹⁸³ The British government supported the development of imperial transport and communication. They subsidised private shipping companies and the Royal Navy had a crucial role in keeping shipping lanes open to trade. Shipping lanes were vital to the empire, economically, militarily and politically, but they were also essential to private enterprises. In fact, many British shipping companies developed close imperial connections. The British government also encouraged the construction of railways in some colonies, even providing material for them.¹⁸⁴

1.2.4 Migration

The fourth component identified as essential to the British world-system was migration. It fuelled global economic growth as British communities helped to boost trade and investment. It is also believed that emigration from Britain was responsible for establishing a new division of labour in the international economy whose effects were the establishment of a new economy and the forging of transnationalism. The

¹⁸¹ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 11–13.

¹⁸² *Ibid.*, pp. 15–20.

¹⁸³ *Ibid.*, pp. 52–54.

¹⁸⁴ *Ibid.*, pp. 129–133.

first ‘global’ economy was constructed by British free-traders in the nineteenth century.¹⁸⁵

In Argentina, as in other parts of the world, there was an abundance of land but a lack of capital that attracted British investors and emigrants. They built modern transport infrastructure and exported a range of raw materials, achieving remarkable levels of growth. However, integration into the international economy was a condition for rapid development and British settlers living far from Britain, in both formal and informal colonies, depended on British capital, markets and skills, creating an ‘unforced dependence’ on the imperial hub.¹⁸⁶

Migrants also helped to form British settlements and established social and religious institutions, clubs, schools, banks, factories, hospitals and houses that required the construction of new buildings, which were naturally British in character.¹⁸⁷ This reinforced British national sentiment and strengthened social networks while maintaining a sense of dual nationality, as experienced by the Scots in Buenos Aires and the Welsh in Patagonia, all of which helped the expansion of British culture and imperial business.¹⁸⁸

Settler societies like the Scottish Caledonian or St Andrew’s societies flourished in the colonies (formal and informal). In Argentina, as in many other places, these societies were more cultural than political and promoted a sense of provincial sentiment along with national belonging. They were very important for new migrants as they helped people to find work and a place to live as well as providing social introductions. According to Magee and Thompson, Caledonian societies were the

¹⁸⁵ Ibid., pp. 1–6

¹⁸⁶ Ibid., pp. 38–42.

¹⁸⁷ Darwin, *The Empire Project. The Rise and Fall of the British World-system, 1830–1970*, p. 5.

¹⁸⁸ J.M. MacKenzie, ‘Irish, Scottish, Welsh and English Worlds? A Four-Nation Approach to the History of the British Empire’, *History Compass*, vol. 6, no. 5 (2008), Kearney, *The British Isles: A History of Four Nations.*, and Colley, *Britons: Forging the Nation, 1707–1837*.

most successful, the largest and strongest of their type, because of their strong sense of cultural identity.¹⁸⁹

Migrant and professional networks helped to disseminate British styles of architecture, fashion, fiction, food and music. As the means of communication (regional, national and imperial) improved and transport distances were shortened, migrants could move with more confidence, taking the empire even further afield.¹⁹⁰

Professionals carried their knowledge and expertise overseas, especially as demand for professionally qualified people grew rapidly from the 1850s in response to socio-economic developments in the dominions.¹⁹¹ Professional knowledge and skills were, thus, voluntarily transferred to the dominions and, although some professionals returned to Britain, many others stayed. Interestingly, it was outside Great Britain where British professionals had their greatest impact, mainly in projects related to mining, railways, harbours, canal construction and bridges, as was the case in Argentina.¹⁹²

In particular, a great number of British engineers went abroad independently, without government support, when work on the main lines of the British railway system neared completion in the 1870s. They continued their activities in the dominions, where the development of the railways depended on British engines and expertise as well as on basic necessities like coal, rails, iron, rolling stock, and locomotives.¹⁹³ The majority of railway engineers received their training in England or Scotland. They were the ones who surveyed the terrain, developed the projects and drawings, liaised with contractors and ensured that work was done according to their specifications. They were also in charge of deciding which firms should provide the

¹⁸⁹ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 86–87.

¹⁹⁰ *Ibid.*, pp. 29–30.

¹⁹¹ *Ibid.*, pp. 28–29.

¹⁹² *Ibid.*, pp. 136–139.

¹⁹³ *Ibid.*, pp. 135–138.

materials and tended to choose British companies because they knew and trusted them.¹⁹⁴

Professional networks played a critical role in forging shared cultures of consumption between British settlers and local population, setting norms of desirable lifestyle. In addition, they spread new technology and commercial practices in disparate parts of the world, configuring patterns of economic behaviour and decision-making.¹⁹⁵ Decision-makers, as engineers in charge of public works, acted on the basis of what they knew, and professional networks served as channels of information about British products, demands, tastes, laws and conventions. There were many mechanisms ensuring the flow of information, including official reports and personal contacts, who shared their knowledge about trade, transportation and communication.¹⁹⁶

Professional bodies or companies had their headquarters in London and extensive branch networks across the dominions (including Argentina). Others stayed in national offices but co-operated closely with kindred bodies elsewhere.¹⁹⁷

Section 3 will demonstrate, with case studies, how British engineers had a direct influence on the choice of products. John La Trobe Bateman, for example, was instrumental in the decision to buy English terracotta instead of Argentinean marble for the Palace of Running Waters. In the same building cast-iron pieces from Walter Macfarlane of Glasgow were also chosen. Although difficult to prove how exactly these decisions were taken, they nonetheless reinforced imperial networks, even if unconsciously.

These professional networks operated in a similar way in both formal and informal colonies. E. Zalduendo has shown, for example, how railway construction followed the same pattern all over the world and how the same companies were involved in

¹⁹⁴ Ibid., pp. 135–138.

¹⁹⁵ Ibid., pp. 28–30.

¹⁹⁶ Ibid., pp. 60–62.

¹⁹⁷ Ibid., pp. 28–29.

building the railways.¹⁹⁸ In Argentina, the River Plate House functioned as the offices of the big railway companies that operated in South America, and, by 1911, it housed the headquarters of twenty railway lines and eight Argentinian banks.¹⁹⁹ Unsurprisingly, it functioned as the South American centre of information related to business in that region.²⁰⁰

Magee and Thompson have stated that it was emigration that determined consumption habits within the colonies. This was a consequence of British settlers' tastes, expectations and values, which were familiar and communicable to manufacturers back in Britain and affected considerably British imports to the dominions. It was emigration that enabled the rapid establishment of trust between commercial partners in the colonies and Great Britain, facilitating long distance trade.²⁰¹ Transport, information and monitoring costs in long-distance trade are usually very high and foreign markets are less predictable as they are influenced by differences in education, language, customs and legal systems. Thus, the less uncertainty there is, the more likely goods are to flow between markets.²⁰²

Even though other groups, such as the French and Italians in Argentina, could have functioned similarly, the British in Argentina enjoyed advantages that others did not have, or at least not in the same quantity. The advantages brought by a commercial policy that included preferential tariffs, structures like mercantile houses and department stores, international trade networks, and cultures of consumption, all helped to give Britain access to larger markets. In addition, the British had more access to the transport and communications that linked Britain with the dominions.²⁰³

¹⁹⁸ Zalduendo, *Libras Y Rieles: Las Inversiones Británicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*.

¹⁹⁹ R. Lloyd, *Impresiones de la República Argentina en el siglo Veinte: su Historia, Gente, Comercio, Industria y Riqueza* (London, 1911), p. 889.

²⁰⁰ *Ibid.*, p. 889.

²⁰¹ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 118–120.

²⁰² *Ibid.*, pp. 133–135.

²⁰³ *Ibid.*, pp. 118–120.

Undoubtedly, British people went abroad because it offered them opportunities for business, power and prestige.

The following chapter describes some of Scotland's contribution to the empire in general, while also highlighting the imperial connection with Argentina.

1.3 The Scots and their Contribution to the Empire. Some Argentinian Connections

British settlers in Argentina, as elsewhere, shared a sense of nationality – a Britannic nationalism – that served to cohere Scots, Irish, Welsh and English even more abroad than at home.²⁰⁴ This Britishness may have been an artificial construction,²⁰⁵ chosen as a ‘unifying title’ following the 1707 Act of Union between Scotland and England,²⁰⁶ but it served to engender a sense of common purpose and a belief in a ‘Greater Britain whose Empire brings prosperity and stability to all’,²⁰⁷ creating motivation for expanding power. The Scots saw the British empire as ‘their ideal world stage’, and their Scottishness was complemented by a wider British identification²⁰⁸ – arguably giving them a type of dual nationality as both Scottish and British.²⁰⁹

Britain was created by the union of several distinct nations – England, Wales, Ireland and Scotland – each of which contributed on different levels to the colonies and dominions of the British empire. However, it can be difficult to distinguish the input of one from the other during the imperial process, mainly because all of them operated in complex forms of networks in creating the British world-system.²¹⁰ While sharing a feeling of ‘Britishness’, both at home and abroad that was crucial to promoting the ‘British World’ and imperial ideas,²¹¹ each of the four nations had its

²⁰⁴ J. Darwin, *The Empire Project. The Rise and Fall of the British World-System, 1830–1970* (Cambridge, 2009), p. 178.

²⁰⁵ Colley, *Britons: Forging the Nation, 1707–1837*.

²⁰⁶ E. Breitenbach, *Empire and Scottish Society: The Impact of Foreign Missions at Home, c. 1790 to c. 1914* (Edinburgh, 2009), p. 13.

²⁰⁷ *Ibid.*, pp. 13–14.

²⁰⁸ J.M. MacKenzie, ‘The Second City of the Empire: Glasgow – Imperial Municipality’, in F. Driver and D. Gilbert (eds.) *Imperial Cities: Landscape, Display and Identity* (Manchester, 2003), p. 232.

²⁰⁹ Breitenbach, *Empire and Scottish Society: The Impact of Foreign Missions at Home, c. 1790 to c. 1914*, pp. 2–5.

²¹⁰ J.M. MacKenzie and T.M. Devine, ‘Introduction’, in J. M. MacKenzie and Devin (eds.) *Scotland and the British Empire* (Oxford, 2011), p. 4.

²¹¹ G.B. Magee and A.S. Thompson, ‘Introduction’, in G.B. Magee and A. S. Thompson (eds.) *Empire and Globalisation: Networks of People, Goods and Capital in the British World, c. 1850–1914* (Cambridge, 2010).

own relationship with empire and each nation's identity was developed and enhanced by the imperial experience.²¹²

But it was not only nationalism that started to change after Scotland and England were brought closer together in 1707. The Act of Union meant that Scotland had free access to England and could trade legally with the American colonies and Europe under the protection of the Navigation Acts. Scottish trade would not have existed on such a scale but for its inclusion within the English system of tariff protection, which opened up new markets to the Scots and gave them the protection of the Royal Navy (the need for which was demonstrated by failure the Darien colony in Panama because of a Spanish blockade). These combined to help Scotland achieve an unprecedented rate of economic growth in a remarkably short period of time.²¹³

While the idea of an 'imperial partnership' with England gave international credibility to Scotland, the Scots were, in fact, making their own distinct contribution to the British empire. The Scottish Enlightenment begun in the eighteenth century produced a generation of influential thinkers, philosophers, chemists, medics, botanists, missionaries and explorers whose work would inspire the generations to come, with consequences across the globe in the following centuries.²¹⁴ With the Enlightenment came new ideas of free trade and banking that, along with the developments in industry and engineering that came with the Industrial Revolution, would transform Scotland's economy. Scottish skills and abilities were boosted by the Scots' 'clannish' way of establishing networks throughout the empire and beyond.²¹⁵ Scottish soldiers served in Scottish regiments commanded by Scottish generals, while missionaries promoted Presbyterianism (considered the Scottish national religion) and were funded by subscriptions raised by Scottish churches. Imperial

²¹² This corresponds with the 'four-nation' approach to the history of the British Empire. See MacKenzie, *Irish, Scottish, Welsh and English Worlds? A Four-Nation Approach to the History of the British Empire*, H.F. Kearney, *The British Isles: A History of Four Nations*. (Cambridge, 2006), and L. Colley, *Britons: Forging the Nation, 1707–1837* (New Haven, 1992).

²¹³ T. Devine, 'The Spoils of Empire', in T. M. Devine (ed.) *Scotland and the Union, 1707–2007* (Edinburgh, 2008), p. 94.

²¹⁴ MacKenzie and Devine, *Introduction*, p. 19.

²¹⁵ *Ibid.*, p. 12.

administrators were educated in Scottish universities. Scottish businesses were owned, run and operated from Scotland. As Scotland made such an extraordinary profile contribution to the British empire, Scottish national esteem rose to new heights amid popular notions that the Scots were a race of 'empire builders'.²¹⁶

Furthermore, as the cotton and linen industries declined in the early nineteenth century and were replaced by the heavy industries based around coal, iron, steel and engineering,²¹⁷ the substantial output from Scotland's shipbuilding, locomotive, heavy machinery and iron works gained Scotland a reputation as the 'workshop of the Empire' and helped to position Glasgow as the 'second city of the Empire' between 1825 and the inter-war period.²¹⁸ Before 1914 more than 80 per cent of the world's output of sugar-crushing and refinery machinery was made in Glasgow, 71 per cent of the locomotives produced in Glasgow in 1895–9 went overseas to work on both imperial and non-imperial routes around the world.²¹⁹ Individual Scotsmen and companies relocated to London to take advantage of the opportunities offered by the capital in its position as the essential connection between Scotland and the Empire.²²⁰

The Scottish contribution to the empire was undoubtedly extensive but, in the following, I will focus on Scotland's influence on Argentina in two key areas. First, I explore Scotland's intellectual and immaterial legacy and the impact of the Scots imperial mentality in relation to free trade, diplomacy, and the financial system. Second, I review the imperial infrastructure²²¹ created by Scots and Scotland, which

²¹⁶ R.J. Findlay, 'The rise and fall of popular imperialism in Scotland, 1850–1950', *Scottish Geographical Magazine*, vol. 113, no. 1 (1997).

²¹⁷ MacKenzie and Devine, *Scotland and the British Empire*, p. 232.

²¹⁸ MacKenzie, *The Second City of the Empire: Glasgow – Imperial Municipality*.

²¹⁹ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, p. 3.

²²⁰ MacKenzie and Devine, *Scotland and the British Empire*, pp. 23–25.

²²¹ Although the meaning of the word 'infrastructure' still needs some clarification, there is general consensus that basic infrastructure facilities are those features related to economic performance, i.e. those 'which provide services and support that are basic to the functioning of a community, organization, or society and crucial to its economic productivity' or those that are the 'basic physical and organizational capacities and resources needed for the operation of a society or enterprise or are

included several inventions and innovations used in public services and communications and the development of the infrastructure for industry, including the creation of machinery for exploiting land, minerals and raw materials. Taken together, these areas had a huge impact in both formal and informal British colonies, and left a permanent imprint on Argentinian life.

The Scottish Enlightenment, which was part of the general intellectual movement that swept through Europe in the eighteenth century, was remarkable because of its range and dissemination throughout the empire.²²² What began as the work and ideas of a ‘compact intellectual elite’ in the eighteenth century was to spread rapidly south as intellectuals began congregating in London in the nineteenth century. Before long the extraordinary range of ideas generated by Scotland’s Enlightenment thinkers had been disseminated throughout the empire.²²³

The Scottish Enlightenment was centred on the ancient universities of Edinburgh, Glasgow and Aberdeen. The Scottish universities, it seems, were uniquely placed to generate new ideas from a diverse range of people, each with their own distinct experiences. In contrast to Oxford or Cambridge, which were only open to Anglicans, the Scottish universities attracted students from a broad range of denominations and countries, including Presbyterians from Ireland and non-Anglicans from the colonies in North America. Courses at the universities were also relatively inexpensive with individual courses offered for an annual fee. This opened up a good level of education to those unable to afford a full degree. Such was the case, for example, for the printer William Smellie who founded the *Encyclopaedia*

necessary for an economy to function.’ See: L. Beeferman and A. Wain, ‘Infrastructure: Defining Matters’, Harvard Law School (2013).

²²² T. Devine, ‘What made the Scottish Enlightenment possible?’, <http://www.sath.org.uk/edscot/www.educationscotland.gov.uk/scottishenlightenment/introduction.html> (accessed September 4, 2017).

²²³ C. Craig, ‘Empire of Intellect: The Scottish Enlightenment and Scotland’s Intellectual Migrants’, in J. M. MacKenzie and T. M. Devine (eds.) *Scotland and the British Empire* (Oxford, 2011), pp. 85–86

Britannia in 1768, and the gardener Loudon, the most influential garden theorist of the first half of the nineteenth century.²²⁴

Like all scholars working under the principles of the Enlightenment, those born and educated in Scotland in the eighteenth century sought to understand the natural world and the human mind and behaviour by challenging and investigating ideas and gathering and examining evidence.²²⁵ And, just as we continue to further our knowledge today with those principles, we still operate under the influence of the key figures of the Scottish Enlightenment movement – the philosophers David Hume and Adam Smith,²²⁶ the engineers James Watt and Thomas Telford, and the architects Robert and James Adam.²²⁷ Others, like the poet Robert Burns, continue to inspire contemporary artists,²²⁸ and Burns' life is still celebrated in Scotland, the UK and other parts of the globe, including Argentina.²²⁹

Scottish universities served to cultivate imperialistic ideas that were then disseminated globally. Scottish professionals, freemasons, missionaries, soldiers, traders and migrants (within the UK and abroad) disseminated ideas of brotherhood and loyalty that helped to reinforce global networks, and spread the ideas of Adam Smith that encouraged free trade, commerce, and banking, disseminating ideas and helped the British empire to expand its power. It has been argued that Scots probably established the first world-wide trading network as extensive business networks had emerged by the 1790s that linked activity in Scotland, London, India, China, Western Europe, the Caribbean and the United States, and thus encouraged the process of

²²⁴ Ibid., p. 86.

²²⁵ 'Enlightenment Scotland', <http://www.sath.org.uk/edscot/www.educationscotland.gov.uk/scottishenlightenment/scotland/index.html> (accessed September 14, 2017).

²²⁶ Ibid.

²²⁷ S. Sutherland, 'Scottish Enlightenment', <https://www.britannica.com/topic/Scottish-Enlightenment>

²²⁸ L. Johnstone, 'Five Artists Inspired by Robert Burns,' *The Scotman*, January 20, 2005.

²²⁹ Burn's night has been commemorated by Scottish immigrants since the early 1800s. A. Graham-Yooll, *The Forgotten Colony: A History of the English-Speaking Communities in Argentina* (London, 1981), p. 14.

globalisation that promoted British imperial supremacy.²³⁰ Not surprisingly, the Scots were the first to undertake trade on a large scale in the Rio de la Plata in Argentina at the beginning of the nineteenth century.²³¹

Free Trade, Commerce and Banking

Adam Smith is considered to be the father of modern economics because of his ideas on free trade, the division of labour, the value of money, capital and land, production costs and market prices. He expounded his central belief – that bigger markets would bring bigger gains – in *An Inquiry Into the Nature and Causes of the Wealth of Nations* (1776). Without knowing or using the terms, in the *Wealth of Nations* Adam Smith was already proposing an ‘imperialism of free trade’ or ‘informal empire’ by suggesting that formal colonies should be given up as too expensive and advocating instead the use of commercial treaties and free trade to secure British benefits.²³² He suggested:

Great Britain should voluntarily give up all authority over her colonies, and leave them to elect their own magistrates, to enact their own laws, and to make peace and war, as they might think proper, would be to propose such a measure as never was, and never will be, adopted by any nation in the world. No nation ever voluntarily gave up the dominion of any province, how trouble some so ever it might be to govern it, and how small so ever the revenue which it afforded might be in proportion to the expense which it occasioned. If it was adopted, however, Great Britain would not only be immediately freed from the whole annual expense of the peace establishment of the colonies, but might settle with them such a treaty of commerce as would effectually secure to her a free trade, more advantageous to the great body of

²³⁰ G.K. McGilvary, ‘The Scottish Connection with India 1725–1833’, *Études écossaises*, vol. 14 (2011).

²³¹ Grierson, *Colonia de Monte Grande. Primera Y Unica Colonia Formada Por Escoceses En Argentina*, p. 15.

²³² MacKenzie and Devine, *Introduction*, p. 24.

the people, though less so to the merchants, than the monopoly which she at present enjoys.²³³

According to Richard Finlay, the Scottish role in building the British empire was widely accepted, as global expansion in British trade and political attitudes in the first half of the nineteenth century were based on Adam Smith's ideas.²³⁴

Although the trend towards freer trade began in the late eighteenth century, it gained strength in the 1820s when it became more widely accepted that free trade would make goods cheaper to produce and create more competition in the international market, thus increasing exports and prosperity. The merchants of Britain's largest trading cities – London, Manchester and Glasgow – petitioned the House of Commons for the abolition of all duties and in 1823 the Reciprocity of Duties Act enabled Britain to sign mutual trading agreements with foreign powers on an individual basis. Indeed, the Treaty of Friendship and Navigation with Argentina was signed just two years later, in 1825. Free trade, however, was not fully implemented in Great Britain until the 1850s.²³⁵ In 1853, duties were reduced on 250 articles and by 1860 protectionist regulations on more than 400 articles had been removed.²³⁶ In Argentina, that same year, the country started to trade freely through the liberal national constitution. British products, including Scottish iron, would begin to be imported in large quantities to Argentina (See Section 2).

Free trade, in combination with heavy foreign investment, certainly helped to shape the British economy, especially in the late nineteenth century. British capital, pouring into foreign railways and other industries overseas, helped to reduce agricultural commodity prices, shifted the terms of trade in Britain's favour and raised national

²³³ A. Smith, *An Inquiry Into the Nature and Causes of the Wealth of Nations* (London, 1812), book IV, Chapter VII, p. 444. accessible online in: <http://babel.hathitrust.org/cgi/pt?id=nnc2.ark:/13960/t3613bh19;view=1up;seq=456>.

²³⁴ R.J. Finlay, 'National Identity, Union, and Empire, c. 1850–c.1970', in J. M. MacKenzie and T. M. Devine (eds.) *Scotland and the British Empire* (Oxford, 2011).

²³⁵ 'Free Trade and Protection', <http://www.parliament.uk/about/living-heritage/transformingsociety/tradeindustry/importexport/overview/freetrade/> (accessed September 14, 2017).

²³⁶ P. Cain, 'British Free Trade, 1850–1914: Economics and Policy', *Refresh*, no. 29 (1999)

income. Dividends and interest payments on foreign investments also increased returns in the UK, as did the import of cheap foreign produce.²³⁷

As productive capacity was expanded, trading networks grew further and the opportunities for British merchants and manufacturers increased. This was complemented by intense development of the financial system and the opening of banks, finance houses and investment companies.²³⁸ Already in Adam Smith's time, banking in Scotland was probably more developed than in England. Banking operations started in Scotland in 1750s, although the first bank in Edinburgh opened in 1697.²³⁹ When Britain became the world's banker, Scotland played a major role. It has been suggested that the Scots invested more money than any other country within the empire (£110 for each Scot compared with £90 across the UK).²⁴⁰ Scots invested in formal and in informal colonies, as demonstrated in the following table (**Table 1–1**) of Scottish shareholders in Argentinian companies.

Shareholders	No. of companies in which shares were held	Total value of portfolio, £
Bank of Scotland	9	97,331
John Bruce (Edinburgh)	4	25,944
James E. Bunten (Glasgow)	4	75,180
National Bank of Scotland	7	112,155
James Reid Stewart (Glasgow)	2	92,830
Scottish Investment Trust Co. Ltd. (Edinburgh)	4	46,827

²³⁷ Ibid.

²³⁸ T.M. Devine and J.M. MacKenzie, 'Scots in the Imperial Economy', in J. M. MacKenzie and T. . Devine (eds.) *Scotland and the British Empire* (Oxford, 2011), p. 229.

²³⁹ R.C. Smith, *Adam Smith and the Origins of American Enterprise: How America's Industrial Success was Forged by the Timely Ideas of a Brilliant Scots Economist* (New York, 2004), pp. 122–123.

²⁴⁰ T.M. Devine and J.M. MacKenzie, 'Scots in the Imperial Economy', in J. M. MacKenzie and T. . Devine (eds.) *Scotland and the British Empire* (Oxford, 2011), p. 246.

Union Bank of Scotland	10	114,665
TOTAL	40	£ 564,932

Table 1–1. Major Scottish shareholders in River Plate companies around 1895. Source:

Fernandez-Canque and Manuel, ‘Scots in South America. A Survey’, in R. A. Cage (ed.) *The Scots Abroad: Enterprise, Capital, Labour, 1750–1914* (London, 1985)

While Glasgow and Edinburgh certainly played a big part in the process of imperial globalisation, they were not the only Scottish cities to participate. Dundee was at the centre of imperial globalisation for much of the eighteenth century. The enormous expansion in demand for its main products – jute bags and sacking – directly reflected the expansion of global trade in bulky commodities, which was at the heart of that process. The cost efficient movement of American and Canadian grain, Argentinian grains and meat, and Australian and New Zealand wool relied on the availability of cheap bags and sacks (see **Table 1–2**).²⁴¹

Destination	Volume (millions of yards of piece goods)
USA	86.4
Argentina	31.1
Canada	13.5
Australasia	9.1
Brazil	1.3
Germany	0.6
Holland	0.4
Other countries	31.3
All countries	173.9

Table 1–2. Export destination of Dundee jute goods, 1900. Source: J. Tomlinson, *Dundee and the Empire: ‘Juteopolis’, 1850–1939* (2014), p. 26

²⁴¹ Tomlinson, *Dundee and the Empire: ‘Juteopolis’, 1850–1939*, p. 26.

Scots also expanded the jute business to other countries. In Argentina, for instance, Douglas Fraser & Son, along with the Argentinian merchant Mr Etcchegaray, established the Sociedad Anonima de Fabrica Argentina de Alpargatas in 1884 in Buenos Aires to make rope-soled shoes (Alpargatas) from jute fibre.²⁴²

Atlantic trade came to dominate Scottish overseas commerce. By 1762 just under half of Scottish imports and 52 per cent of exports were of colonial tobacco. During the eighteenth century, more than fifteen million pounds of American tobacco were re-distributed from Scotland to continental Europe each year.²⁴³ At the beginning of the nineteenth century, sugar and cotton from the West Indies became the new money-spinners and the West Indian connection was key to the development of early Scottish cotton manufacture.²⁴⁴

Trade, economics and power were intricately connected. Perhaps because Adam Smith's ideas were so influential, when Scottish or English men who had been educated in Scottish universities gained positions of power, they often gave great weight to trade and economics. For instance, the Scot Henry Dundas, first Viscount Melville, who was Secretary of State for War and First Lord of the Admiralty, considered war to be an economic issue and thought that the best strategy for gaining supremacy was to weaken the enemy's economic power.²⁴⁵ He was also President of the Board of Control in India and instrumental in the expansion of the British trade empire there. Dundas did not wish to colonise British India, preferring instead to use commercial exploitation and monopoly to deprive competitors of their footholds in the territory. He did, however, encourage Scots to emigrate to India and work in the

²⁴² A. Cox, *Empire, Industry and Class: The Imperial Nexus of Jute, 1840–1940* (Abingdon, 2013), p. 27. The company was still trading in 2012: <http://www.alpargatas.com.ar/es/empresa/conoce-la-empresa/historia.html>.

²⁴³ T.M. Devine and P. Rossner, 'Scots in the Atlantic Economy, 1600–1800', in J. M. MacKenzie and T. M. Devine (eds.) *Scotland and the British Empire* (Oxford, 2011), p. 36.

²⁴⁴ T. Devine, 'The Spoils of Empire', in T. M. Devine (ed.) *Scotland and the Union, 1707–2007* (Edinburgh, 2008), p. 96.

²⁴⁵ M. Fry, 'Dundas, Henry, first Viscount Melville (1742–1811)', <http://www.oxforddnb.com/view/article/8250> (accessed August 4, 2017).

East India Company; between 1720 and 1780 it is estimated that the Company employed more than 1,668 Scots as officers, doctors and administrators.²⁴⁶

When the Company's charter came up for renewal in 1813, the British government decided to end its monopoly with the exception of the tea trade and the trade with China. This encouraged the opening of private agency houses in India, which were often created by British merchants with parent or sister firms in London. The proportion of Scots in the East India Company and in other ventures in India and other parts of the world was remarkably high (as illustrated in the **Table 1–3**).

Unsurprisingly, the vast majority of the import/export companies that subsequently sprang up in India and London bore Scottish names.²⁴⁷

Period	Territory	Ratio
1680–1780	American colonies	One-third of university-educated men from Europe trained in Scotland
1707–75	Antigua	60 per cent of planter elite
1707–1800	North America	Thirty Scottish-born governors and lieutenant governors
1740	India	One in three of colonel rank in EIC army
c. 1750	Antigua	60 per cent of doctors
c. 1760	North America	One in four of British army officer corps
1763	Ceded Islands (West Indies)	Three governors appointed, all Scots
1771–5	Jamaica	45 per cent of inventories at death above £1,000
1774–85	Bengal	47 per cent of writers: 50 per cent of surgeon recruits (EIC)
c. 1775	Bengal	One in three of the EIC army's officer corps
1776–85	Bengal, Calcutta, Madras	60 per cent of 'free' merchants
1799	British North America (Hudson Bay Company)	78 per cent of staff from Orkney

²⁴⁶ J.A. Cannon, 'Dundas, Henry (1742-1811), of Melville Castle, Edinburgh', <http://www.historyofparliamentonline.org/volume/1754-1790/member/dundas-henry-1742-1811> (accessed September 14, 2017).

²⁴⁷ A. Le Pichon, 'Introduction', in A. Le Pichon and B. Academy (eds.) *China Trade and Empire: Jardine, Matheson & Co. and the Origins of British Rule in Hong Kong, 1827–1843* (Oxford, 2006), pp. 6–7.

Period	Territory	Ratio
1800	British North America (North West Company)	62 per cent of staff from counties of Inverness, Banff and Aberdeen
1813	Calcutta	37 per cent of private merchant houses

Table 1–3. Proportion of Scots in the eighteenth-century imperial elite. Source: T. M. Devine, *Scotland's Empire, 1600–1815*

It could be said that Dundas had a particularly Scottish attitude toward Britain's imperial policy and utilised the political system to protect Scottish institutions, enhance Scottish influence within the Union, and promote liberal reform. What is more, he was a 'son of the Enlightenment', a follower of Adam Smith fighting to create a more competitive trade system. His way of conducting war, with its emphasis on the West Indies and the East, illustrated his global, imperial thinking and his success at securing a place for Scotland and Scottish ideas.²⁴⁸

Dundas was not the only Scottish-influenced member of the British ruling class to espouse Smith's ideas. Sir Ralph Abercrombie, a Scottish soldier and politician who proposed that Britain should mount a military expedition to liberate Spanish America shortly after conquering Trinidad in 1798, also followed Smith in stating that:

[They] should be undertaken without any view to conquest, to exclusive commerce or to plunder. Every port in Spanish America, and the whole trade of that extensive continent, should be declared free and laid open to every nation of the world. Every country should be interested in it, Spain and Portugal excepted: Great Britain, however, from her enterprise, from her capital, and from her industry, would in reality possess nine parts in ten of this great enterprise.²⁴⁹

Similarly, Sir Home Riggs Popham, a British Royal Naval Commander, wrote a letter to Dundas in 1804 expressing his ideas about dismantling the Spanish Empire:

²⁴⁸ J.M. Mackenzie, 'Essay and Reflection: On Scotland and the Empire', *The International History Review*, vol. 15, no. 4 (1993), p. 720.

²⁴⁹ Quoted in D. Rock, 'The British in Argentina: From Informal Empire to Postcolonialism', *Bulletin of Latin American Research* 27 (2008). And taken from K. Gallo, *Great Britain and Argentina: From Invasion to Recognition, 1806–26* (Palgrave, 2001). In Italic emphasis by author.

The idea of conquering South America is totally out of the question, but the possibility of gaining all its prominent points, alienating it from its present European Connections, fixing on some Military position, and enjoying all its Commercial advantages can be reduced to a fair calculation, if not a certain operation; The Nerve and Spirit which such an Enterprise would give to this Country if successful are incalculable. The riches that it would bring in, the new Sources that it would open for our Manufactures and navigation, both from Europe and Terra Firma, and from Asia to the Pacific, are equally incalculable, and the popularity and stability that it would give any Government that undertook I, may be estimated from the preceding propositions...²⁵⁰

Henry John Temple, 3rd Viscount Palmerston (1784–1865), Foreign Secretary and Prime Minister (twice), had also studied at Edinburgh University where Adam Smith's ideas were at their most influential. Under his rule Britain reached the height of its power, setting the scene for British trade policy and global transformation in the late nineteenth and early twentieth centuries. Palmerston too preferred using economic influence to gain territory where trade played a significant role: 'Let us try to improve all these countries by the general influence of our commerce'.²⁵¹

Trade, business and politics were clearly very well connected, and businessmen usually had an influence on political decisions.²⁵² Perhaps one of the best demonstrations of the significance and impact of trade can be seen in the case of the opium trade with China. By 1832 Britain's adoption of tea as a national drink and the parallel fashion for opium coincided with the growth of Scottish companies, such as the Jardine Matheson & Co, which had set up the first private shipments of tea following the end of the East India Company's monopoly.²⁵³ The firm quickly established itself in China and became the main importer of opium. Its influence was such that the question of whether Palmerston was acting at the behest of Jardine

²⁵⁰ H.S. Ferns, *Britain and Argentina in the Nineteenth Century* (Oxford University Press, 1960). From Adm. 1/58, Popham to Melville, 14 Oc.1804, enclosed with Popham to Admiralty, 30 Apr. 1806.

²⁵¹ D. Steele, 'Temple, Henry John, third Viscount Palmerston (1784–1865)', <http://www.oxforddnb.com/view/article/27112> (accessed August 4, 2017).

²⁵² Le Pichon, *Introduccion*.

²⁵³ *Ibid.*, pp. 29–30.

Matheson when he decided to go to war with China in 1839 has lingered ever since.²⁵⁴ Whatever the case, Jardine Matheson & Co. continued to prosper as one of the principal trading houses in the British colony of Hong Kong long after the end of the Opium Wars.²⁵⁵

In Argentina too merchant houses were very important. In the years before and after the country gained independence in 1816, several Scots established merchant houses in Buenos Aires. All had either sufficient personal wealth or the financial support of others in Scotland to help them establish themselves in the commercial world that already existed in Buenos Aires. There they had to develop contacts with Argentinian merchants and landowners. Most of them seem to have adapted successfully to their new environment, laying the foundations of an increasingly prosperous business community. Their success, which was based on providing new services or superior products at low cost, opening up new markets and taking risks in anticipating demands for goods and services, encouraged others to follow them. Lists of Scottish merchant houses in the 1820s include Brown, Buchanan and Co., Dickson, Montgomery and Co., Anderson, Weir and Co., John Gibson and Co., Stewart and McCall, and Duguid and McKerrall, as well as long established names like Daniel MacKinlay and William Parish Robertson. Later these were joined by others, including Duncan McNab, David Methven, John Smith, James Dodds and Thomas Drysdale. Several of these early merchants married into Argentinian families. For example, John McNeile married the wealthy Donna Pasquala de las Talegas and Dr. David Reid married a sister of Bernardino Rivadavia, first president of the independent Republic.²⁵⁶

The Scottish commercial community was closely linked to the establishment of British institutions. Thomas Drysdale helped with the foundation of the Presbyterian

²⁵⁴ ‘The Opium Wars: How Scottish Traders Fed the Habit’, <http://www.scotsman.com/lifestyle/the-opium-wars-how-scottish-traders-fed-the-habit-1-465743>

²⁵⁵ The firm later became involved in textile factories, railways, shipping and real estate, see Le Pichon, *Introduccion*, p. 35. The company still exists today as a diversified business group focused principally on Asia, <http://www.jardines.com/>.

²⁵⁶ A. Morrison, ‘Scots in Argentina and Patagonia Austral, 1800–1950’, <http://www.electricscotland.com/history/argentina/patchap1.htm> (accessed September 14, 2017)..

Church of St John in Quilmes (now Florencio Varela), the St. Andrew's Presbyterian church and school, and the Jeppener Chapel Foundation Irish Orphanage. Drysdale's business benefited many of his descendants in Argentina. A memorial cast-iron fountain dedicated to the Drysdale family can be found in Scotland in East Lothian. It was erected in 1882 using money donated by John Drysdale, a former native who settled in Buenos Aires.²⁵⁷

Scottish importing and manufacturing companies such as Drysdale and Agar Cross & Co. were among the most important in Argentina with branches in several provinces. These businesses were also connected with other Scottish activities, such as farming and agriculture, which they helped pioneer in Argentina by importing machinery and iron products from Great Britain. For instance, Agar Cross was one of the official importers of Walter Macfarlane's products (see Section 3).

Once the Scottish colony was established in Monte Grande in 1825, the colonists soon put into practice very sophisticated farming methods hitherto unknown in Argentina. Around 16,000 acres of wasteland were brought into full production: over 2,000 acres were formed into enclosures, properly fenced and cultivated; 1,000 acres were devoted to peaches and other crops; and 13,000 acres were used to rear 3,000 head of cattle and 1,000 head of sheep. One crop alone – maize – yielded a harvest of 800 tons in one year, which left plenty to be sold in town. Moreover, Monte Grande's butter and cheeses became familiar products in the capital's markets. The colonists also made bricks and used lime they found in their fields to build thirty-one new houses and forty-seven 'ranchos'.²⁵⁸

²⁵⁷ The fountain manufactured by the George Smith of Sun Foundry is casting number 6. HIS, 'Drysdale Fountain', <https://memorialdrinkingfountains.wordpress.com/2013/08/13/drysdale-fountain/> (accessed September 14, 2017).

²⁵⁸ Fernandez-Canque and Manuel, *Scots in South America. A Survey*. Original uncorrected draft, accessible on: https://www.academia.edu/782143/_Scots_in_Latin_America_a_Survey_.

Military

In the military too the Scots were to write their names large in the history of the empire. The Highlands were known as ‘a land of heroes’ because of the Highland clansmen’s legendary fighting abilities. Since the failure of the Jacobite rising in 1745, Highlanders had enlisted in the British army and fought with great success in the Seven Years War and the American War of Independence. With the appointment in 1756 of William Pitt – who preferred colonial expansion to European commitments – as Prime Minister, the British army was in need of new men and the Highlands supplied the biggest proportion of soldiers.²⁵⁹

Between 1756 and 1815, 48,300 Highlanders went to serve in Britain’s twenty-three line regiments and twenty-six fencible units (excluding the 42nd Highland Regiment of Foot – the Black Watch). By 1757, 27.5 per cent of the soldiers in North America and 31.5 per cent of their officers were Scottish. Between 1714 and 1763, one in four officers in the British army were Scottish, and by the end of the eighteenth century Scottish officers were more likely to be county Members of Parliament than English officers.²⁶⁰

The Crown clearly appreciated the warrior nature of the Highlanders, but it also understood and valued their sense of commitment, which was based on the ties of clanship. For this reason the government kept the Highlanders together in distinct regiments under their natural leaders. Fraser’s Highlanders (the 71st of Foot) had no fewer than six clan chiefs among its officers.²⁶¹ The regiment was in command during the invasion of the River Plate, and in 1806 Mariquita Sanchez de Thompson²⁶² described its soldiers as ‘the cutest troops that can be seen, the most

²⁵⁹ MacKenzie and Devine, *Scotland and the British Empire*, pp. 177–180.

²⁶⁰ H. Strachan, ‘Scotland’s Military Identity’, *The Scottish Historical Review*, vol. 85, no. 220 (2006), pp. 321–322.

²⁶¹ T. Devine, ‘Soldiers of Empire, 1750–1914’, in J. M. MacKenzie and T. M. Devine (eds.) *Scotland and the British Empire* (Oxford, 2011), p. 182.

²⁶² Mariquita Sanchez de Thompson. (1786–1868) was a well-known woman in social and political life in Argentina. Famous for being the first person to sing the Argentinian National Anthem, she was also a very good writer and recorder of the important events in the history of Argentina. See: F. Pigna, ‘Mariquita Sánchez de Thompson (1786-1868)’,

poetic uniform, scarlet ribbon cross boots, a portion of the bare leg, a short skirt...'.²⁶³ The Highlanders may have been in imperial units but they clearly sustained a strong sense of Scottish identity within the empire. Distinctive in dress and appearance, the Highlanders remained unambiguously Scottish.²⁶⁴

The close personal and military connections that Argentinian General San Martin, the 'liberator of South America', enjoyed with several Scotsmen have thrown into doubt his motivation for liberation. San Martin had fought beside the Scottish Robertson brothers who went on to plan the first Scottish colony in Argentina. They had also fought next to Beresford, a man who had participated in the unfruitful British invasions in Buenos Aires and who had been San Martin's superior officer when the Portuguese, Spanish, and English united against Napoleon. San Martin was also a close friend of Lord James Duff, 4th Earl of Fife, whom he had met and fought beside during his early military career in Europe. After retiring from his political and military life in South America, San Martin emigrated to Europe and stayed briefly with Lord Duff (who helped him gain a British passport) at his home in Macduff, Banffshire. During this stay he was given the Freedom of the Burgh of Banff on 19 August 1824.²⁶⁵ It seems likely that Lord Duff also introduced San Martin to freemasonry.²⁶⁶ It looks suspiciously like the liberation of South American was 'funded by Britain, monitored, controlled and schooled by British officials'.²⁶⁷

http://www.elhistoriador.com.ar/biografias/s/sanchez_de_thompson.php (accessed September 14, 2017).

²⁶³ Miranda, *Invasión, Reconquista Y Defensa de Buenos Aires*, p. 106.

²⁶⁴ T. Devine, 'Soldiers of Empire, 1750–1914', in J. M. MacKenzie and T. M. Devine (eds.) *Scotland and the British Empire* (Oxford, 2011), p. 192.

²⁶⁵ In 1953 the Scottish Office wrote to the Town Clerk of Banff informing him that the 'Plaza Versailles' in Buenos Aires had been renamed the 'Ciudad de Banff' in recognition of the hospitality that Banff had given to General San Martin. Archive documentation can be found in Aberdeen archives. See: 'General San Martin', <http://www.aberdeencity.gov.uk/nmsruntime/saveasdialog.asp?IID=15002&SID=6873> (accessed September 14, 2017).

²⁶⁶ M. Arana, *Bolívar: The Epic Life of the Man Who Liberated South America* (London, 2013), p. 74.

²⁶⁷ R. Hanglin, 'Una bofetada a San Martín', <http://www.lanacion.com.ar/1505082-una-bofetada-a-san-martin> (accessed September 14, 2017).. See also: C. Antonio, *Jose de San Martin, un Agente Ingles?* (Buenos Aires, 2012)..

Migration

Scottish emigration developed an extraordinary dynamic in the nineteenth century and Scottish migrants had a significant impact on the British empire and gained great influence in Britain's informal and formal colonies.

The migration of citizens was accompanied by exports of capital and products, and the dissemination of the English language, ideas and constitutional forms all radiated from the social energies of the British peoples. Between 1812 and 1914, over twenty million people emigrated from the British Isles, nearly 70 per cent of them went to places outside the empire. In general, emigration helped to accumulate credit abroad, encourage investment and trade, and promote the consumption of British manufactured products, all of which integrated new regions into the expanding economy.²⁶⁸

The main destinations for Scots were the USA, Canada, New Zealand, Australia, along with India and South Africa. The earliest Scot known to have settled in Latin America was a merchant who lived in Mexico in 1540. After an unsuccessful attempt to settle a Scottish colony at Darien in Panama between 1698 and 1699, emigration from Scotland to Latin America began in earnest when Spanish power began to decline at the beginning of the nineteenth century.²⁶⁹

Migration was usually linked with business and trade opportunities. In the eighteenth century, Scots headed to America and the West Indies to trade tobacco. In Victorian times the United States remained a destination of choice for Scottish migrants (44 per cent went there), followed by Canada (28 per cent) and Australasia (25 per cent). Between 1815 and 1914, two million Scots left their country. While this number represents just 12 per cent of the total of British migrants, it also represents a staggering 42 per cent of the Scottish population recorded in the 1911 census, while all the English migrants in the nineteenth century formed only 25 per cent of the English population in 1911. Around 10,000 Scots left the country each year between

²⁶⁸ Gallagher and Robinson, 'The Imperialism of Free Trade,' p. 5.

²⁶⁹ D. Dobson, *Scots in Latin America* (Baltimore, 2003), p. 83.

1825 and 1850, and this figure rose to 20,000 in the mid-Victorian era, reaching 30,000 at the end of the century. In 1914 there were around 60,000 departures per year and in the 1920s the Scots made up two-thirds of British emigrants.²⁷⁰

The migration of British engineers and other professionals resulted in an intellectual diaspora. Even though this was not deliberately conceived as an instrument of empire, its deepest and most lasting effects were felt in the new nineteenth-century imperialism, where it was put at the service of settlers developing Britain's new territory.²⁷¹ Scottish engineers, other professionals, and workers were often seen as more highly skilled than other migrants.²⁷² For instance, the railway and harbour workers were mainly Scottish, and English colleagues would sometimes complain that they needed a 'Mac' before their name in order to get a job.²⁷³ In the Australian colony of Victoria early in 1885, its Scottish mayor said: 'we want more Scots. Give us Scots. Give us the whole population of Glasgow'.²⁷⁴

In the Falkland Islands, it was not their professional skill that made the Scots attractive but their hardiness. The main purpose of the Colonial Land and Migration Commissioners during the 1840s was to direct Scots to the Falklands because:

no class of persons could be so eligible as early settlers in that colony as the inhabitants of the islands and western coast of Scotland. They are a seafaring people, hardy and industrious; they are inured to a rigorous climate and have for some time past, we fear, been in a very distressed condition.

It is difficult to know exactly how many Scots actually went to the Falklands, but it is likely that over one-third of the settlers came from Scotland, mainly to work as shepherds.²⁷⁵

²⁷⁰ G. Vaughan, 'A Scottish Empire? Scotland and the British World, 1815–1931', *L'Histoire Politique*, vol. 11, no. 2 (2010).

²⁷¹ Buchanan, 'The Diaspora of British Engineering'.

²⁷² MacKenzie and Devine, *Scotland and the British Empire*, pp. 165–166.

²⁷³ MacKenzie, *The Second City of the Empire: Glasgow – Imperial Municipality*, p. 166.

²⁷⁴ *Ibid.*, p. 223.

²⁷⁵ Fernandez-Canque and Manuel, *Scots in South America. A Survey*. Original uncorrected draft, accessible on: https://www.academia.edu/782143/_Scots_in_Latin_America_a_Survey_.

According to Lynch, the history of nineteenth-century Argentina cannot be told without mentioning the contribution of the Scots, as they worked the land from Buenos Aires to the province of Patagonia and extended their influence even to the Falklands/Malvinas. Wherever they went they built churches and schools, taking an interest in commerce, education, transportation and sport. By 1885 there were around 2,000 Scots in Argentina.²⁷⁶

Freemasonry

Between the 1860s and World War I, Freemasonry spread from Britain to create one of the first global institutional networks, which linked Britons and local people throughout the formal and informal empires.²⁷⁷ This network, which had both practical functions and ideological dimensions, played a critical role in building, consolidating, and perpetuating the empire. Belonging to the fraternity conferred privileged access to that network, which helped men adjust to strange surroundings, and secure employment and assistance.²⁷⁸

Freemasonry originated in Scotland, where the first ‘lodges’ appeared as early as the 1590s, and later spread to England, Ireland and the rest of the world. The development of Freemasonry in England is attributed to the Scots. Although differences between English, Irish, and Scottish Freemasonry did exist, the institutions were similar enough to be considered ‘British’,²⁷⁹ and Freemasonry seems to have been used as another tool to expound imperialistic ideas.²⁸⁰ Masonic lodges constituted a vast network that connected Britain to the colonies, offered practical services, and encouraged an ‘imperialist’ identity that helped to consolidate

²⁷⁶ M. Lynch, *The Oxford Companion to Scottish History* (Oxford, 2007), p. 380.

²⁷⁷ J. Harland-Jacobs, “‘Hands Across the Sea’: The Masonic Network, British Imperialism, and the North Atlantic World.”, *Geographical Review*, vol. 89, no. 2 (1999), p. 11.

²⁷⁸ *Ibid.* p. 246.

²⁷⁹ D. Stevenson, *The Origins of Freemasonry. Scotland’s Century, 1590–1710* (Cambridge, 1988), Introduction.

²⁸⁰ M. Chrimes, ‘British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century’, *3rd International Congress on Construction History* (2009), p. 90.

the British empire. Many key figures of the Enlightenment, and many significant politicians, were freemasons: Sir Ralph Abercromby, Henry Dundas (First Viscount Melville), James Bruce, Robert Burns, Erasmus Darwin, John Loudon McAdam, Thomas Telford and Sir Walter Scott.²⁸¹

The values of ‘liberty, equality, and fraternity’ were promoted by Freemasons and adopted later by French revolutionaries. From France, both revolutionary ideals and Freemasonry were spread to other parts of the world, including Argentina.²⁸² The first lodge in what is now Argentinian territory was the ‘Logia Independencia’, which followed rituals from the General Scottish Grand Lodge of France.²⁸³ The first British gathering in the River Plate was a Military Masonic Lodge during Berresford’s occupation in 1806.²⁸⁴

Many other lodges developed in Argentina and became influential as they were well connected with the ruling class and worked successfully to mediate between civil society and political power.²⁸⁵ Proof of this is that several presidents of Argentina were masons, including Bernardino Rivadavia (1826–1827), Vicente López y Planes (provisional president in 1827 and author of the Argentinian National Anthem), Justo José de Urquiza (1854–1860), Santiago Derqui (1860–1861), Bartolomé Mitre (1862–1868), Domingo Faustino Sarmiento (1868–1874), Miguel Juárez Celman (1886–1890), Carlos Pellegrini (1890–1892), Manuel Quintana (1904–1906), José Figueroa Alcorta (1906–1910), Roque Sáenz Peña (1910–1914), Victorino de la Plaza (1914–1916), Hipólito Yrigoyen (1916–1922 and 1928–1930) and Agustín

²⁸¹ Harland-Jacobs, ‘‘Hands Across the Sea’: The Masonic Network, British Imperialism, and the North Atlantic World.’, p. 237.

²⁸² Chrimes, ‘British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century,’ , p. 90.

²⁸³ ‘La Gran Logia de la Argentina’, http://www.masoneria-argentina.org.ar/index.php?option=com_content&task=view&id=14&Itemid=32 (accessed September 14, 2017).

²⁸⁴ Grierson, *Colonia de Monte Grande. Primera Y Unica Colonia Formada Por Escoceses En Argentina*, p. 12

²⁸⁵ S.O. Bandieri, ‘Sociedad civil y redes de poder social en los Territorios Nacionales del Sur: Neuquén, Patagonia argentina, 1880-1907’, <http://www.raco.cat/index.php/boletinamericanista/article/viewArticle/120205/0> (accessed September 15, 2017).

Pedro Justo (1932–1938). San Martin and Belgrano – significant figures in the fight for independence in Latin America – were also Freemasons.²⁸⁶

Explorers and Missionaries

According to Esther Breitenbach, Scottish churches played an important part in the history of the British empire. They participated in evangelising movements among colonists, developed Presbyterian churches in Scottish migrant communities and started foreign missions in many colonial territories.²⁸⁷ The Scottish churches clearly played an important role in imperial expansion and settlement, but they were also essential for sustaining cultural values and Scottish identity, providing a channel of communication between communities abroad and at home and creating networks within the empire that helped the Scots to transmit ideas, build support for their work and establish colonial elites.²⁸⁸

Religion and economic expansion were also connected. Missionaries, for example, sometimes promoted the use of technology and changes in agricultural practices, and they preached the work ethic that prepared labourers for white economies. They even ran commercial ventures, such as the African Lakes Company, which was a commercial arm of the Scottish missions around Lake Malawi.²⁸⁹ David Livingston – one of the most famous Scottish missionaries and explorers – stressed in his writings the benefits of civilisation, commerce and Christianity, along with his opposition to the slave trade. Livingston urged the development of commerce in Africa, declaring: 'I go back to Africa to try to make a path for commerce and Christianity. Do you carry out the work which I have begun' and 'we ought to encourage the Africans to

²⁸⁶ 'Masones Ilustres Argentinos', <http://www.logiamazzini.org/la-francmasoneria/masones-ilustres-argentinos/> (accessed September 14, 2017).

²⁸⁷ Rock, *The British in Argentina: From Informal Empire to Postcolonialism*, p. 198.

²⁸⁸ Ibid. pp. 205–225.

²⁸⁹ M. Newitt, 'Economic Penetration and the Scramble for Southern Africa', in P. Morris (ed.) *Africa, America and Central Asia: Formal and Informal Empire in the Nineteenth Century* (1984), p. 41.

cultivate for our markets, as the most effectual means, next to the gospel, of their elevation'.²⁹⁰

After hundreds of years of Spanish rule in Argentina, the word 'mission' conjures up the spectre of the Jesuits, and the country remains predominantly Catholic.²⁹¹

However, the Scots brought religious tolerance to Argentina when they established the Scottish colony in Monte Grande. The Robertson brothers made sure their colonists were 'permitted the free use of the Protestant religion', as was made explicit in article number seven of their contract with the government.²⁹² This was later extended to the whole British community through the Friendship and Navigation Treaty of 1825, which was created to encourage British merchants to emigrate. In Buenos Aires the Scots initially had to worship in the Church of England or under the guidance of a Presbyterian missionary of the North American Bible Society. However, in 1828 it was proposed that a Church of Scotland chapel should be established and a permanent minister appointed. A temporary chapel was leased at the short-lived colony at Monte Grande, and Dr. William Brown became the first minister. In 1835 St. Andrew's Church in Buenos Aires – designed by another migrant from Monte Grande, Richard Adams, it was consecrated as the first Scottish National Church in South America. It was followed by a second church at Florencio Varela.²⁹³

The growth of rural communities stimulated the building of further churches: St. John's at Quilmes in 1855; the Rancho Kirk at the Adela estancia owned by James Dodds, James Burnett and George Bell in 1857; and St. Andrew's in 1872 in

²⁹⁰ E. Breitenbach, 'Africa in Scotland, Scotland in Africa: Historical Legacies and Contemporary Hybridities', in A. Adogame and A. Lawrence (eds.) *Africa in Scotland, Scotland in Africa: Historical Legacies and Contemporary Hybridities* (Leiden, 2014)

²⁹¹ In 1995, the country was reported to be 88 per cent Catholic, the Protestant population was about seven per cent, and other religious groups combined with the non-religious comprised about 5 per cent. *Religion in Argentina*. Country Overview http://www.prolades.com/encyclopedia/countries/english/religion_in_argentina_2009.pdf.

²⁹² Dodds, *Records of the Scottish Settlers in the River Plate and their Churches*, p. 23.

²⁹³ Graham-Yooll, *The Forgotten Colony: A History of the English-Speaking Communities in Argentina*, pp. 131–133.

Chascomús. Much later, a minister was also appointed to a church in Bahía Blanca.²⁹⁴

Botany provided another field in which Scottish expertise was to play an important role within the empire. Many Scots were instrumental in introducing new plants to Britain; including Phillip Miller, who wrote the ‘bibles’ of eighteenth-century gardening, the *Gardener’s Dictionary* and the *Gardener’s Kalendar*.²⁹⁵ The Scots’ relationship with botany was demonstrated early in Argentina, where the settlers in the Colonia Monte Grande transformed the land they occupied into orchards, farms, ponds and forests, and planted thousands of trees within two years of their arrival.²⁹⁶ Much of this was the work of John Tweedie, a Scottish botanist who was among the first settlers in Monte Grande. He helped to transform the landscape in the area and became the most important plant collector in South America, with a collection of around 10,000 specimens. Although Tweedie’s connection with Darwin is not well known, the two men certainly seem to have met and Tweedie’s contribution to botanical knowledge is reflected in the plant classifications – created by Darwin’s close associate, Professor Hooker of Glasgow University – that bear his name.²⁹⁷

Scottish expertise in other environmental subjects like geology was essential to imperial enterprises like the construction of railways lines, roads, mountain passes and bridges.²⁹⁸

Finally, the Scots made a huge contribution to medicine in Argentina. Scottish universities and colleges were very well developed in areas such as medicine.

²⁹⁴ Graham-Yooll, *The Forgotten Colony: A History of the English-Speaking Communities in Argentina*, pp. 131–133.

²⁹⁵ Harland-Jacobs, ‘“Hands Across the Sea”: The Masonic Network, British Imperialism, and the North Atlantic World.’, p. 155.

²⁹⁶ Grierson, *Colonia De Monte Grande. Primera Y Única Colonia Formada Por Escoceses en La Argentina: Colonia De Monte Grande, Provincia De Buenos Aires*, p. 56.

²⁹⁷ J. Ollerton, G. Chancellor, and J. Van Wyhe, ‘John Tweedie and Charles Darwin in Buenos Aires’, *Notes & Records of the Royal Society*, vol. 66, no. 2 (2012).

²⁹⁸ MacKenzie and Devine, *Scotland and the British Empire*, p. 162.

Scottish universities had 10,000 medical graduates between 1750 and 1850.²⁹⁹ This knowledge was transmitted to Argentina. The first medical practitioners in Buenos Aires were British and included Dr. Thomas Forbes and many other doctors who had been educated in Scottish medical schools: George Fair, William Mair, Robert Tait, Robert Reid, John Aiston and Robert Rodman and Andrew Dick, who arrived in Buenos Aires in 1817, founded the Academy of Medicine in 1822 and promoted the creation of the British Hospital. Even governor Rosas had a Scottish doctor – John Crosbie – attached to his staff at the battle of Caseros in 1852, and John Macdonald served as a surgeon to the Argentinian Army.³⁰⁰ The first female doctor in Argentina – Cecilia Grierson (1859–1934) – was a descendent of the first Scottish settlers.

1.3.1 Imperial Infrastructure

Even today, an extensive and efficient infrastructure is essential for ensuring the effective functioning of any large-scale economy.³⁰¹ The vast networks of paved roads to carry armies and goods, the development of public buildings, and things such as waterworks to provide mechanical energy for mills and supply water to the population, for instance, all helped sustain and expand the Roman empire.

Well-developed infrastructure reduces the effects of distance between regions and connects national and international markets. A well-developed transport and communications infrastructure network is a prerequisite to maintaining economic activity and services. Effective modes of transport, including quality roads, railroads and ports, enable entrepreneurs to get their goods and services to market in a secure and timely way while facilitating the transport of passengers. Economies also depend on energy supplies for businesses, factories and houses. In addition, a solid and extensive telecommunications network allows for the rapid and free flow of information, which increases overall economic efficiency by helping to ensure that

²⁹⁹ Grierson, *Colonia de Monte Grande. Primera Y Unica Colonia Formada Por Escoceses En Argentina*, p. 15.

³⁰⁰ Morrison, *Scots in Argentina and Patagonia Austral, 1800–1950*

³⁰¹ D.S. Rothman et al., *Building Global Infrastructure* (Abingdon, 2015), p. 5.

businesses can communicate and decisions are made by taking into account all available relevant information.³⁰²

Even though the term ‘infrastructure’ is a relatively new one,³⁰³ it seems that the British were well aware of its significance for expanding the empire. However, it was the Industrial Revolution and, in particular, the invention of the steam engine – which enhanced production and revolutionised transportation – that made the massive wave of colonisation seen in the 1800s possible and set the foundation for today's globalised world.³⁰⁴ And it was Scotland that provided the steam power for the Industrial Revolution. This in turn made possible the invention of new machines that permitted increased production with a smaller expenditure of human energy, the division of labour and specialisation of function, developments in transportation and communication. All these technological changes made possible a tremendously increased use of natural resources and the mass production of manufactured goods,³⁰⁵ which helped to fund the empire. The empire's economic growth coincided with striking urban transformation, involving the development of the railways, improvements in locomotives and sailing ships, steamships, deep water harbours and canals, as well as the development of the telegraph and undersea cables.³⁰⁶

1.3.1.1 Innovations, Engineering and Industry

In Argentina, as in many places around the globe, British companies came to be associated with public services, such as gas and water supply, whose development

³⁰²Ibid., pp. 5–6.

³⁰³ The term ‘infrastructure’ derived from French in the nineteenth century, perhaps as early as 1875 and may have been identified with the military. It comes from a combination of the Latin prefix ‘infra’, meaning ‘below’ and ‘structure’. In the Oxford English Dictionary, appeared for first time in 1927 being used to describe ‘the tunnels, bridges, culverts, and ‘infrastructure work generally’ of French railroads.

³⁰⁴Ibid., p. 8.

³⁰⁵ Anonymous, ‘Industrial Revolution’, <https://www.britannica.com/event/Industrial-Revolution> (accessed September 14, 2017).

³⁰⁶ Grierson, *Colonia de Monte Grande. Primera Y Unica Colonia Formada Por Escoceses En Argentina*, p. 229.

had been facilitated by Scottish innovators. In Buenos Aires, for example, the British-Argentinian Buenos Aires Gasworks Company was set up in 1856.³⁰⁷

The total number of professional engineers in Britain increased from about 1,000 in 1850 to around 40,000 in 1914. They possessed an expertise that was in short supply elsewhere and they were willing to travel abroad in large numbers in order to provide it.³⁰⁸ At the centre of this movement of engineers to foreign and colonial climes was the railway boom. The first complete railway to offer timetabled transport for goods and passengers was the Liverpool & Manchester Railway, which opened in 1830. The success of this line, operated with the ‘Rocket’-style locomotive designed by Robert Stephenson – an Englishman who had studied natural philosophy, chemistry and natural history at Edinburgh University³⁰⁹ – prepared the way for the tremendous wave of organisation, capitalisation and railway construction that left Britain as a world leader. Professional engineers played a vital part in organising this programme of railway building – which involved promoting acts of parliament before parliamentary committees – supervising the railways’ construction, and supplying locomotives, rolling stock and operating equipment.³¹⁰

Scottish innovation in Argentina was seen in rural areas as well. In agriculture, among the pioneers was Walter Laidlaw, an outstanding sheep-breeder brought to Argentina from Scotland to improve local flocks. The Scottish farmer John Gibson became one of the wealthiest *estancieros* in Argentina, and among other farmers were Sinclair, Grant, Niven, Thompson, Mackenna, Bell, Corbett, Drysdale, and Macdonald.³¹¹ The introduction of Aberdeen Angus cattle is usually considered to be one of the most important innovations in Argentinian agriculture. The cattle were introduced in 1879 as the last of three British breeds after the Shorthorn and the

³⁰⁷ D.R. Bellhouse, ‘David Bellhouse and Sons, Manchester’, <http://www.stats.uwo.ca/faculty/bellhouse/bellhousehistory.htm> (accessed May 20, 2017)., Chapter 4, available on: <http://www.stats.uwo.ca/faculty/bellhouse/bellhousehistory.htm>.

³⁰⁸ Buchanan, ‘The Diaspora of British Engineering’.

³⁰⁹ M.W. Kirby, ‘“Stephenson, Robert (1803–1859)”’, <http://www.oxforddnb.com/view/article/26400> (accessed September 14, 2017).

³¹⁰ Buchanan, ‘The Diaspora of British Engineering,’

³¹¹ Craig, ‘Scotland and Argentina,’.

Hereford taken to Argentina. Aberdeen Angus became the most important breed in the meat export industry in the country and their introduction created a concrete link between Scotland and the *Sociedad Rural*, in which many Scots participated.³¹²

1.3.1.2 Heavy Industries

In Great Britain, the development of heavy industries, such as shipbuilding, railways and machineries, was one of the main consequences of the change in orientation in the British economy, as it provided the economy with an abundant supply of iron and steel. The improvements in these industries helped to increase the consumption of coal, while keeping prices low. The ability to mass-produce iron and steel reinforced the impetus in the transport industries, particularly steamships and railways, in which Scotland was outstanding.³¹³

In fact, Glasgow's economy was particularly closely connected with British imperial and global networks. It produced half of British marine-engine horsepower, one-third of railway locomotives and rolling stock, one-third of the shipping tonnage, and about one-fifth of all steel produced. It also specialised in engines, pumps, hydraulic equipment and railway products.³¹⁴

Trading ties between Glasgow merchants and sugar planters in the West Indies stimulated the production of sugar-processing machinery and equipment in Scotland. Cast-iron pans and Boulton and Watt steam engines (which used cast iron) were already in use for treating sugar cane at the end of the eighteenth century. Between 1851 and 1876, firms like Neilson & Co. (known as locomotives builders), P. and W. McOnie, and W. & A. McOnie built 820 steam engines, 1,650 sugar mills, 1,200 steam boilers, 117 waterwheels and 169 evaporating pans, which were sent to Mauritius, Brazil and Java.³¹⁵ When the West Indian markets contracted, a very large

³¹² R.D. Flores, 'Familias Británicas en la Sociedad Rural Argentina, 1866–1912', *Epocas, Revista de Historia*, vol. 3 (2010).

³¹³ E.J. Hobsbawm, *Industry and Empire: From 1750 to the Present Day* (London, 1999), pp. 94–95.

³¹⁴ MacKenzie and Devine, *Scotland and the British Empire*, p. 231.

³¹⁵ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, pp. 3–31.

quantity of sugar machinery was sent instead to Mexico and the Argentinian Republic, and Mirrlees Watson Company machinery can still be seen in sugar mills in Argentina today, for example at the San Ignacio sugar mill in Salta³¹⁶ (see **Figure 1–5**).

Even though locomotive building in Glasgow began around the 1830s, it gained its greatest significance with the amalgamation in 1903 of the three most important companies of locomotive builders – Neilson, Reid and Co., Dubs and Co., and Sharp, Stewart and Co. Together they formed the famous North British Locomotive Company and became the most important locomotive company in Great Britain. Employing more than 7,000 men, the company was able to produce over 600 locomotives a year, which were sent to every continent. In South America, the company supplied locomotives to the Argentinian railways (the Buenos Ayres and Pacific Railway, the Buenos Ayres Midland railway, the Buenos Ayres Great Southern Railway and the Entre Rios Railway). The company also sent locomotives to Brazil, Chili, Bolivia, Peru and Uruguay and Cuba (**Figures 1–6 and 1–7**).³¹⁷

Scottish expertise in locomotives also meant that Scottish engineers went to Argentina. Alexander Kincaid, one of the Kincaid brothers of the Balcleuther *estancia*, for example, became a locomotive superintendent during the construction of the railways and later carried out studies on behalf of the Rio Negro Salt Company for a railway from the salt deposits to the port of San Blas. This Glasgow/Argentinian enterprise was still operating in the 1890s according to Mulhall's directory.³¹⁸

After the introduction of steam, the Clyde became one of the most important shipbuilding rivers in the world.³¹⁹ The Scottish shipbuilder William Laird originally

³¹⁶ Anonymous, *Local Industries of Glasgow and the West of Scotland* (Glasgow, 1901), p. 57.

³¹⁷ M. Nicolson, *Glasgow, locomotive builder to the world* (Edinburgh, 1987), pp. 5–18. Steam locomotives made by North British Locomotives are still in use in Argentina, some of them for tourism. See <http://www.railwaytouring.net/travel-tours/south-american-adventure>.

³¹⁸ Morrison, *Scots in Argentina and Patagonia Austral, 1800–1950*.

³¹⁹ MacKenzie and Devine, *Scotland and the British Empire*, p. 166.

established his company, which would become Laird Brothers, in Birkenhead in 1824, with the aim of manufacturing boilers. However, in 1828 the yard moved into shipbuilding and the company soon became pre-eminent in the manufacture of iron ships and made major advances in propulsion.³²⁰ Nicholas Mihanovich, which had the most important merchant fleet in Argentina, had its offices in London and its ships made in Glasgow by important engineering and shipping companies like A&J Inglis.³²¹

1.3.1.3 Ironfounding

Abraham Darby's contribution to English industry is well known. But his innovative use of coke instead of charcoal to produce iron in a blast furnace for the first time in 1709 also helped to stimulate iron production outside England.³²² In Scotland in 1759 two Englishmen founded Carron Company on a site near Falkirk, close to the River Carron with easy access to coal and ironstone.³²³ This iron foundry was the first one to use coke for smelting in Scotland and also the first one to produce iron on a major scale.³²⁴ It was also where James Watt's first steam engine was cast. By the time Carron Company received its royal charter in 1773, it was a major manufacturer of the iron guns and carronades that would be so important to the empire's expansion.³²⁵

Many technological innovations (described in detail in Section 2) helped Scottish foundries to produce good quality iron at a very fair price and secured their reputation for architectural and engineering casting around the world. By 1840 there

³²⁰ 'Laird Brothers', https://www.gracesguide.co.uk/Laird_Brothers (accessed September 14, 2017).

³²¹ 'Ships for Argentina,' *The Glasgow Herald*, November 15, 1945.

³²² N. Cox, 'Darby, Abraham (1678–1717)', <http://www.oxforddnb.com.ezproxy.is.ed.ac.uk/view/article/7137> (accessed September 14, 2017).

³²³ B. Watters, 'Carron Company', <http://www.falkirklocalhistorysociety.co.uk/home/index.php?id=107> (accessed September 14, 2017).

³²⁴ D. Mitchell, *Macfarlane's Castings: Walter Macfarlane & Co, Saracen Foundry, Glasgow : Catalogue, Sixth Edition*, ed. Historic Scotland Technical Group, vol. I, (Historic Scotland, Technical Conservation Group, 2009). Introduction.

³²⁵ 'Carron Co', https://www.gracesguide.co.uk/Carron_Co (accessed September 14, 2017).

were more than fifty-two foundries in Glasgow, ranging from small works to large engineering works.³²⁶

Iron in its three different forms – cast, wrought and steel – was used successfully for bridges in Scotland. The first examples of cast-iron bridges in Scotland were those made by Telford. The oldest one was built in London Road, Glasgow, around 1826. This was followed by one in Linn Park in Glasgow in 1836. The major aqueducts on the Union Canal (built 1818–1822) also used cast iron. From 1815 suspension bridges in Scotland began to use wrought iron but steel was a far more suitable material and the Forth Bridge (**Figure 1–8**), built in steel in 1890 by William Arrol & Co. from Glasgow, became was the greatest of all nineteenth-century bridges while the construction of the London Tower Bridge (1894), gave the company worldwide recognition.³²⁷ Other companies, such as Smith and Naysmith, A. & W. Smith & Co., P. & W. MacLean of Glasgow, the Motherwell Bridge Building & Engineering Co., Alexander Findlay and Co. and the Brandon Bridge Building Co. were all well-known bridge builders in the nineteenth century, each able to export these massive structures abroad, where they can be found in places as distant as Argentina, as will be seen in Section 3.³²⁸

In addition, Scottish engineers specialising in ironwork were contracted to go to Argentina. For example, after gaining experience in Errol, Glasgow and Motherwell, David Colville Bruce was contracted by Garrick and Son of Edinburgh to install cranes in Galvan port in Bahia Blanca. While there, he made his own contribution by designing the grain elevator in the port.³²⁹ Many English companies had a Scottish representative in Buenos Aires. Edward Wood and Company, for instance, employed the engineer William Alexander McCallum to execute some of its most important projects, including the construction of four mills in Puerto Galvan (part of the Pacific railway in Bahia Blanca), and work for many refrigeration companies in Buenos

³²⁶ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, p. 14.

³²⁷ *Ibid.*, p. 57.

³²⁸ *Ibid.*, p. 60.

³²⁹ Gazaneo and Scarone, *Arquitectura de La Revolución Industrial*, p. 51.

Aires and Patagonia. The Scottish engineer and constructor George Whyte built what is known as ‘New Liverpool’ – a railway worker neighborhood formed by more than sixty houses – for the Southern Railway company.³³⁰ Undoubtedly all these projects contributed to increase iron trade between Great Britain and Argentina (See Section 2).

1.3.1.4 Urbanism and Architecture

The New Town in Edinburgh is considered to be the physical expression of Enlightenment thinking – rational, planned and beautiful.³³¹ Now a World Heritage site, it was constructed between 1767 and 1890 and designed to take full advantage of the local topography while creating an extensive system of private and public open spaces. The buildings were designed by renowned architects that included John (1721–92), and Robert Adam (1728–92), Sir William Chambers (1723–96) and William Playfair (1790–1857). The high quality of Edinburgh’s architecture set the standard for Scotland and beyond, influencing urban development and architecture throughout Europe.³³²

Urban development was also influenced by the textile mills at New Lanark, which employed more people than any other factory in the world. Their significance was such that in 2001 they were recognised as a World Heritage site.³³³ Two-thirds of the mills’ employees were women and children recruited from local orphanages. The factory’s owner, Robert Owen, believed that it was important to have happy workers so he provided them with clothes, food, and free housing. He also reduced working hours and provided buildings to be used as a nursery and day school – the first infant school in the world. Owen became one of the most influential early nineteenth-century advocates of utopian socialism and his New Lanark mills became a place of

³³⁰ Ibid.p. 56.

³³¹ *Enlightenment Scotland*,

³³² ‘Old and New Towns of Edinburgh’, <http://whc.unesco.org/en/list/728> (accessed September 14, 2017).

³³³ ‘New Lanark World Heritage Site’, <http://www.newlanark.org/world-heritage-site/> (accessed September 14, 2017).

pilgrimage for statesmen and social reformers.³³⁴ He also sponsored or encouraged many experimental ‘utopian’ communities, including one at the New Harmony settlement in 1825 in Indiana. Owen's legacy in the areas of education, town planning, economics, social and political philosophy, labour and the cooperative movement is recognised worldwide.³³⁵ The company towns that grew out of industrialisation followed New Lanark's lead and spread across the world, including to Argentina.³³⁶

With regard to iron architecture, it seems that a lack of distinction between the countries that form the United Kingdom means that Scotland's role in the development and expansion of the British empire is often overshadowed by England's (or that ‘England’ is taken as a synecdoche for Britain as a whole, or any of its constituent nations). For instance, Coalbrookdale Company has enjoyed much more attention than Scottish firms, even though it never matched the diversity and range of the cast-iron architectural products of the major Scottish firms.³³⁷ In the same way, big American firms like J. W. Fiske (founded in 1862) and J. L. Mott (founded in 1828), or European firms like Val d'Osne, are recognised for the high quality of their bronze work, even though none of them produced work equivalent to the standard of the Walter Macfarlane & Co of the Saracen foundry.³³⁸ In addition, many internationally significant early Scottish innovations in cast iron remain unknown. For example, whilst James Bogardus is considered to be the father of American cast iron façades, his work in New York from 1849 came several years after the Scottish physicist Adam Anderson had designed and constructed the Perth Waterworks building and façade (1832). According to David Mitchell, this structure,

³³⁴ Herman, *The Scottish Enlightenment: The Scots' Invention of the Modern World*, p. 324.

³³⁵ C. Moughtin, P. Signoretta, and K.M.M. Moughtin, *Urban Design: Health and the Therapeutic Environment* (Oxford, 2009), p. 111.

³³⁶ O. Paterlini de Koch, ‘Company Towns of Chile and Argentina’, in *The Company Town: Architecture and Society in the Early Industrial Age: Architecture and Society in the Early Industrial Age* (New York, 1992), p. 207.

³³⁷ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 584.

³³⁸ *Ibid.*, pp. 579–589.

supplied by Dundee Foundry, could be considered to be one of the earliest and most important architectural cast-iron structures in the world (**Figure 1–9**).³³⁹

Even Joseph Paxton, who has been associated with the construction of cast-iron glasshouses since his design of the famous Crystal Palace in 1851, actually borrowed principles developed by the Scotsman John Claudius Loudon during his work on the great conservatory at Chatsworth in 1836.³⁴⁰ Loudon's principles informed not only Paxton's work but also Turner and Burton's at Kew Gardens, and were applied to innumerable conservatories and exhibition buildings throughout nineteenth-century Europe and America.³⁴¹ Earlier even than Loudon, David Mushet's family constructed the Fairfield Glasshouse in Dalkeith, near Edinburgh, in 1812 – a building that could be considered the first to use iron in its construction. These cast-iron structures are extremely important for the history of technology and yet are relatively unknown.³⁴²

From the ornamental point of view, Carron was one of the first companies to produce ornamental cast iron in Great Britain. Their work can be seen in the domestic ironware created for Edinburgh New Town, which includes the cast-iron grates made to Robert Adam's designs. The Adam brothers' work at Charlotte Square was replicated exhaustively by other firms, who followed the originals' elegant and simple designs.³⁴³ In fact, the Adamesque or Adam brothers' Neo-classical style became popular worldwide, reaching Argentina with the arrival of the architect Richard Adams in 1825.

From 1850 onwards, architectural ironfounding developed as a separate speciality, especially after the establishment of Walter Macfarlane at the Saracen foundry in Glasgow. Macfarlane, George Smith (Sun foundry) and Lion foundry were among

³³⁹ Ibid. pp. 83–84.

³⁴⁰ Ibid. pp. 95–96.

³⁴¹ 'John Claudius Loudon', <http://www.encyclopedia.com/education/dictionaries-thesauruses-pictures-and-press-releases/loudon-john-claudius> (accessed September 14, 2017).

³⁴² Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, pp. 95–96.

³⁴³ MacKenzie and Devine, *Scotland and the British Empire*.

the three most important architectural iron foundries, although other smaller general foundries in Scotland made rainwater and ornamental goods.³⁴⁴ Architectural iron products made in Scotland, like Macfarlane's bandstands, fountains, buildings and decorative materials, were exported throughout the empire and beyond.³⁴⁵ The trading of these elements was encouraged by the opening of colonial branches overseas as well as the circulation of catalogues. These type of products developed a powerful iconography of empire in terms of advertising,³⁴⁶ and also helped to ensure a certain 'cultural and design uniformity' across the empire, the effects of which could be seen even in informal colonial settings like Argentina.³⁴⁷ Scottish cast iron in Argentina will be described in more detail in Section 3.

³⁴⁴ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, p. 20.

³⁴⁵ MacKenzie and Devine, *Scotland and the British Empire*, p. 233.

³⁴⁶ MacKenzie, *The Second City of the Empire: Glasgow – Imperial Municipality*, p. 223.

³⁴⁷ Juarez, 'Documenting Scottish Architectural Cast Iron in Argentina'.

1.4 The Establishment of Informal Empire in Argentina

Even though this thesis focuses on the period 1852–1948, it is essential to attempt to identify the beginning of British economic interests in such a distance place as the River Plate Area (now Argentina and Uruguay). In what follows here a series of periods are identified and discussed in defining the beginning, the consolidation, and the decline of British commercial and political power in Argentina.

1.4.1 The Beginning of British Economic Interest in The River Plate (1713–1806)

Some of the first signs of Britain's interest in trade in what is now Argentina were manifested in the 1713 Treaty of Utrecht (which put an end to the War of Spanish Succession), in which Spain granted to Great Britain the right to trade slaves in South America for thirty years.³⁴⁸ The terms included the River Plate region – a vast area of more than a million square miles that was part of the Viceroyalty of Peru but was so remote that it was the least developed region of Spain's American empire.³⁴⁹

Under the same treaty, Spain gave Colonia de Sacramento (now Uruguay) to Portugal. The Portuguese presence in the River Plate created a problem in the area. Thus, in 1776 King Carlos III of Spain created the Viceroyalty of the River Plate with its capital in Buenos Aires. It was formed of territories from Argentina, Paraguay, Uruguay (back then called Banda Oriental), much of Upper Peru (now Bolivia) and part of modern-day Brazil.³⁵⁰

Although the British had traded in illegal contraband and made some re-exports of other products from Spain before 1713, the Treaty gave them the opportunity to expand into new, legal businesses related to the slave trade, such as the import of clothing. They were also allowed to place agents in many ports in South America,

³⁴⁸ A. McFarlane, *The British in the Americas, 1480–1815* (London, 1994), p. 221.

³⁴⁹ D. Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín* (California, 1987), p. 1.

³⁵⁰ McFarlane, *The British in the Americas, 1480–1815*, p. 221.

which helped the British merchants become familiar with trading conditions in the Spanish American colonies.³⁵¹ Having the slave trade into the River Plate area in their hands also allowed the British to explore new resources for export and other businesses. For instance, two Scottish members of the South Sea Company – Thomas Stewart and Robert Young – established the first brewery, ‘la zervezeria’, in Buenos Aires in 1738.³⁵²

The slave trade also helped to establish the first connection between Argentina and the Baring Brothers (called Francis Baring at that time) merchant bank. A document from 1802 reveals that the bank insured the slave-ship *Catherine* for her journey to Argentina on behalf of the Scot Hugh Maccaughey, for whom Barings acted as London agent.³⁵³

Before MacCaughey’s Argentinian adventure, another Scotsman had shown even greater ambition. Colonel William Fullarton proposed an expedition in the 1780s, funded by the East India Company, to secure advantageous positions in Mexico, Peru, and Chile by offering independence to the colonies in order to open up trade between South America and the East Indian territories. The expedition was abandoned on the declaration of the Dutch War (1780–1784).³⁵⁴ While the ideas of opening trade and relinquishing formal colonies were aligned with Adam Smith’s ideas, after the American Revolutionary War (1775–1783), Britain was also attracted by the idea of punishing Spain and France for having supported American independence. Some, like Viscount Hood of the Admiralty, sought to ‘return them

³⁵¹ V.B. Reber, *British Mercantile Houses in Buenos Aires, 1810–1880* (Cambridge, 1979), p. 2.

³⁵² J. Di Fiore, ‘Intentando ordenar las veinte primeras cervecerías de Buenos Aires’, http://www.botelladecerveza.com.ar/magazine_2012.php. (accessed September 14, 2017).

³⁵³ Baring Asset Management, *Argentina and Baring. A Historical Record from the Baring Archive*, n/d, Max Von Buch Library.

³⁵⁴ K. Gallo, *Great Britain and Argentina: From Invasion to Recognition: 1806–1826* (2003), pp. 17–18.

the compliment' by liberating Spanish America, but the King made clear that he could 'never copy so faithless an example'.³⁵⁵

Nevertheless, a few years later, Britain took Honduras (1798), Trinidad (1802) and Guyana (1803) from foreign powers, and the River Plate area seemed to be the next target.³⁵⁶

1.4.2 From Formal to Informal Empire (1806–1826)

The British clearly intended to exploit this part of the continent. Commander Popham believed that Buenos Aires had 'the best situation in South America' and, based mainly on commercial interest, he planned an invasion of the River Plate with General William Beresford and a force that included a Scottish regiment of Highlanders in 1806.³⁵⁷ Even though it did not succeed, Beresford was able to occupy Buenos Aires for about six weeks before the city was re-conquered. In 1807 a second invasion, led by General Whitelocke, also failed.

Documentation shows that after these failed attempts, the British decided to employ a more friendly approach and build a trade relationship. Economic expansion was their main driver (as pointed out by Gallagher and Robinson), as illustrated in a letter written by Lord Castlereagh (Secretary of State for War at the time, and later Secretary of Foreign Affairs):

it may be doubtful whether the silent and imperceptible operation of our illicit commercial intercourse with that portion of the world during the war would not be more operative and beneficial, if we *approached it only as traders*, than when, by approaching it as enemies, a new energy is given to the local government, which may probably enable

³⁵⁵ Ibid., pp. 17–18. Taken from a letter from Viscount Hood to Lord Hawkesbury, 11 December 1787, British Library additional manuscripts 38222.

³⁵⁶ Garcia, '¿ Imperio informal? La Política Británica hacia América Latina en el Siglo XIX,' .

³⁵⁷ Ibid. Adm. 1/58 Popham to Admiralty, 9 July 1806.

them the better to enforce the prohibitory regulations against our commerce.³⁵⁸

This in some ways defined the British strategy in the River Plate area; they had abandoned any idea of formal empire and here were the beginnings of a policy geared towards informal political and economic influence.

In fact, when General Beresford stayed in Buenos Aires, he had already taken the opportunity to promote a trade policy that benefited British commerce, as he saw an excellent market for British goods and a source of hides, tallow, bullion, flour, meat, wood and hemp.³⁵⁹ He enforced three decrees that benefited British goods, one of which agreed a 12 per cent duty on British goods while goods from other parts of the world were taxed at 17.5 per cent, thereby essentially declaring a price war on Spanish manufactured goods.³⁶⁰

It is worth mentioning that more than 100 commercial vessels and 2,000 merchants accompanied the military ships during the failed invasions³⁶¹, and British goods, such as soap and textiles, rapidly sold out in the shopping streets of Buenos Aires.³⁶² In 1806–1807 British merchants sold goods valued at more than £1,000,000 in the River Plate area. In 1808–1809 thirty-one British ships arrived in Buenos Aires and ten at Montevideo bearing cargoes valued at a total of £2,986,000.³⁶³ The Spanish Viceroy Baltasar Hidalgo de Cisneros temporarily accepted the trade with Britain, in spite of opposition from local traders and artisans,³⁶⁴ and it has been said that these

³⁵⁸ Ibid. From Castlereagh, Correspondence, vii, p. 320. Emphasis by author.

³⁵⁹ Reber, *British Mercantile Houses in Buenos Aires, 1810–1880*, pp. 2–3.

³⁶⁰ A. Graham-Yooll, *The Forgotten Colony: A History of the English-Speaking Communities in Argentina* (London, 1981), p. 59.

³⁶¹ Ibid., p. 59

³⁶² Miranda, *Invasión, Reconquista Y Defensa de Buenos Aires*, p. 106.

³⁶³ Ferns, *Britain and Argentina in the Nineteenth Century*, p. 68. Taken from Staples to the Foreign Office, 21 June 1810, p. 68.

³⁶⁴ A. Tabbush, 'The British-Argentine long-lasting relationship Reflections on the Bicentenary of the May Revolution', *South Atlantic Council* (2013). Accessible online: <http://www.staff.city.ac.uk/p.willemts/SAC/COMMENTS/AT170813.HTM>

trading activities became one of the local points of political tension that contributed to the revolution.³⁶⁵

At the time, the creoles (Spanish or European children born in Latin America) were a growing economic class that had seen their prosperity restricted by the Spanish monopoly. They were aware of the libertarian ideals that had generated the French Revolution and North American independence. They were therefore supportive of the free trade policies promulgated by the Scotsman Adam Smith. They saw the British presence in the River Plate region as an opportunity for change.³⁶⁶

The presence of the British helped significantly in the overthrow of Spanish dominion in the River Plate colonies, as it encouraged the popular action and political expression that led to rebellion. In 1810 the May Revolution in the city of Buenos Aires took place, resulting in the deposition of the Spanish viceroy, Cisneros, and his replacement by a temporary government board called the 'Primera Junta'.³⁶⁷ This is why the reaction of the creoles against Spanish rule must be understood not only in political terms but also in commercial terms.

Not surprisingly, a British merchant group, in which the majority were Scots, started to organise business in Buenos Aires. Between 1810 and 1813 they created the British Commercial Rooms of Buenos Aires – whose first president was the Scotsman Alexander Mackinnon – a club, a library and a school.³⁶⁸ Members of the Commercial Rooms, such as Robert Ponsonby Staples, were directly connected with the Foreign Office and British authorities like Lord Strangford and Castlereagh because they served as unofficial consuls in the River Plate. They were also ambitious businessmen, and Staples and the Scot John MacNeile founded a

³⁶⁵ Ferns, *Britain and Argentina in the Nineteenth Century*, p. 68. Taken from Staples to the Foreign Office, 21 June 1810.

³⁶⁶ Graham-Yooll, *The Forgotten Colony: A History of the English-Speaking Communities in Argentina*.

³⁶⁷ Ibid., p. 29.

³⁶⁸ Ibid., p. 63.

‘saladero’ in Buenos Aires to produce salted and dried meat for export to Great Britain.³⁶⁹

By 1815 the River Plate was still in chaos with no effective self-government. In addition, in Europe the restoration of the French monarchy presented, for some, the opportunity to establish a constitutional monarchy in the River Plate. With this in mind, the Supreme Director of the United Provinces, General Alvear, issued an explicit proposal to make the River Plate a formal colony of Britain. Manuel Jose Garcia was sent to Rio de Janeiro to present the proposal to the British ambassador, Lord Strangford.³⁷⁰

Five years of repeated experiences have demonstrated ...that this country is in no state to govern itself and needs an outside hand to direct us and hold us in the sphere of order rather than rush into the horrors of anarchy.

In these circumstances only the generous British nation can provide an effective remedy to so many evils, taken in her arms, these provinces will obey her government and receive hers laws with the greatest pleasure: they know that is the only way to avoid the destruction of the country ... and expect from the wisdom of that nation a peaceful and happy life.³⁷¹

Even though Lord Strangford did not accept the proposition for fear of disturbing Britain’s relationship with Spain,³⁷² it reflected the vision of an early Argentinian anglophile. The ideas that the British were superior and could bring order and development, and that they would ‘rescue’ Argentina from ‘chaos’ were aspects that encouraged British control through a form of informal imperialism, and that would reappear repeatedly in future relations between Britain and Argentina.³⁷³

³⁶⁹ Ibid., p. 68.

³⁷⁰ J.M. Rosa, *La Misión García ante Lord Strangford: Estudio de la Tentativa de 1815 para Transformar a la Argentina en Colonia Inglesa* (Buenos Aires, 1951)., p. 3. British Library, BLL01011870396. Translation by author.

³⁷¹ Ibid., p. 3.

³⁷² Ibid., p. 3.

³⁷³ J. Darwin, *Unfinished Empire: The Global Expansion of Britain* (London, 2012)., p. 26.

A year later, the viceroyalty of the River Plate acquired full independence and formed the new United Provinces of the River Plate (the name Argentina was used later— see **Figure 1–10**). Independence came but the area was still in chaos. The need to reorganise the country resulted in the formation of two opposed political parties – the Unitarians and the Federals. The Unitarians wanted a centralised government in Buenos Aires, with hegemony over the entire territory, and administrative divisions being mere provinces under the general authority. They followed centralist and liberal ideas and supported free trade. The Unitarians were mainly formed from the Buenos Aires’ elite; they were intellectuals and members of the upper class or military. The Federals defended provincial autonomy, believing that each province should have its own government, constitution, law and economics. In general, they were provincial governors, leaders or militiamen with strong roots in the countryside,³⁷⁴ some of whom became *caudillos*.³⁷⁵

In 1816 the Unitarian Juan Martín de Pueyrredón was made Supreme Director of the United Provinces of the River Plate. He had to reduce the political disorder of the interior, finance the conflict with Spain, and liquidate past debts. Thus, his policy led to forced loans and increased tariffs in 1817. Conscious of the need to trade with, and gain the political support of, the United Kingdom, he began to lower the customs duties in 1818.³⁷⁶

The same congress that declared independence sanctioned a Constitution in 1819. Its Unitarian principles were rejected by the provinces and civil war broke out. In 1820 the Federals emerged victorious from the Battle of Cepeda. The battle marked the end of the centralised system and the emergence of federalism in Argentina. From

³⁷⁴ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, p. 95.

³⁷⁵ The term *caudillo* originates from the Spanish word for head, *cabeza*, and describes the leader of a political faction, often linked to a band of armed men. Used in Spain since the time of the Reconquista, the term became increasingly common in Spanish America during the wars of independence. It initially had the positive connotation of a man fighting in defence of his land, but it gradually became linked to authoritarian rule by a strongman and was used pejoratively. Caudillos began their careers at the local level, and some garnered national support. Many took over the government of a country and were successful in maintaining it, while others faced strong opposition. See: <http://www.oxfordbibliographies.com.ezproxy.is.ed.ac.uk/view/document/obo-9780199766581/obo-9780199766581-0141.xml?rskey=As7BD1&result=1&q=caudillo#firstMatch>

³⁷⁶ Reber, *British Mercantile Houses in Buenos Aires, 1810–1880.*, p. 64

then on each province acquired the right to govern itself. However, the country was still in a state of anarchy and the turmoil continued as the rest of South America fought for liberation.

In 1824 the Battle of Ayacucho in Peru marked the end of Spanish dominion in all of Latin America, and the newly independent countries started to gain British recognition. The foreign secretary George Canning declared: ‘Spanish America is free, and if we do not mismanage our affairs sadly, she is English’.³⁷⁷

For the new Latin American states, establishing connections with Britain was one of the benefits of independence. Thus, these states were willing to accept British free-trade rules as the price for having their sovereignty recognised. This diplomatic recognition was formalised through commercial treaties that gave the British additional protection and legal security to carry out their business.³⁷⁸ Consequently, Colombia, Buenos Aires, and Mexico negotiated trade treaties with Great Britain.³⁷⁹

However, it was not only Great Britain that had an interest in trading with Spanish America; the most important powers in Europe, such as France and the Holy Alliance (a coalition created in 1815 by Russia, Austria and Prussia), also had their eyes on the continent. These nations engaged in many discussions about how to approach the situation in the New World in order to gain power and increase the benefits of trade. While France was busy negotiating an alliance with Spain, Great Britain concentrated on protecting her own trade with Latin America.³⁸⁰ However, increasingly aware of the brewing situation, President James Monroe, in his annual address to the U.S. Congress in 1823, declared that the Americas would no longer be open to colonisation by European powers. This pronouncement marked what became known as the Monroe Doctrine, by which the US would intervene if the Americas

³⁷⁷ Gallagher and Robinson, ‘The Imperialism of Free Trade,’ , p. 8.

³⁷⁸ Garcia, ‘¿ Imperio informal? La Política Británica hacia América Latina en el Siglo XIX,’ .

³⁷⁹ W.W. Kaufmann, *British Policy and the Independence of Latin America, 1804–1828* (New Haven, 1951), p. 205.

³⁸⁰ D. Perkins, ‘Europe, Spanish America, and the Monroe Doctrine’, *The American Historical Review*, vol. 27, no. 2 (2010).

were threatened by imperial powers.³⁸¹ Interestingly, soon after, Canning sent Sir Woodbine Parish (a protégé of Castlereagh) to Buenos Aires as the first official British Consul.³⁸²

Monroe's pronouncement was well received by the United Provinces of the River Plate, despite the belief that it was in no imminent danger. Nevertheless, three years later the United Provinces of the River Plate appealed to the United States for support when it entered a war with Brazil (supported by Portugal) over the rights to Uruguay (the Banda Oriental). However, the United States declared itself neutral, stating that the Monroe Doctrine was not applicable.³⁸³

When Brazil occupied the Banda Oriental, the Brazilians blockaded Buenos Aires, which greatly affected international trade. In fact, British trade was so affected that the Chamber of Commerce and Manufacturers for Glasgow and London's commercial houses complained to Britain's Foreign Secretary.³⁸⁴ Consequently, the British intervened through the formation of a new independent state – Uruguay. The mercantile and political elites in Montevideo preferred an English ascendancy as a guarantee of social and political stability and economic growth. In 1824 they had even pressed for the transformation of the Banda Oriental into a British colony but the Foreign Office had declined their request. From Buenos Aires, Robert Ponsonby Staples encouraged them to form an independent Uruguay instead, as this would enjoy British protection and attract both British capital and skilled immigrants. According to Winn, the establishment of the new republic represented the triumph of British informal empire.³⁸⁵

³⁸¹ R.Q. Monge, 'América Latina. El Imperialismo Histórico. El Libre Comercio o la Diplomacia de Dios', *Globalización* (2009).

³⁸² Ferns, 'Beginnings of British Investment in Argentina'.

³⁸³ W. Stewart, 'Argentina and the Monroe Doctrine, 1824–1828', *The Hispanic American Historical Review*, vol. 10, no. 1 (1930).

³⁸⁴ Ferns, *Britain and Argentina in the Nineteenth Century*, p. 155.

³⁸⁵ P. Winn, 'British Informal Empire in Uruguay in the Nineteenth Century', *Past and Present*, vol. 73 (1976).

As John Darwin points out, British interests entered a particular region in search of trade or dominion, and this was almost impossible without some sort of local alliance or understanding with the ruler and people who claimed or controlled the area concerned.³⁸⁶ In Argentina, and other new Latin American nations, the desire for economic growth and the expectations of a resurgent British-friendly liberal class, opened the doors to British economic dominion. This is consistent with what Robinson called the ‘collaborative elite’ – a number of citizens who eased the introduction of informal imperialistic measures.³⁸⁷

In Argentina one of the early ‘collaborators’ was probably Bernardino Rivadavia, who was very influential in 1820–29 and became the country’s first President in 1826. He made great efforts to promote closer economic ties with Britain, especially in trade and investments.³⁸⁸ He had spent some time in Europe, especially in Paris and London, where he came into contact with British ideas, including those of Adam Smith.³⁸⁹ Thus, he was inclined towards capitalism and believed that a strong centralised government and greater freedom of commerce would connect Argentina to the global market. Under his rule, a regime of free trade was inaugurated when Sir Woodbine Parish (the first British consul) and Manuel Jose Garcia (the Argentinian Foreign Minister) signed one of the most important treaties with Great Britain – the Treaty of Friendship, Commerce, and Navigation in 1825.

Trade agreements signed between Great Britain and Argentina established the term and conditions of mutual trade and included agreements on tariff and custom duties. Serving as tools to regulate and guarantee profits, frequently asymmetrically, these treaties set the ground for informal ‘dominion’ through British economic expansion. The two commercial agreements that best illustrate the unequal benefits offered to

³⁸⁶ Darwin, *Unfinished Empire: The Global Expansion of Britain*, p. 8.

³⁸⁷ Robinson, *Non-European Foundations of European Imperialism: Sketch for a Theory of Collaboration*.

³⁸⁸ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, p. 100.

³⁸⁹ G. Aguirre, *Bernardino Rivadavia* (Buenos Aires, 2001), p. 19. For European intellectual influence in Latin America in 1820’s see: M. Brown and G. Paquette, ‘The Persistence of Mutual Influence: Europe and Latin America in the 1820s’, *European History Quarterly*, vol. 41, no. 3 (2011).

Britain and Argentina are the Treaty of Friendship, Commerce, and Navigation (1825) and the Roca-Runciman Treaty (1933). The first symbolised the beginning and the latter the beginning of the decline of a fruitful Anglo-Argentinian commercial relationship.

The Treaty of Friendship, Commerce, and Navigation (1825)

The Treaty of Friendship, Commerce, and Navigation established the legal foundations of a British-Argentinian relationship that lasted over more than a century.³⁹⁰ It was a collection of fifteen articles, the most significant of which were the following:

Art 2. ...the inhabitants of the two countries, respectively, *shall have liberty freely and securely to come, with their ships and cargoes*, to all such places, ports and rivers in the territories aforesaid, to which other foreigners are or may be permitted to come, to enter into the same, and to remain and reside in any port of the said territories respectively; also *to hire and occupy houses and warehouses for the purpose of their commerce; and generally, the merchants and traders of each nation, respectively, shall enjoy the most complete protection of the laws and statutes of the two countries respectively.*

Art 4. *No higher or other duties shall be imposed on the importation into the territories of Britannic Majesty's dominions, of any articles of the growth, produce or manufacture of the United Provinces of the Rio de la Plata, and no higher or other duties shall be imposed on the importation into said United Provinces, of any articles of the growth, produce, or manufacture of His Britannic Majesty's dominions; ...nor shall any prohibition be imposed upon exportation of any article, the growth, produce or manufacture of His Britannic Majesty's dominion or of the said United Provinces, which shall not equally extend to all other nations.*

Art 8. *All merchants, commanders of ships and others, subjects of His Britannic Majesty, shall have the same liberty*, in all the territories of the said United Provinces, as

³⁹⁰ H.S. Ferns, 'Britain's Informal Empire in Argentina, 1806–1914', *Past and Present* (1953).

the natives thereof, to the management to whomsoever they please, as broker, factor, agent or interpreter; *nor shall they be obliged to employ any other persons for those purposes, nor to pay them; and absolute freedom shall be allowed, in all cases; to the buyer and seller to bargain and fix the price of goods, wares, or merchandise imported into, or exported from the said United Provinces, as they shall see good.*

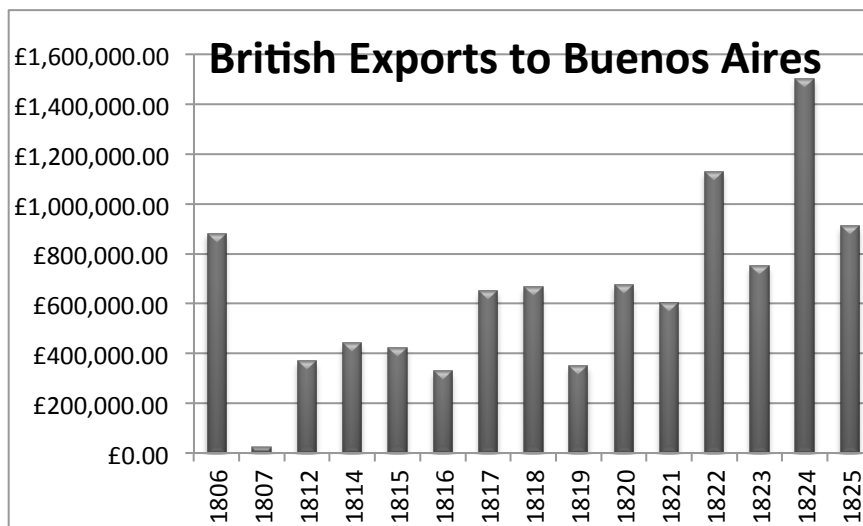
Art 9. In what relates to the loading or unloading of ships, the safety of merchandise, goods, and effects, the disposal of property of every sort and denomination, by sale, donation or exchange, or in any other manner whatsoever, as also the administration of justice, the subjects and citizens of the two contracting parties shall enjoy, in their respective dominions, the same privileges ... *neither shall they be compelled to pay any ordinary taxes, under any pretext whatsoever, greater than those that are paid by native subjects or citizens.*

Art 11. For the better security of commerce between the subjects of His Britannic Majesty, and the inhabitants of the United Provinces of Rio de la Plata, *it is agreed that if at any time any interruption of friendly commercial intercourse, or any rupture should unfortunately take place, ... the subjects or citizens of either of the two contracting parties residing in the dominions of the other, shall have the privilege of remaining and continuing their trade therein, without any manner of interruption, so long as they behave peaceably...*

³⁹¹

As is clearly shown in **Graph 1–3**, the British had undertaken significant commercial activity in the period between the invasions and the Treaty of Friendship.

³⁹¹ Mulhall and Mulhall, *Handbook of the River Plate Republics. Comprising Buenos Ayres and the Provinces of the Argentine Republic and the Republics of Uruguay and Paraguay.*



Graph 1–3. British Exports to Buenos Aires 1806–1825. Source: Graph made by author with information taken from H.S. Ferns, ‘Beginnings of British Investment in Argentina’, *The Economic History Review*, vol. 4, no. 3 (1952), p. 343

They obviously needed a legal framework for protecting and encouraging their trade and the treaty gave them this. Above all it protected traders who, even though they were individuals, were essential to economic expansion (see *Networks of Empire*). Ferns has stated that the treaty represented efforts to create a free-market connection between an industrial community and a raw material community.³⁹²

Since Rivadavia’s ideals matched the requirements for British economic expansion, his government enabled British business to flourish. Accordingly, he encouraged immigration and sold or rented public land to reinforce public revenue.³⁹³ His initiatives included the establishment of the Law of Emphyteusis of 1826, which granted long-term rights of access to, and exploitation of, the state’s land. The government could lease land to private individuals or companies but, as the assessment of the land was made by the people who were going to rent it, it was undervalued and 122 people were granted access to around 6.5 million acres of

³⁹² Ferns, *Britain and Argentina in the Nineteenth Century*.

³⁹³ Ferns, ‘Beginnings of British Investment in Argentina’.

public land in the space of two years.³⁹⁴ Rivadavia also supported private banking and stimulated the use of foreign capital. Under his rule, in 1824 the famous £1,000,000 loan from Baring Brothers of England was undertaken to fund the construction of new harbour facilities and waterworks in Buenos Aires.³⁹⁵ Rivadavia also wanted British expertise on the project and gave the commission to the English engineer James Bevens. In the end, the borrowed money was not used for the proposed harbour,³⁹⁶ but instead subsidised the Argentine-Brazilian War (1825–28) for the incorporation of Banda Oriental.³⁹⁷ In addition, Rivadavia used part of the loan to finance a new national bank (Banco Nacional), which was largely dominated by British merchants, who used its facilities to finance a new wave of imports from Britain.³⁹⁸ With the loss of the Banda Oriental and the outbreak of civil war in the provinces, Rivadavia lost popularity and Juan Manuel de Rosas came to power in 1829.

1.4.3 Protectionism vs Free Trade. Internal Conflicts, British Blockades and the Falkland Islands (1829–1852)

Juan Manuel de Rosas differed radically from the Unitarians – who were more connected with European liberal ideas – in his cultivation of nationalist sentiment. European settlers were no longer considered a panacea, and the active promotion of immigration ceased.³⁹⁹ Rosas also counteracted his predecessor's regime and restricted foreign trade. He tried to protect local industry against foreign newcomers and embarked on a path of protectionism. Through the Federal Pact of 1831, he restricted navigation on internal rivers. He established the Customs Act of 1838 with two main objectives: the defence of local manufacturers and the revival of

³⁹⁴ D.K. Lewis, *The History of Argentina* (London, 2003)..

³⁹⁵ Ferns, 'Beginnings of British Investment in Argentina'.

³⁹⁶ Gazaneo and Scarone, *Arquitectura de La Revolución Industrial*, pp. 25–28.

³⁹⁷ Ferns, 'Beginnings of British Investment in Argentina'.

³⁹⁸ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, pp. 100–101.

³⁹⁹ I.A.D. Stewart, *From Caledonia to the Pampas: two Accounts by Early Scottish Emigrants to the Argentinian* (East Linton, 2000), pp. 12–13.

agricultural wealth. He applied high tariffs on foreign products and, in some cases, banned items that were generally imported from Great Britain or France but that could instead be produced in Buenos Aires. For example, he prohibited the import of iron products, tin, brass, as well as other items for horses.⁴⁰⁰ These measures naturally affected trade relations with Britain and France, but also with Paraguay and Uruguay. In addition, Rosas was determined to put foreign debt on hold. These changes did not go down well with the British, nor did Rosas. Moreover, the issue of the Falkland/Malvinas islands' sovereignty also needed to be resolved.⁴⁰¹

The British were aware that the Falkland/Malvinas islands were rich in food supplies and that they had a geographical advantage over places such as the River Plate and the Brazilian ports.⁴⁰² They were also strategically positioned in the South Atlantic Ocean, providing control and access to the Pacific.⁴⁰³ The British believed that they were within their rights to occupy the islands in 1833 since they had discovered and already occupied them in 1774, when they left a plaque with the following inscription:

*...the Falkland Islands with its forts ,warehouses, landings, ports, bays and coves, belong only to His Majesty George III, King of Great Britain... In witness and possession taken by Samuel William Clayton, commanding officer Falkland Islands ... leaving unfurled flags of Her Britannic Majesty, on May 22, 1774.*⁴⁰⁴

In 1841, Rosas tried to have Rivadavia's Barings debt cancelled in exchange for the secession of Argentina's rights over the islands. The British government did not

⁴⁰⁰ J.M. Rosa, *Defensa y Pérdida de Nuestra Independencia Económica* (Buenos Aires, 1975). p. 12–13. Certain leather products were also protected, as was silver, copper and shoes, among others items, by imposing heavy duties between 24 per cent and 35 per cent. Some competitive articles made in cotton were totally prohibited. Protectionism was extended with more than 24 per cent duty on thread beads, wool and cotton, clothing and blankets. Some items were only allowed under a duty of 50 per cent. In agriculture, farm produce, such as vegetables, barley and corn, were completely prohibited.

⁴⁰¹ Ferns, *Britain and Argentina in the Nineteenth Century*, pp. 224–232

⁴⁰² Ibid.

⁴⁰³ García, '¿ Imperio informal? La Política Británica hacia América Latina en el Siglo XIX,' .

⁴⁰⁴ T. Falkner, *Descripción de la Patagonia y de las Partes Adyacentes de la América Meridional* (Buenos Aires, 1835)., accessible online: <http://www.gutenberg.org/files/28542/28542-h/28542-h.htm>. Translated by author.

accept the deal because it would have meant acknowledging that Argentina *had* rights over the islands.⁴⁰⁵

Rosas also attempted to eliminate trade competition from the provinces of the Litoral (Santa Fe, Corrientes and Entre Rios). In 1845 he set up trade controls over the Parana River, which was navigable for hundreds of miles and reached deep into the south American interior, as well as connecting Brazil, Paraguay, Uruguay and Argentina with the Atlantic. His actions put Rosas in conflict with France and Britain, who desperately needed new markets, and an Anglo-French naval squadron swept upriver to reopen commerce with the Litoral.⁴⁰⁶

In 1845, briefly abandoning Castlereagh's policy of non-intervention, the Foreign Minister, Lord Aberdeen (a Scotsman), agreed to collaborate with the French in an endeavour to dismantle the Argentinian siege of the River Plate, which was part of Rosas's military operations against Uruguay.⁴⁰⁷ However, in 1847 the British saw that they were losing more trade in Buenos Aires and abandoned the blockade.⁴⁰⁸ Rosas agreed to pay part of the defaulted loan of 1824.⁴⁰⁹ Britain's naval action in those years is usually viewed as the most palpable assertion of British imperial interests – so-called gun boat diplomacy. Cain and Hopkins, Rock and even Platt, have suggested that this event was, in fact, the only case of active intervention by the British government. The blockade affected both the hundred or so British trading houses operating in Buenos Aires and Montevideo at the time and British exports, which in 1841 totalled £150 million (globally), of which about 10 per cent went to Latin America, with one fifth of that going to the River Plate.⁴¹⁰ Henry John Temple, 3rd Viscount Palmerston – the British Foreign Secretary when the blockade took place – demonstrated that he certainly preferred using economic influence and

⁴⁰⁵ Ferns, *Britain and Argentina in the Nineteenth Century*, p. 232.

⁴⁰⁶ Winn, 'British Informal Empire in Uruguay in the Nineteenth Century,' .

⁴⁰⁷ Ferns, *Britain's Informal Empire in Argentina, 1806–1914*.

⁴⁰⁸ Winn, 'British Informal Empire in Uruguay in the Nineteenth Century,' .

⁴⁰⁹ Ferns, *Britain's Informal Empire in Argentina, 1806–1914*.

⁴¹⁰ D. McLean, 'Trade, Politics and the Navy in Latin America: The British in the Paraná, 1845–46', *The Journal of Imperial and Commonwealth History*, vol. 35, no. 3 (2007)

believed that trade played the most significant role when he said: ‘Let us try to improve all these countries by the general influence of our commerce’.⁴¹¹

It seems like Palmerston’s policy was applied in Argentina and other parts of the globe. The war against China, the Turkish and Egyptian treaties of 1838 and 1841, and the attacks on Rosas and on Argentinian protectionism all reflected his particular belief that ‘it is the business of government to open and secure the roads for the merchant’.⁴¹² The Anglo-Moroccan Treaty of 1856 exemplified the desired arrangement with its abolition of most restrictions on imports, tariffs fixed at 10 per cent for revenue, not protection, and the promise of benefits of extraterritoriality for British residents. In the era of ‘informal empire’, this was the pattern of agreements with China, Japan, and other states.⁴¹³

Under Rosas the preservation and extension of property rights insured the well-being of the estancieros, especially in the Buenos Aires area. However, sheep and cattle farming and the fencing of land required capital and, if Argentina was to enter the world market, new transportation routes were essential.⁴¹⁴ The influence of Adam Smith remained strong and the provinces of the Litoral – especially Entre Rios – wanted free navigation on the rivers so that they could move their produce and trade abroad without passing through Buenos Aires.

1.4.4 A New State and the Opening of Trade (1852–1914)

In 1852 the leader of Entre Rio, General Justo José de Urquiza, defeated Rosas to become President of the Argentinian Confederation (1854 and 1860), setting up a temporary capital in Entre Rios. With Urquiza in place, free trade was open again and investments and people from abroad were welcome once more. The British could flourish again. Urquiza’s government proposed a federal constitution, which was

⁴¹¹ Steele, *Temple, Henry John, Third Viscount Palmerston (1784–1865)*.

⁴¹² Cain and Hopkins, ‘Gentlemanly Capitalism and British Expansion Overseas I. The Old Colonial System, 1688–1850,’ p. 523.

⁴¹³ Steele, *Temple, Henry John, Third Viscount Palmerston (1784–1865)*.

⁴¹⁴ Ferns, ‘Britain’s Informal Empire in Argentina, 1806–1914,’.

formed under the influence of liberal intellectuals like Sarmiento o Alberdi. Even though the constitution aimed to unify the country, it did not have Buenos Aires' consent, as the city did not want to open up the rivers or surrender control over its revenues. Buenos Aires declared its independence and remained separate from the Argentinian Confederation until 1862,⁴¹⁵ but confrontations between it and the provinces persisted. Both Buenos Aires and the provinces wanted to develop trade, industries and railways, and they both wanted connections with Britain and other European countries, but they did not want to share the benefits. Affected by the conflict, British businessmen felt the need to intervene to try to find agreement between Buenos Aires and the provinces. In 1854 Jose Maria Cullen, future governor of Santa Fe, and Daniel Gowland, chairman of the British merchants, were able to negotiate a temporary commercial agreement between the two.⁴¹⁶ It did not solve the political division, but it was a step towards economic unification.⁴¹⁷

The mastermind of the constitution was Juan Bautista Alberdi, who wrote 'Bases and Starting Points for the political organisation of the Republic of Argentina' just after the overthrow of Rosas. His most famous statement was 'to govern is to populate' and this determined migration policy in Argentina. He supported liberalism and saw Great Britain, France, and the United States as examples to follow:

To civilise a country it is necessary populate it with civilised people; to educate our country with freedom and industry we must populate our country with inhabitants from the most advanced and free European countries, as the United States did. Now, the United States can be capable of making a good, free citizen from a servile wretched immigrant due to the natural simple pressure exercised by its freedom...

But the American freedom is more European than it seems. The United States was made from the three united kingdoms of England, Ireland and Scotland. The free citizens of the United States are descendants of people of the free England,

⁴¹⁵ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, p. 129.

⁴¹⁶ Fernández-Gómez, *Argentina: Gesta Británica: Revaloración de Dos Siglos de Convivencia*, pp. 38–39.

⁴¹⁷ *Ibid.*, pp. 38–39.

free Switzerland, free Belgium, free Holland, the sensible and laborious Germany.

The English have been the most conquered of all, all nations have stepped on their soil and mixed their blood and race into it. The result is an infinite union of classes, which is why the *English is the most perfect of men*, and its nationality is so pronounced that it makes the common believe that their race is not mixed.

Freedom is a machine that, like steam, requires original Englishmen drivers. Without the cooperation of that race it is impossible for liberty and material progress to prevail and prosper.⁴¹⁸

He even saw the English language as the most important language to learn in Argentina:

The English language, as the language of freedom, industry and order, should be even more important than Latin ... That single innovation would make a fundamental change in the education of the youth. How to receive the example and the civilising of the Anglo race without the general possession of his language?⁴¹⁹

Alberdi was not the only one who admired the British. It was no coincidence that the first organised colony in Argentina in 1825 was British. More importantly in the context of this work, it was Scottish, and had the support of Rivadavia.

The position of these anglophiles on immigration, foreign investment and enterprise, and the introduction of railways, as outlined in the Constitution, would give Britain all the elements that it needed to expand its influence:

Art. 25.- The Federal Government will encourage European immigration, and it will not restrict, limit or burden with any taxes the entrance into Argentinian territory of foreigners who come with the goal of working the land, improving the industries and teaching the sciences and the arts.

⁴¹⁸ Alberdi, *Bases Y Puntos de Partida Para La Organización Política de La República de Argentina*, translation by author.

⁴¹⁹ Ibid.

Art. 67.- Congress shall have the power to provide for all that conduces to the prosperity of the country, to the advancement and welfare of all the provinces, and to the advancement of people by prescribing plans for general and university education and *by promoting industrial enterprise, immigration, the construction of railways and navigable canals, the colonisation of public lands, the introduction and establishment of more industries, and the importation of foreign capital*, by laws which protect these ends and temporary concessions of privileges and rewards.⁴²⁰

The Federal constitution made a few changes in 1860 when Buenos Aires was included, but its liberal nature was maintained. From that moment onwards, Argentina was open to foreign settlements and investment, and the country started to grow. The government wanted to unify the republic and therefore needed to develop the railway system and other communication services. Critically, British investments were largely associated with those services. In addition, the increasing number of free-trade policies in other Latin American countries, presented the British with a great business opportunity, as attested by the Brazilian minister's words in London in 1854:

Commerce between the two countries is carried out with English capital, on English ships, by English companies.... The profits ... the interest on the capital ... the payments for insurance, the commissions and dividends from business, everything goes into the pockets of Englishmen.⁴²¹

From the 1860s onwards there was a period of relative political stability: trade stabilised and investments increased considerably. Argentina once more became a land of opportunity for foreigners, who were able to influence the development of the new cities. Between 1862 and 1880 Argentina reorganised itself economically and politically, along liberal ideas.

Argentina represented an exceptional market for British manufacturers and British imports permanently exceeded Argentinian exports.⁴²² Indeed, the British had very

⁴²⁰ In Italic, emphasis by author.

⁴²¹ G. Hurd and D.N. Ashton, *Human Societies: An Introduction to Sociology* (London, 1986), p. 26.

⁴²² Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, p. 228.

low manufacturing costs and an abundance of commercial capital, as well as vast commercial experience and connections.⁴²³ Up to the early 1870s, British exports to Argentina were dominated by textiles and British investment was largely limited to commercial ventures and private estancias. However, a new trend had emerged in the 1860s that coincided with the introduction of the railway. Several joint-stock companies were organised by British entrepreneurs with British capital. In 1863 the first branch of the London and River Plate Bank was opened in Buenos Aires and one in Rosario followed three years later. Barings also issued new loans to the Argentinian government. This was the beginning of a steady flow of capital from Britain to Argentina, much of which was used for infrastructure, either as direct investments or as loans to the national government.⁴²⁴

More investments were to follow in the 1870s, when banks, factories and public utilities became the mayor beneficiaries. The railway was one of the main areas of investment, it was essential for economic growth, bringing agricultural exports from the vast hinterland of Buenos Aires and carrying in imported goods.⁴²⁵ By 1872, the gross trade of the country had doubled in less than ten years. The balance of trade steadily improved and the British Board of Trade returns show that English commerce with the River Plate had increased twice as rapidly as with the British colonies in general.⁴²⁶

The farming stock of the fourteen provinces was roughly set at 15 million horned cattle, 4 million horses, and 80 million sheep. Buenos Aires accounted for three quarters of the sheep, and half the cows and horses, with Santa Fe and Entre Rios next in importance. This contributed around of £30,000,000 per annum in exported produce.⁴²⁷

⁴²³ Ferns, *Britain and Argentina in the Nineteenth Century*, p. 78.

⁴²⁴ R.C. Conde, 'The growth of the Argentine economy, c. 1870–1914', in L. Bethell (ed.) *Argentina since Independence* (Cambridge, 1993), p. 43.

⁴²⁵ *Ibid.*, p. 43.

⁴²⁶ Mulhall and Mulhall, *Handbook of the River Plate Republics. Comprising Buenos Ayres and the Provinces of the Argentine Republic and the Republics of Uruguay and Paraguay*, p. 18.

⁴²⁷ *Ibid.*, p. 22.

There are few cities that have made such progress as rapidly as Buenos Aires. Whereas in 1860 it had only 10 miles of railway, by 1872 it had 400 miles. In 1860 there was only one line of ocean steamers, in 1872 there were fifteen lines travelling from England, France, Germany, Belgium, and Italy. In 1860 there were only two banks, in 1872 there were ten. In 1860 daily newspaper circulation was 3,000, in 1872 it was 30,000.⁴²⁸

In Buenos Aires, the population doubled from 100,000 in 1860 to 200,000 in 1872. In 1860 there was not a single English joint-stock company, nor an insurance office, in the country. By 1872 English investments amounted to £25,000,000 pounds sterling. In 1860 the number of immigrants was 4,700; in 1872, 96,000 migrants arrived. In 1860 the Post Office dealt with 400,000 letters and papers, in 1872 there were nearly 6,000,000. In 1860 customs revenues were about £200,000, by 1872 they had exceeded £4,000,000 sterling.⁴²⁹ All these activities needed an infrastructure to support them and iron and steel, other metal products, and coal became the most important British exports to Argentina.⁴³⁰

Old political and economic disagreements between the Confederation and the province of Buenos Aires were reconciled by making Buenos Aires the capital of the Republic in 1880. The administrations of Bartolome Mitre (1862–1868), Domingo Faustino Sarmiento (1868–1874), and Nicolas Avellaneda (1874–1880) dealt with occasional civil disturbances and began to re-establish the international credit standing of the country. The governments consolidated and reorganised the debts of the provinces, made new loans, set aside funds for road construction, railroad building, and public works, and established a new bank that limited the issuing of paper currency. Although the customs house began to function normally and to bring

⁴²⁸ Ibid., p. 74.

⁴²⁹ Ibid., p. 74.

⁴³⁰ Conde, *The Growth of the Argentine Economy, C. 1870–1914*, p. 43. For the role of coal as an instrument of informal empire in South America see: T. Boyns and S. Gray, ‘Welsh Coal and the Informal Empire in South America, 1850–1913’, *Atlantic Studies*, vol. 13, no. 1 (2016).

in much-needed revenues, national resources became severely strained by war with Paraguay (1864–1870) and the government was unable to balance its budget.⁴³¹

Argentina's trade with the United Kingdom was the root of the balance of payments deficit. In 1825, 76 per cent of Argentina's imports came from Great Britain and 57 per cent of her exports went to Great Britain. In the years between 1875 and 1880, the UK supplied 24.6–27.8 per cent of Argentinian imports while buying only 7.4–15.1 per cent of Argentinian exports. It was only in the 1890s, when Argentina became a large exporter of wheat and meat, that the country could enjoy a favourable balance of trade with Great Britain.⁴³² Even then, the boom in Argentina's agricultural exports was closely tied to the industrial economy of the United Kingdom, which supplied the railroad entrepreneurs who rapidly expanded the rail network into the pampas.⁴³³

By 1876 almost everything that Argentina produced was exported, and almost everything that it consumed (except meat, bread, and vegetables) was imported. The British played an important role in this, not only in the import/export trade but also in the institutions that dealt with foreign exchange. The international foreign exchange market was centred in London and the merchant houses and merchant banks employed foreign exchange brokers there to manage their transactions.⁴³⁴

The principal factor affecting fluctuations in the foreign exchange rate was the demand for imports and exports. In Argentina, when imports from the UK exceeded exports, the peso declined on the foreign exchange market because the demand for sterling exceeded the demand for pesos.⁴³⁵

⁴³¹ Reber, *British Mercantile Houses in Buenos Aires, 1810–1880*, p. 13.

⁴³² *Ibid.*, p. 23.

⁴³³ W. Fleming, 'Profits and Visions: British Capital and Railway Construction in Argentina, 1854–1886', in C. B. Davis, K. E. Wilburn, and R. E. Robinson (eds.) *Railway Imperialism* (New York, 1991), p. 81.

⁴³⁴ Reber, *British Mercantile Houses in Buenos Aires, 1810–1880*, p. 23.

⁴³⁵ *Ibid.*, p. 23.

The Baring Crisis

During the 1880s, imports of British goods such as iron and steel, items related to railway infrastructure, wire fences, threshing machines and steel ploughs, grew faster than exports in Argentina, generating a deficit in the trade balance that some believe was one of the elements that triggered the 1890 Baring crisis, when Barings Bank was nearly bankrupted by its investments in Argentina.⁴³⁶

In 1890 President Juárez Celman sent a number of decrees to Congress to check inflation and raise revenues. Unfortunately, these measures had no consensus, as the majority of voters benefitted from the existing system. The government of Buenos Aires was forced to sell its only remaining railway system, the Western (FCO), to try to reconcile its debt. Yet, even the £8,200,000 brought in by the sale was not enough to cover the whole deficit.⁴³⁷ As a consequence, Juárez Celman lost popularity and later, Carlos Pellegrini soon assumed the presidency.

The situation in 1891 was very upsetting for the investing classes. A substantial part of the sterling debt of the Republic was in default and the losses being experienced on the Stock Exchange were so abundant that the Foreign Office started to receive complaints and requests for intervention. An unofficial delegation of British bankers, acting privately, asked for ‘some power’ to create a provisional government in Argentina. They believed ‘Britain ought to do something’ or £200 million would be lost in a terrible collapse.⁴³⁸ However, the volume of complaints began to diminish when Argentina’s economy started to grow again after 1892. Argentinian wheat, meat, linseed and wool flooded into the world market in increasing volumes, and

⁴³⁶ C. Escude and A. Cisneros, ‘Tomo X. Las relaciones económicas de la Argentina con Gran Bretaña y Estados Unidos, 1880–1943’, in *Historia General de las Relaciones Exteriores de la Argentina (1806–1989)* (Buenos Aires, 2000). Accessible online: <http://www.ucema.edu.ar/ceieg/arg-rree/10/10-002a.htm>.

⁴³⁷ Ibid.

⁴³⁸ Ferns, *Argentina*, p. 115.

Argentinian net receipts, at least in the British market, mounted even more rapidly than the volume of goods sold.⁴³⁹

In the end, the British government was forced to intervene, as the Baring crisis had a huge impact on the British financial system as well. But a whole year had passed since the beginning of the crisis before the British Treasury finally agreed to put resources behind the Bank of England to assist with the orderly liquidation of Barings.⁴⁴⁰

For Argentina, the only way to manage the crisis was by encouraging exports (with new investments from Britain and other European countries), increasing tax on imports, and reducing guarantees in the railway system. To achieve this, financial help from Britain was again needed. In 1893, the Romero Deal was signed, giving Argentina a reduction on the interest on her existing debt. Argentina could then pay the debt and expand the export economy again.⁴⁴¹

For Cain and Hopkins, the wider consequences of the Baring crisis were that it facilitated the penetration of the Argentinian economy by British firms, giving them the chance to increase their influence on the railways and public utilities, as well as in banking and insurance. In addition, the crisis brought down two large Argentinian banks – the National and the Banco de la Provincia, – and left the London and River Plate bank in a virtually unassailable position, thereby ending any possibility that Argentina could build a nationally owned rail network. This was reinforced in 1907 by the Mitre Law, which encouraged the expansion of private rail networks and, with them, British control.⁴⁴²

Between 1895 and 1900 export prices were around 25 per cent higher than the average for 1890–1895. As prosperity returned, the government was able to make

⁴³⁹ Ferns, 'Britain's Informal Empire in Argentina, 1806–1914,' .

⁴⁴⁰ Escude and Cisneros, *Tomo X. Las relaciones económicas de la Argentina con Gran Bretaña y Estados Unidos, 1880–1943*.

⁴⁴¹ Ibid.

⁴⁴² Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, p. 296.

payments on the foreign debt before the date specified in the Romero Pact. The gross national product increased by around 6 per cent a year, as it had in the 1880s.

Farmland in use grew from 5 million hectares to 24 million in 1914. The acreage of wheat tripled, corn quadrupled and linseed quintupled during the same period.

Consequently, railroad cargoes increased from 5 million tons to 42 million tons between 1890 and 1913. By 1914 Argentina had become a primary exporter serving the industrial economies. Britain was still Argentina's leading trade partner, buying between 20 and 40 per cent of her meat and cereals.⁴⁴³

Interestingly, much of the economic expansion seen in the first decade of the twentieth century was the result of changes that transformed the cattle industry.

Refrigerated ships, for example, made meat exports possible and Argentina's cattle stock had been improved by breeding with imported British cattle. Changes in land use, including sowing pastures to feed cattle, enabled more cattle to be farmed. These changes required a reorientation of investments and of technology.⁴⁴⁴ And, of course, British capital and technology were once again necessary.

According to Cain and Hopkins, the expansionist years after the crisis confirmed the dominance of the Anglophile elite in Argentina, guaranteed political stability and softened criticism of the inequalities generated by the export sector. In Great Britain, the boom produced steady profits on secure investments. British investments in Argentina also financed an increasing volume of manufactured imports. Argentina after the crisis could symbolise the recognition by the elite that its hold on power depended on the ability of both government and private firms to continue to raise funds in London.⁴⁴⁵

⁴⁴³ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, pp. 165–168.

⁴⁴⁴ R. Cortés Conde, *The Political Economy of Argentina in the Twentieth Century* (New York, 2009), p. 17.

⁴⁴⁵ Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, pp. 297–98.

1.4.5 The World Wars and the Decline of the British Connection (1914–1948)

By the beginning of the First World War, Argentina had developed a reputation as a great exporting nation, in spite of average import tariffs consistently above 20 per cent, and by 1913 it was the tenth richest economy in the world in per capita terms. The country had experienced around twenty years of continuous expansion. Buenos Aires had become the second city on the Atlantic seaboard, after New York, and by far the largest city in Latin America. The city was the pivot of the railroad system and the port of entry for almost all of Argentina's imports, as well as the hub of government, and the centre of banking and finance.⁴⁴⁶ The pampas region (Buenos Aires province, southern Santa Fe, eastern Cordoba, Entre Rios, and the territory of La Pampa) was more advanced than the rest of the country. It was covered by a dense network of railways. Its landed estates were clearly demarcated by iron wire – an element brought over from England by Richard Newton in 1845 – its landscape was dotted with small towns, windmills, scattered homesteads and water troughs. Just after the First World War, this part of the country (including the city of Buenos Aires) accounted for more than 90 per cent of Argentina's automobiles and telephones and no less than 42 per cent of the railways in the whole of Latin America. The Argentinian pampas was the source of half of South America's foreign trade.⁴⁴⁷ Argentina's growth, however, was to be severely interrupted by the First World War, which caused a substantial economic decline as both export markets and the import of key intermediate goods were disrupted.⁴⁴⁸

In 1914 there was as yet no alternative to the primary export economy, in spite of a recent surge in manufacturing that meant that by 1913 local industry provided one-third of Argentina's processed food products, one-eighth of its metals and one-sixth of its textiles. Local manufacturing, however, was heavily dependent on the growth

⁴⁴⁶ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, pp. 172–173.

⁴⁴⁷ D. Rock, 'Argentina in 1914: The pampas, the interior, Buenos Aires', in L. Bethell (ed.) *Argentina since Independence* (Cambridge, 1993), p. 117.

⁴⁴⁸ D. Debowicz and P. Segal, 'Structural Change in Argentina, 1935–1960: The Role of Import Substitution and Factor Endowments', *The Journal of Economic History*, vol. 74, no. 1 (2014)

of domestic demand, incomes from the export sector, and the inflow of foreign investment. At that point, despite the wide adoption of steam power, most industries were simple handicrafts, employing little capital or machinery. The metal and textile industries were much less established. Local metallurgical plants used imported raw materials. The developing textile industry in Buenos Aires also used a high proportion of imported raw materials. Since there were relatively scant reserves of coal and iron in Argentina, it was only possible to enhance industries by increasing investment; the country had no easy in-built capacity to lessen its dependence on imports.⁴⁴⁹

By the 1920s American investment was higher than the British. But this did not affect the basic economic structure of the country, although it certainly affected commercial links with Great Britain. The British share of the Argentinian market fell from 30 to 19 per cent, while the American share increased from 15 to 24 per cent between 1913 and 1930. But still, Argentina continued to depend on Britain for its export earnings.⁴⁵⁰

Those export earnings would remain at the mercy of British demand for the next twenty years, with often devastating effects in Argentina. Exports decreased, prices dropped, and the production of frozen and canned beef almost disappeared. Only meat-packing plants that could adapt their production lines to the chilled-beef trade avoided the impact of the decline in demand. Suffering from a significant depression, local ranchers asked the government to intervene; its inability to do so was seen as a 'demonstration of the power of foreign-dominated monopolies'.⁴⁵¹ Later, in 1929, the Argentinian Minister for Foreign Affairs observed that 'Argentina had always offered such a good field for British enterprise and capital, that she was to some

⁴⁴⁹ Rock, *Argentina in 1914: The Pampas, the Interior, Buenos Aires*, p. 117.

⁴⁵⁰ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, pp. 198–199.

⁴⁵¹ *Ibid.*, p. 205.

extent an economic dependency of Great Britain, and could, therefore, claim the same preferential treatment as the Dominions'.⁴⁵²

The 1930s are known as the period in which Argentina moved into the import substitution era. The main author of the policy was Raúl Prebisch, who later developed the 'dependency theory' and believed that industry needed to be promoted in order to reduce imports.⁴⁵³ Prebisch suggested that the reason Latin American countries were poorer was because they exported primary products to the rich countries, whose manufactured goods were then sold back to the poorer countries. While manufactured products cost more than primary products, poorer countries would never earn enough from their exports to pay for their imports. The main solution to the problem was import substitution. Poorer countries could then still sell their primary products on the world market, but their foreign exchange reserves would not be used to purchase manufactured products from abroad.⁴⁵⁴ In Argentina, some re-ordering of the industrial strategy was attempted but there was no radical change.

The decade from 1930–40 was known as 'the infamous decade', as the conservatives repeatedly rigged elections to keep themselves in power. The deposition of the radical Hipolito Yrigoyen in the first coup in 1930, led by Jose Felix Uriburu, included the arrest or exile of radical leaders. The conservative government tried to cope with its internal debt by making heavy public spending cuts, but this, along with an increase in tariffs and the introduction of exchange controls, meant a decrease in the demand for imports and also affected trade revenues. Thus, it seemed once more that the only solution was to renew foreign investments.⁴⁵⁵

⁴⁵² W.R. Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948* (Texas, 1974), p. 134.

⁴⁵³ Debowicz and Segal, 'Structural Change in Argentina, 1935–1960: The Role of Import Substitution and Factor Endowments,' .

⁴⁵⁴ Ferraro, 'Dependency Theory: An Introduction,' .

⁴⁵⁵ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, p. 223.

The Roca-Runciman Treaty

In 1933, another commercial agreement was signed in London by the Vice President of Argentina, Julio Argentino Roca, and the president of the British Board of Trade, Sir Walter Runciman. This agreement, called the Roca-Runciman treaty, lasted three years and turned out to be an extremely uneven treaty since Britain undoubtedly received by far the greatest benefits. David Rock summarised the most salient points of the agreement, in which Britain agreed to continue taking the same quantity of Argentinian beef as in 1932 (the lowest point in the Great Depression), and Argentinian-owned meat processing plants would provide 15 per cent of the nation's meat exports to Britain.⁴⁵⁶

These were the only substantial concessions made by the British. They applied to beef alone and they merely kept trade at the same level as in early 1932. In return, Argentina agreed to reduce tariffs on almost 350 British goods, including coal, that were still on the free list. Argentina also committed itself to the 'benevolent treatment' of British companies, which were to be given priority in the distribution of permits under the newly reformed exchange control system. The treaty also included two concessions to the British railroads: an exemption from certain labour legislation, including the funding of pension programmes, and the promise of favourable remittance terms in the event of future devaluations in Argentina.⁴⁵⁷

The treaty generated strong nationalist feeling that gathered pace between the two world wars as British investment declined. The decline of the Anglo-Argentinian relationship was symbolised by the official transfer of 16,000 miles of British-owned railway to Argentinian ownership under President General Juan Domingo Peron in 1948,⁴⁵⁸ and it reached its nadir in the Malvinas/ Falkland Islands war of 1982.⁴⁵⁹

⁴⁵⁶ Ibid., p. 134.

⁴⁵⁷ Ibid., sp. 134.

⁴⁵⁸ Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948*.

⁴⁵⁹ Rock, *The British of Argentina*, p. 43.

After the First World War (1914–1918), in spite of numerous attempts to re-establish links, Anglo-Argentinian trade started to decline. Numerous import firms and small banks were liquidated and many of the British companies, including the railways, were ready to sell out.⁴⁶⁰ This situation changed British opportunities and affected the British community as a whole. In 1944 *The Standard* wrote:

Every schoolboy knows that the British community is dwindling away due to lack of imports...in a number of years; there will be no British-born people in the country at all.⁴⁶¹

With the passage of time the situation did not improve. After the Second World War (1939–1945), Great Britain lost its competitive edge as it failed to redevelop its manufacturing industry and conceded the Latin American market to the United States.⁴⁶² In 1948 the nationalisation of the railways meant the end of the Anglo-Argentinian relationship and the British community in general.

⁴⁶⁰ Ibid., p. 36.

⁴⁶¹ Ibid., p. 36.

⁴⁶² Ibid., pp. 40–41.

1.5 Colonial Patterns

As previously stated, Gallagher and Robinson have identified similar patterns in formal and informal colonies around the world with respect to trade, investment, migration and culture. The railway was another element that characterised British imperialism and, for that reason, it will be included in the analysis of these fields in relation to Argentina.

Remarkably, the majority of investments in Argentina were related to British enterprises. For instance, the British-owned railway system was designed and built by British engineers, using duty-free coal imported from Great Britain, and British materials (especially iron) carried in British ships. In addition, the railway system helped transport British goods within the country. However, the railways were not the only enterprise related to public services that the British invested in. They loaned sums to water, gas, light and power companies. They also managed telegraph and port amenities. Even though these projects contributed significantly towards urban development, they greatly benefited private enterprises as well as British economic expansion.

1.5.1 Investments

From the 1820s until the outbreak of World War I, British investors supplied more long-term capital to Central and South America than any other group of foreign investors. British holdings in South and Central America in 1913 represented about one-fifth of the country's overseas investments.⁴⁶³

Until 1914, British investments in Argentina made up the largest proportion of investments made by British investors in any country outside the British empire, with the exception of the United States. The estimated British investment was £319,600,000, or 8.5 % of all British external investments before 1914.⁴⁶⁴ For this

⁴⁶³ I. Stone, 'British Long-Term Investment in Latin America, 1865–1913', *The Business History Review*, vol. 42, no. 3 (1968).

⁴⁶⁴ Ferns, 'Beginnings of British Investment in Argentina'.

reason, Alan Knight states that, ‘if India was the jewel in Britain’s imperial crown, Argentina was the prize possession within her informal empire’. In addition, British investment in Argentina shared a similar pattern with the formal colonies of South Africa and New Zealand.⁴⁶⁵ For an illustration of the proportion of British foreign investments in 1914 see **Figure 1–11**.

In Argentina, in particular, three different periods of investment can be defined: 1820–1865, 1865–1914, and after 1914.

1.5.1.1 British Investments 1820–65

In Latin America and Argentina, government loans and mining were the two main destinations for British capital in 1820–65.⁴⁶⁶

In the era of liberation, during the early 1820s, the new republics needed loans to fund their fledgling states.⁴⁶⁷ The recognition of independence from Great Britain, commercial agreements, and loans went hand-in-hand. British investment was clearly a magnificent help but, with the passage of the time, it became a lever of financial domination, as substantial loans and dependence on British finance meant that countries could be threatened with credit suspension and bankruptcy,⁴⁶⁸ as we saw in the Baring crisis.⁴⁶⁹

Baring Brothers bank had been connected with the River Plate area since it began to support the traders there in 1802, but it was during Rivadavia’s administration that the Argentinian government took its first loan in 1824. The £1 million loan was the most controversial loan in Argentina’s history, as the government of Buenos Aires received only 57 per cent of the credit and the rest was taken by Baring in

⁴⁶⁵ Knight, *Rethinking British Informal Empire in Latin America (Especially Argentina)*, p. 35.

⁴⁶⁶ Stone, *British Long-Term Investment in Latin America, 1865–1913*.

⁴⁶⁷ Ibid.

⁴⁶⁸ W.H. Koebel, *British Exploits in South America; A History of British Activities in Exploration, Military Adventure, Diplomacy, Science, and Trade, in Latin America* (New York, 1917)..

⁴⁶⁹ Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*.

commission and interest. Nor, as mentioned before, could the money be used for the water and harbour works as anticipated. It took eighty years to settle the debt.⁴⁷⁰

When Rivadavia visited London in 1824 he was also looking for investments in mining in Argentina. Two companies were keen to mine silver in Argentina. One, the Famatina Mining Company, was led by John Parish Robertson with the financial support of Baring Brothers. The other was led by Rivadavia, whose company had the financial support of a minor bank, Hullelt House, which had already acted as financial agent for the government of Buenos Aires and with which Rivadavia had been involved since 1820. Both companies proposed to explore Famatina in la Rioja, and both were unsuccessful because they needed a huge amount of investment to mine an area that was difficult to access, politically unstable, and had very low-grade silver.⁴⁷¹ Ultimately, the only company that successfully exploited it was La Mexicana, a company founded with British capital in 1902, but even then its business declined after the First World War.⁴⁷²

Rivadavia also encouraged the formation of the first bank in Argentina. It was formed privately by a committee of nine people, three of whom were British merchants. In 1822 the government approved the foundation of the Banco de Descuentos better known as Banco de la Provincia de Buenos Aires (Provincial bank), then in 1826 it changed to Banco Nacional de las Provincias Unidas del Rio de la Plata, with more government intervention. However, as its business was restricted to Argentina and it had no European correspondent, it had to rely on British merchants for international transactions. Oddly enough, rather than the merchants borrowing money from the bank, the bank borrowed from the merchants as, for instance, happened in 1827 when the bank borrowed over 140,000 pesos from British merchants to pay dividends due on the Baring's loan from 1824. This cooperation between the government and the commercial community ended in 1836, as Rosas did

⁴⁷⁰ Ferns, 'Beginnings of British Investment in Argentina,'

⁴⁷¹ Reber, *British Mercantile Houses in Buenos Aires, 1810–1880*, p. 128.

⁴⁷² The area seems to be a good source of gold, silver, iron and other metals, but local population is against its exploitation as it can put in danger the water source for the population. See: 'Beder Herrera suspende proyecto minero en Famatina,' *La Gaceta Mercantil*, January 17, 2012.

not want British involvement in the operation of the bank. Nevertheless, the British had experience and skills that were difficult to deny, and some – including Edward Lumb, Thomas Armstrong and George Drabble – continued to serve as directors of government banks.⁴⁷³

1.5.1.2 British Investments 1865–1914

From the 1860s there was a new wave of investments and immigration, which once again pushed the need to enhance the ports and railways and to promote industry. This changed the trend in investments, and private investment started to exceed public loans in importance, mainly because of the introduction of the railways. British private companies were mainly registered in Great Britain under the English Companies Acts; they issued their shares and debentures in sterling and maintained their principal offices in England. Most of their officers, directors, and supervisory personnel were British. All of this meant that part of their revenues went back to Britain, not Argentina.⁴⁷⁴

The period between 1880 and 1890 was one of great investment in Argentina: two-thirds of British investment abroad took place in the country. Other European countries like France, Germany and Belgium also began to invest.⁴⁷⁵ During the late 1880s there were such expectations surrounding the development of Argentina that between a quarter and a half of the new issues in the London capital market were made on behalf of Argentinian enterprises.⁴⁷⁶

British investments in Latin America generally followed the same pattern, with the main destination for British capital being railways, public loans, public utilities (canals and docks, gas and electric, telegraphs, tramways) and financial businesses,

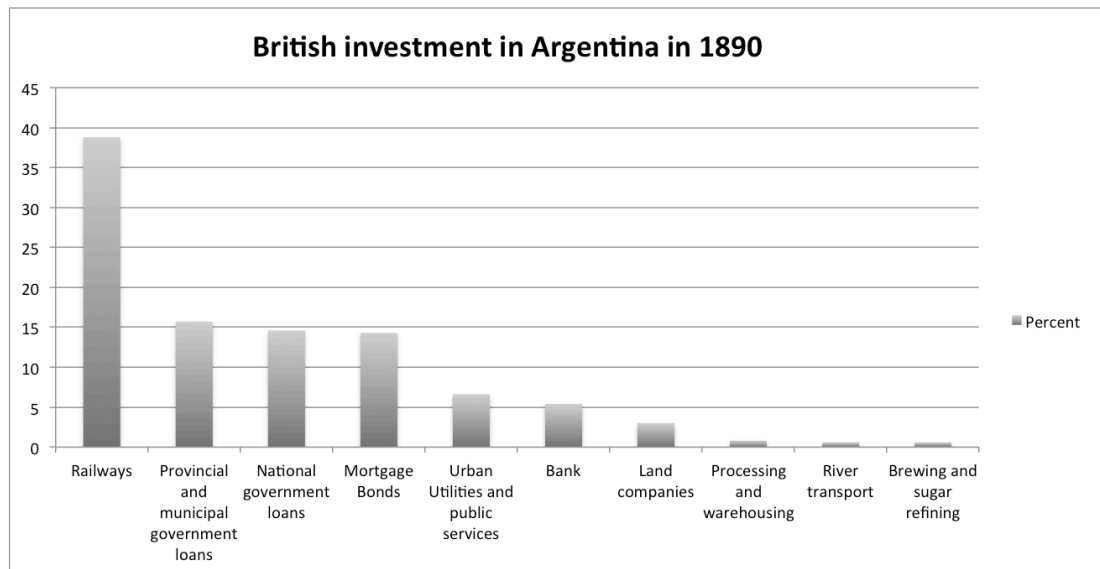
⁴⁷³ Reber, *British Mercantile Houses in Buenos Aires, 1810–1880*, pp. 118–120.

⁴⁷⁴ Stone, 'British Long-Term Investment in Latin America, 1865–1913,'

⁴⁷⁵ C. Escude and A. Ibid. Cisneros, 'Tomo X. Las relaciones económicas de la Argentina con Gran Bretaña y Estados Unidos, 1880–1943', in *Historia General de las Relaciones Exteriores de la Argentina (1806–1989)* (Buenos Aires, 2000). Accessible online: <http://www.ucema.edu.ar/ceieg/arg-ree/10/10-002a.htm>.

⁴⁷⁶ Ferns, *Argentina*, p. 102.

the exploitation of raw materials, industry and shipping companies.⁴⁷⁷ These activities were usually interconnected and linked the British with partners abroad. Argentina was the main destination, and the way these investments were distributed is illustrated in **Graph 1–4**.



Graph 1–4. British investment in Argentina in 1890. Source: Made by author with information taken from R. Gravil, ‘The Anglo-Argentinian Connection and the War of 1914–1918’, *Journal of Latin American Studies*, vol. 9, no. 01 (1977)

Even after periods of crisis, this trend was maintained. In 1904–1913 British investment still mainly went to private railways, and railroad investment rose from 346 million gold pesos in 1890 to 1,358 million in 1913.⁴⁷⁸

Table 1–4 illustrates how some of the British loans granted to the Argentinian government were also connected with British activity in Argentina. Note that British

⁴⁷⁷ Stone, *British Long-Term Investment in Latin America, 1865–1913*.

⁴⁷⁸ Rock, *Argentina 1516–1987: From Spanish Colonization to Alfonsín*, p. 169.

loans were still needed for the extension of the state-owned railways and even the purchase of the British-owned railway in 1948.

Some British Loans Granted to the Argentinian Government		
Year	Thousands of pounds	Destination
1824	1	Public Works
1844/45	1.64	Public Works
1862	1	notes conversion
1868	2.5	Public Works
1870	1.04	Public Works
1870	6.12	Public Works
1873	2.04	Railways
1880	2.45	Railways
1882	1.71	Railways
1885	8.33	Public Works
1886/93	2.02	restructuring Banco Nacional
1887/93	3.94	Buenos Aires Province
1876/87	620	notes conversion
1888	5.3	notes conversion
1863/89	2.66	notes conversion
1885/86	3.97	Railway Noroeste Argentino
1889	2.98	Railway Noroeste Argentino
1882/90	2	Port of Buenos Aires
1891	6.32	Sanitary works
1896	9.92	Railways guarantees
1899	1.69	Railways guarantees
1897/98	1.53	Debt Cancellation of National Bank
1896/97	6.75	exchange of the bonds of Pcia. Buenos Aires debt
1896	3.03	Debt conversion Pcia. Santa Fe
1896/99	2.83	Debt conversion Pcia. E. Ríos
1896/99	1.02	Debt conversion Pcia. de Córdoba
1896	660	Debt conversion Pcia. Tucumán
1896/99	970	Debt conversion Pcia. de Santa Fe
1901	222	to paid interest of old debts
1906/09	4.5	Railway extension Noroeste
1906	11	Bonds conversion Bco. Hipot. Nacional
1908	1.5	sewage
1907	3.4	Railway Meridiano V
1907	1.1	works Avenida Mitre - Avellaneda
1909	2.35	Railway extension Noroeste
1907/1913	15	Municipals loans
1910	15.4	Rambla de Mar del Plata

1914	2	Debt Consolidation
1916	5	Treasury Bonds
1947	110	British Railways Purchase

Table 1–4. Some British loans granted to the Argentinian government. Source: E.M. Fernández-Gómez, *Argentina: Gesta Británica: Revaloración de Dos Siglos de Convivencia* (Buenos Aires, 1993), p. 57. Translated by author

1.5.2 Railways

Beginning in the 1820s in Great Britain, and in 1830s in the United States, the railways brought huge changes – political, economic and social – throughout the world. Almost every government in developing countries where there was a progressive elite wanted railways for their national development, as they were aware that a country without trains was likely to remain poor and incapable of modern administration. The process of nation building gained momentum thanks to growing railways networks. For example, in the late 1840s a common rail system helped integrate the diverse German states, as did those in India, Russia, and parts of Canada in the 1850s.⁴⁷⁹

In Argentina the railway was similarly desired. It, along with free trade and river transportation, promised development, civilisation, wealth and social integration to the new state. But, as Alberdi suggests,⁴⁸⁰ and as was reflected in the Constitution, these developments were not possible without European intervention:

Art 64. To provide for the prosperity of the country, the advancement and welfare of all the provinces, and the progress of enlightenment, fostering teaching plans and university general education and promoting industry, immigration, *the construction of railways and waterways*, land settlement of national ownership, the introduction and establishment of new industries, *imports of foreign capital* and exploring inland rivers, through laws protecting these

⁴⁷⁹ Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948*, pp. 10–11.

⁴⁸⁰ Alberdi, *Bases Y Puntos de Partida Para La Organización Política de La República de Argentina*.

purposes and temporary concessions stimulus privileges and rewards.⁴⁸¹

Thus, railway construction started in Buenos Aires in 1856, though little was done in the first ten years. Presidents Mitre (1862–68), Sarmiento (1868–74) and Avellaneda (1874–1880) encouraged railway expansion in Argentina and used state resources to boost private foreign-owned railway companies. Their policies guaranteed returns on foreign investments designed to convert Argentina into a large-scale exporter of agricultural products.⁴⁸²

Between 1856 and 1914 Argentina had the largest railway network in Latin America.⁴⁸³ It had been constructed largely by British directors, managers, architects and engineers from materials brought from Great Britain. Britain provided more than 70 per cent of locomotives, more than 60 per cent of freight wagons, around half of the passenger wagons and boxcars, iron wheels, and other parts. In addition, more than 80 per cent of the railway equipment brought from Britain to Argentina was tax-free.⁴⁸⁴ It can be estimated that between 50 and 60 per cent of the capital invested was used in purchases from Britain, with the rest invested in the country, mainly in the labour used in the preparation of embankments, laying of rail track, and station construction.⁴⁸⁵ Iron played an important role, and iron usage in Argentina was mainly connected with railway construction, as will be demonstrated in Section 2.

By 1929 the rail network in Argentina extended over 37,550 kilometres, 25,906 km of which was owned by British companies, 4,171 km by the French, and the rest by the state. Among the major British companies were: the Buenos Ayres Western Railway (FCO) – which was originally stated-owned – with 4,842 kilometres; the Central Argentine Railway (5,368 kilometres); the Buenos Ayres Great Southern

⁴⁸¹ *Constitucion Nacional Argentina de 1853*. Translation and emphasis by author.

⁴⁸² Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948*, p. 46.

⁴⁸³ *Ibid.*, p. 5.

⁴⁸⁴ E. Zalduendo, ‘Las Inversiones Britanicas para la Promocion y Desarrollo de Ferrocarriles en el Siglo XIX. Los casos de Argentina Brasil, Canada e India’ (PhD thesis, 1969), pp. 213–238.

⁴⁸⁵ Zalduendo, *Libras Y Rieles: Las Inversiones Britanicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*, p. 293.

Railway (FCCA) (6,739 kilometres); and Buenos Ayres & Pacific Railway Company (FCBP) (4,695 kilometres).⁴⁸⁶ **Figure 1–12** helps to illustrate the extent of British-owned railways in Argentina.

The Southern and the Central were the two biggest railway companies owned by the British and they had headquarters in London and offices in Wilde and Quilmes. The creation of these railway lines also coincided with the founding of the London & River Plate Bank, later the Bank of London and South America (now part of Lloyds Bank).⁴⁸⁷

Table 1–5 shows the ownership of the various railway lines. The history of the railways in Argentina is very long and complex and, in the following sections, I attempt to illustrate briefly how the most important British railway companies were formed and operated, in order to demonstrate their role as empire builders.

Railway Companies in Argentina	
British-owned	Argentinian Great Western, Argentinian North Eastern, Argentinian North Western, Argentinian Transandine Railway Company, Bahía Blanca & North Western, Buenos Aires & Campana, Buenos Aires & Ensenada Port, Buenos Aires Great Southern Buenos Aires, Midland Buenos Aires, Northern, Buenos Aires & Pacific, Buenos Aires & Rosario, Buenos Aires & San Fernando, Buenos Aires Western, Central Argentinian, Central Chubut, Córdoba Central, Córdoba North, Western, Córdoba & Rosario, East Argentinian, Entre Ríos, La Boca and Barracas Railway, Rafaela Steam Tramway, Santa Fe & Córdoba, Great Southern, Santa Fe Western, Villa María & Rufino.
French-owned	Compañía General en la Provincia de Buenos Aires, Provincial de Santa Fe, Rosario y Puerto Belgrano, San Cristobal a Tucumán.
State-owned Pre-1948	Andino, Argentino del Norte, Central de Buenos Aires, Central Entrerriano, Central Norte, Central Chubut Railway, Córdoba Central, Córdoba North Western Railway, Oeste, Patagónicos, Primer Entrerriano, Provincial de Buenos Aires, Provincial del Puerto de La Plata al Meridiano V, Provincial de Santa Fe, Rural de la Provincia de Buenos Aires, Tranvia Rural.

Table 1–5. . Railway companies in Argentina. Source:

http://www.worldlibrary.org/articles/Buenos_Aires_and_Pacific_Railway

⁴⁸⁶ M.J. Lopez, ‘El Problema Ferroviario Argentino y la Nacionalización de las Compañías de Capital Británico en 1948’, *Dialnet*, no. 15 (2008).

⁴⁸⁷ Rock, *The British of Argentina*, p. 27.

1.5.2.1 The Buenos Aires Western Railway (FCO)

This was the first line ever built in Argentina. It was constructed in Buenos Aires, which at that time, and until 1862, functioned separately from the Confederation. Buenos Aires, which received revenues from the port, was in a better position than other provinces to think about building railways without the need for foreign loans. With aspirations to be a *porteño*⁴⁸⁸ creation, the railway only used capital provided by local government and residents. As the line linked Buenos Aires to the west side of the city, it was called the Buenos Aires Western Railway (FCO).

More than thirty merchant residents of Buenos Aires, many of them of European and British origin and well connected with the British financial circle of Buenos Aires, contributed to the railway's construction. The government of Buenos Aires owned the highest proportion, but the technology was brought from Great Britain. The engineers were the Englishman William Bragge, who brought with him 160 British navvies,⁴⁸⁹ and the Frenchmen J. Mouillard and J. Allan. The English firm E. B. Wilson & Co. provided the rolling stock and locomotives, including the famous 'La Porteña'. The main items demanded by the company before 1860 were Barlow-type iron rails, imported entirely from Britain using 40 per cent of total investments. Indeed, it is estimated that three quarters of the total investment was used to purchase capital goods made in Britain. In 1862 ownership of the FCO was transferred solely to the provincial government. This national character lasted for almost thirty years, until the debt and financial crisis of 1890 forced the sale of the company to the British Buenos Aires Western Railway (Still called FCO), which then increased its lines in Buenos Aires and La Pampa to reach Mendoza.⁴⁹⁰

⁴⁸⁸ Term is still in use today to refer a person who lives in the port city of Buenos Aires.

⁴⁸⁹ C.M. Lewis, *British Railways in Argentina, 1857–1914: a Case Study of Foreign Investment* (London, 1983), p. 19.

⁴⁹⁰ Zalduendo, *Libras Y Rieles: Las Inversiones Británicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*, pp. 265–267.

1.5.2.2 Central Argentinian Railway (FCCA)

While Buenos Aires was organising its line, the Confederation was trying to get its own line underway. However, the region was more impoverished, more remote, and had a smaller population than Buenos Aires. The only negotiable asset the Confederation possessed was land, and the political instability and conflicts with Buenos Aires did not encourage foreign investment.⁴⁹¹ In 1854 the government of the Confederation commissioned the American Engineer Allen Campbell to survey the terrain for the construction of a line between Cordoba and Rosario, but it was only after Buenos Aires and the Confederation were integrated in 1862 that the government was able to stimulate foreign investment – by guaranteeing a 7 per cent return and granting extensive land – that the construction of the FCCA could begin.⁴⁹² It was the first private and the first British-owned railway company.

Not having enough capital to invest was a problem in many of the provinces and they were often forced to attract foreign investors by handing out generous grants of land and duty-free concessions on the import of all the equipment and material used to construct and operate the railway system. They did, however, issue contracts that limited the period of private ownership to up to ninety-nine years, after which the railway and all its properties reverted to the government on payment of its valued price. These terms differed very little from railway concessions in formal colonies such as India.⁴⁹³ In fact, the terms offered on the Indian railway – a guaranteed rate of interest linked to a railway concession and a grant of one league of land on either side for development – matched the terms given to the FCCA. According to Zalduendo, the FCCA had the most generous agreement with the local government.⁴⁹⁴

⁴⁹¹ Lewis, *British Railways in Argentina, 1857–1914: A Case Study of Foreign Investment*, p. 10.

⁴⁹² Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948*, p. 17.

⁴⁹³ *Ibid.*, p. 19.

⁴⁹⁴ Zalduendo, *Libras Y Rieles: Las Inversiones Británicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*.

An American, Wheelwright, was key to the negotiations for the FCCA, but it was the experience and capital of the contractors, Thomas Brassey, the Scotsman Alexander Ogilvie, and George Wythes that gave the project credibility. Their willingness to accept half the land granted in part-payment was a good incentive for the development.⁴⁹⁵

Railway businessmen, traders, bankers and politicians formed the Board of directors of the FCCA. Among the major shareholders were the president of the Bank of London and River Plate, Henry Bruce. According to the concession agreement, the company should have been legally domiciled in Argentina, but this demand was not met and was obviated by the appointment of a resident director – Thomas Armstrong – but the situation was known to the Argentinian government.⁴⁹⁶

In addition to these larger investors was a group of 411 people representing a good cross-section of Britain's middle class. From the Argentinian side, among the private investors was ex-president Justo Jose Urquiza. The Argentinian government also bought heavily into the company but more for political and military than economic reasons.⁴⁹⁷

By the 1870s the FCCA was the most important and most extensive railway company in Argentina. Companies such as the Cordova Land Co. Ltd. and the Central Argentine Land Co. (later, Central Argentine Land and Investment Co.) exploited the lands surrounding the FCCA line and established agricultural

⁴⁹⁵ Chrimes, 'British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century,' .

⁴⁹⁶ Zalduendo, *Libras Y Rieles: Las Inversiones Britanicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*, p. 289.

⁴⁹⁷ Goodwin Paul B, 'The Central Argentine Railway and the Economic Development of Argentina, 1854–1881,' .

colonies.⁴⁹⁸ In 1870, the Central Argentine Land Company controlled over 900,000 British acres.⁴⁹⁹

In 1903 the Central Argentine Railway incorporated other lines: the Buenos Aires and Campana, the B. A. and Rosario, the Santa Fe and Cordoba Great Southern Railway (FCSSFyC), the Santa Fe and Cordoba Southern Extension Railway, and the old Central Argentine Company. Later the Buenos Aires Northern, a portion of the FCO, and eventually the Western of Santa Fe, came under its control. In 1940 the FCCA was the second longest railroad in Argentina, with over 3,700 miles of track serving the great cities of Buenos Aires, Rosario, Tucuman and Santa Fe.⁵⁰⁰

1.5.2.3 Buenos Ayres Great Southern Railway (FCS)

The Buenos Ayres Great Southern Railway (FCS) was founded in 1862 by Edward Lumb, who intended to build a line south from Buenos Aires to Chascomús. Lumb was a British resident in Buenos Aires, one of the province's wealthiest merchants and landowners and a man with important political connections. Other British residents supported the initiative, including Thomas Duguid, David Robertson, Thomas Fair and Frank Parish.⁵⁰¹

The construction of the line was commissioned to Samuel M. Peto and E. Ladd Betts, who had consolidated their reputation during the early 1850s with the construction of railways in Great Britain and were starting to undertake important projects abroad, including the Danish railway and the extensive Grand Trunk railroad of Canada.⁵⁰²

⁴⁹⁸ Zalduendo, *Libras Y Rieles: Las Inversiones Británicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*, p. 296.

⁴⁹⁹ R. Schmidt, 'British Capital And Argentine Railroad Enterprises, 1860–1945' (Master thesis, 1947), p. 3.

⁵⁰⁰ R. Schmidt, 'British Capital And Argentine Railroad Enterprises, 1860–1945' (Master thesis, 1947), p. 3.

⁵⁰¹ Zalduendo, *Libras Y Rieles: Las Inversiones Británicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*, p. 302.

⁵⁰² M.H. Port, 'Betts, Edward Ladd (1815–1872)', <http://www.oxforddnb.com.ezproxy.is.ed.ac.uk/view/article/49433> (accessed September 14, 2017).

Mr. Rumball, who had already worked extensively in Portugal, was appointed Engineer-in-Chief.⁵⁰³

Lumb and his compatriots quickly realised that having a railway pass near their farms and properties would bring additional benefits. The British Minister in Buenos Aires, Thornton, mediated with Lord Russell and his correspondence stated that ‘capital, personnel and materials to be used will be almost entirely British, and its success can not, therefore, stop interest us. Once the railway is in operation it will greatly facilitate the transport of British goods into the province of Buenos Aires and help develop British trade. If the company succeeds, and I have no doubt it probably will, it will facilitate the construction of others.’⁵⁰⁴ The railway in fact helped to control the market in the province; the British commercial houses provided the settlements with imported goods and served to export wool, hides, and agricultural products from their interior estancias, while the value of their lands increased.⁵⁰⁵

Local landowners did not care much about who controlled the railways as the arrival of the railway line made land speculation hugely profitable. Between 1865 and 1890 speculators regularly made profits over 350 per cent. Even important local politicians, like Bernardo de Irigoyen, made profits from speculation.⁵⁰⁶ And this windfall surely boosted pro-British sentiment in the local community.

Like the FCCA, the FCS was guaranteed an annual profit of 7 per cent, free land, tax exemptions, and given the promise that the government would not interfere in rate fixing.⁵⁰⁷ In return, the company was required to build lines where required by the Argentinian government. However, the company’s management remained private,

⁵⁰³ On the completion of that contract he constructed the Para Gas Works, the Sao Paulo Gas Works, and the Parahibo Bridge over the river of that name for the Brazilian Government. See: Anonymous, ‘Thomas Rumball (1824-1902)’, https://www.gracesguide.co.uk/Thomas_Rumball (accessed September 14, 2017).

⁵⁰⁴ Zaldueño, *Libras Y Rieles: Las Inversiones Británicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*, p. 302.

⁵⁰⁵ Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948*, pp. 30–31.

⁵⁰⁶ *Ibid.*, p. 31.

⁵⁰⁷ *Ibid.*, p. 29.

which gave the state little control. At the same time the railway expressed national progress, pride, and power.⁵⁰⁸

1.5.2.4 The Buenos Aires and Pacific Railway (FCBP)

In 1872 John Clark was awarded the concession to build a line that would link Buenos Aires with San Luis, although he hoped eventually to reach Chile. Nothing happened, however, until the FCBP was registered as a joint-stock company in London in 1882. As with other British railway companies, the government granted the FCBP debentures guaranteed at 7 per cent. John Clark retained the contract for the construction.⁵⁰⁹ The company was financed by the London Joint Stock Bank and Martins Bank. The Buenos Aires and Pacific Railway Equipment and Goods Depot Company was formed in 1890 to provide rolling stock.⁵¹⁰

The initial route ran from Mercedes in Buenos Aires province to Villa Mercedes in San Luis, where it could be connected with the Andino Railway (a state line that served part of Mendoza and San Juan provinces). In 1898 the FCBP took over the Villa Maria and Rufino Railway and extended it from San Juan to Bahia Blanca. In 1907 it took over one of its competitors, the FCO, by then a British-owned company.⁵¹¹ By 1940 the company's capital had expanded to £14,200,000 and it operated from Buenos Aires to the Andes, controlling other companies such as South American Hotels Ltd. It also had a stake, along with the Western and Southern railways, in the Cia. Ferrocarrilera de Petroleo, which provided fuel for its locomotives.⁵¹²

⁵⁰⁸ Ibid., pp. 31–32.

⁵⁰⁹ Lewis, *British Railways in Argentina, 1857–1914: A Case Study of Foreign Investment*, p. 54.

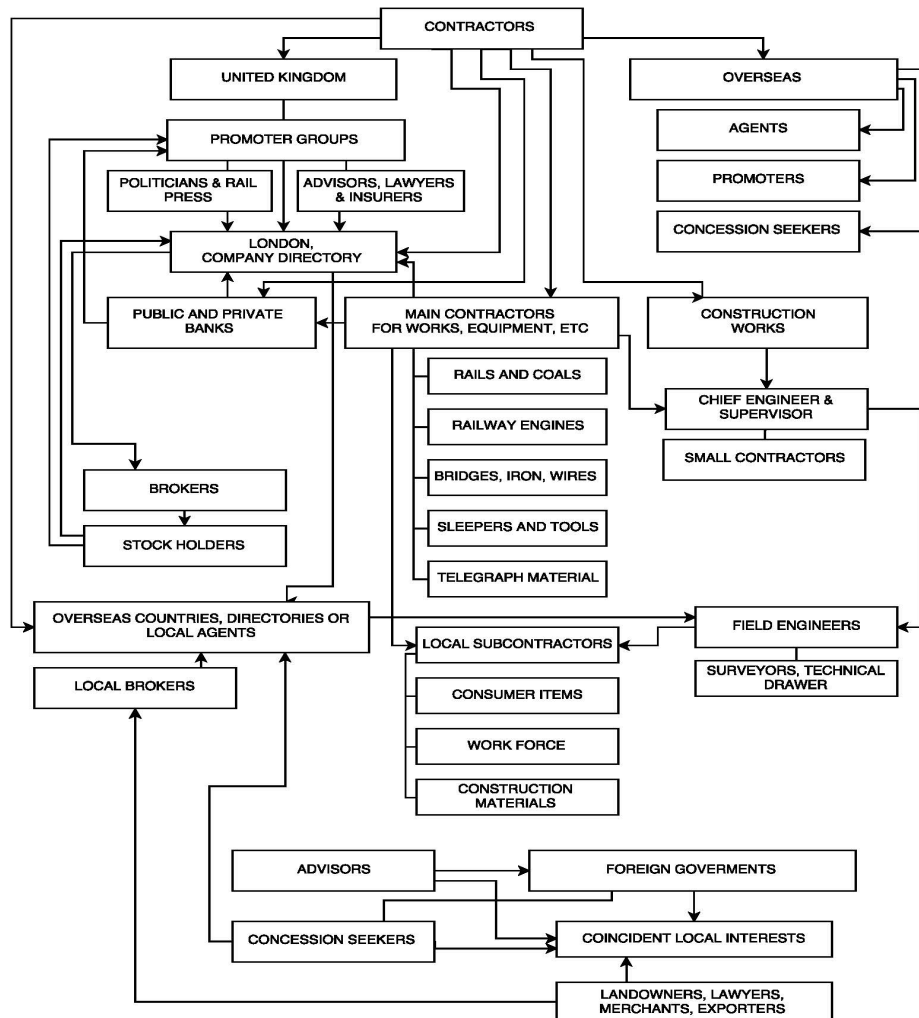
⁵¹⁰ Schmidt, *British Capital And Argentine Railroad Enterprises, 1860–1945*, p. 8.

⁵¹¹ Lewis, *British Railways in Argentina, 1857–1914: A Case Study of Foreign Investment*, p. 54.

⁵¹² Schmidt, *British Capital And Argentine Railroad Enterprises, 1860–1945*, p. 8.

1.5.2.5 Railway co-benefits

Zalduendo has examined the impact of railway construction in four countries that can be categorised as part of either the formal empire (India and Canada) or the informal empire (Brazil and Argentina). He concluded that they all had a similar interconnection of agents, such as contractors, banks, speculators, workforce, and building materials, as can be seen in **Graph 1–5**.⁵¹³



Graph 1–5. Typical scheme of promoting railways. Source: Zalduendo, *Libras Y Rieles*, p. 63, translated by Fernando Koch

⁵¹³ Zalduendo, *Libras Y Rieles: Las Inversiones Británicas Para El Desarrollo de Los Ferrocarriles En Argentina, Brasil, Canada E India Durante El Siglo XIX*, p. 63.

In fact, many companies grew up in connection with the huge British investment in the Argentinian railway system. Banks, land companies, equipment companies, mortgage companies, dock companies, power companies, waterworks and industrial companies. The London and River Plate Bank, which was registered in 1862, had capital of only £ 5,000 in 1870, but this had reached £ 2,400,000 by 1896. In 1923 the title was changed to the Bank of London and South America. The assets of several other South American banks became affiliated by 1940 to reach a capital of £4,040,000.⁵¹⁴ By 1896 the following enterprises had been registered in Argentina: the Argentine Land and Investment Company, the Argentine Colonization and Land Company, Argentine Concessions, the Buenos Ayres and Pacific Equipment and Goods Depot, the Buenos Ayres Harbor Trust, the Mortgage Company of the River Plate, the London and River Plate Bank, and the South American Land Company. The total declared capital of these companies reached a figure in excess of £6,000,000.⁵¹⁵

According to Wright, the golden age of Argentina's development coincided with the expansion of the railway but also with the rule of the oligarchy. Thanks to British investment, Argentina's railway network became the largest in Latin America, comprising more than 40 per cent of total mileage of South America, and ranked eighth in the world.⁵¹⁶ However, there was a close interrelationship between the railroads and other British investments in Argentina as exemplified by the case of R. J. Nield, a director of the FCO who also acted as a trustee for the Buenos Ayres Tramways, a director of the FCS, a director of the Buenos Ayres Rosario, a director of the Buenos Ayres Harbor Trust, a director for the Entre Rios Railway Company, and a director of the Argentine Colonisation and Land Company. Similarly, G. W. Drabble, chairman of the FCO, was also a trustee for the Buenos Ayres Harbor Works Trust and chairman of the board of the London and River Plate Bank.⁵¹⁷ The

⁵¹⁴ Schmidt, *British Capital And Argentine Railroad Enterprises, 1860–1945*, pp. 12–14.

⁵¹⁵ *Ibid.*, pp. 12–14.

⁵¹⁶ Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948*, pp. 47–49.

⁵¹⁷ Schmidt, *British Capital And Argentine Railroad Enterprises, 1860–1945*, pp. 12–14.

aforementioned R. J. Nield and W. Wilson, another railroad magnate, were both directors of the Mortgage Company of the River Plate. Frank Parish was chairman of the board of the Buenos Ayres and Rosario and the FCS, as well as being a director of the South American Land Company.

The success of the railway was associated with its use as a nation-building, as well as an empire-building, tool. The railway offered job opportunities while providing a public service that benefited the internal political economy. It offered markets for farmers, profits for land speculators, fees for lawyers, employment for town workers, and convenient travel for the general public. For that reason patronage was given to politicians who supported these projects,⁵¹⁸ creating financial partnerships and commercial interests that were essential in building informal imperial networks.⁵¹⁹ Unsurprisingly, given British control of the railways, they tended to pass close by British properties, as can be seen in **Figures 1–13 to 1–16**.

The railways had both direct and indirect benefits for the British community in Argentina, helping to forge their networks, expand their businesses and consolidate their power. This contributed significantly to the expansion of British commercial interests, amounting to ‘informal’ imperial influence. According to Ronald Robinson, from a Eurocentric perspective, the railways were not only a ‘servant’ but also the principal generator of informal imperialism.⁵²⁰ In 1871, Lord Salisbury already saw that the locomotive was the main engine of imperialism when he observed that ‘the great organisations and greater means of locomotion of the present day mark out the future to be one of great empires’.⁵²¹

Scalabrini Ortiz has gone so far as to say that the railways were ‘a weapon of domination’, and that British investments in Argentina were part of ‘a malicious economic organisation’ that he described as nothing less than ‘economic

⁵¹⁸ C.B. Davis, K.E. Wilburn, and R.E. Robinson, *Railway Imperialism* (New York, 1991), p. 4.

⁵¹⁹ *Ibid.*, p. 4.

⁵²⁰ *Ibid.*, p. 2.

⁵²¹ *Ibid.*, pp. 2–3.

imperialism'.⁵²² While, according to William Fleming, the British-owned railways in Argentina reflected the propensity of foreign capital to build infrastructure to feed political and economic needs and, as in other places, were considered an indicator of informal imperialism.⁵²³

However, the railway in Argentina provided the transport base necessary for national and regional development at the same time as it caused Argentina to become 'increasingly drawn into a British world of free trade'. However, this did not mean that the entire railroad system in Argentina was financed, built, and operated by British capital solely for the purpose of opening up the country's resources to the British market.⁵²⁴ Nor did Argentina's rulers simply hope to create export lines connecting the pampas to Atlantic ports; they prioritised a national network for domestic purposes.⁵²⁵ Be that as it may, it could be argued that since British investments in Argentina matched those in South Africa and were just short of those in Canada, the railway lines converted the pampas into a British 'bread basket' comparable to the Canadian prairies, while other regions of Argentina became major suppliers of meat and wool for the British.⁵²⁶ The foreign railroad in Argentina also mainly extended into commercial areas, such as those suitable for cereal crops and the grazing of cattle, thus systematically preventing domestic trade and local industrialisation, prompting Scalabrini Ortiz to claim:

The railroad was ... used to strangle any progress which could somehow endanger its hegemony ... Colonial railways were designed to keep us in the routines of agricultural primitivism. Such is the sad consequence that follows from our railway history, and such was the mission for which they were built.⁵²⁷

⁵²² Ortiz, *Historia de Los Ferrocarriles Argentinos*, pp. 11–12.

⁵²³ Fleming, *Profits and Visions: British Capital and Railway Construction in Argentina, 1854–1886*, p. 73.

⁵²⁴ *Ibid.*, pp. 73–81.

⁵²⁵ Davis, Wilburn, and Robinson, *Railway Imperialism*, p. 185.

⁵²⁶ *Ibid.*, p. 184.

⁵²⁷ Ortiz, *Historia de Los Ferrocarriles Argentinos*, p. 24.

The railways represented a dichotomy. Wealth, as well as territorial and social integration, came at the cost of British domination and tariff controls. Even so, Scalabrini Ortiz recognised the significance of the railway in giving life to large areas of the planet, helping to assimilate peoples and promote international harmony, populating desert areas and encouraging emigration from overcrowded countries.⁵²⁸ He considers the railway to have been so important that ‘maybe in a few regions of the world, the railway has been an element as essential to the development of collective life as it was in Argentina’. However, like any human creation, it had negative effects and the railway could be seen as a ‘pernicious instrument of domination and subjugation with subtle effectiveness’.⁵²⁹

Undoubtedly, Argentina's economic growth was closely integrated with, and dependent upon, the expansion of the railways. Most likely, the vast resources of the pampas could never have been successfully developed without their aid. Argentina's economy throughout the nineteenth century and the first two decades of the twentieth was dependent upon the production of agricultural products and livestock and the transportation of these items to Western European markets. British capital invested in Argentinian railroad enterprises played a big part in achieving this. In the process, however, the British and Argentinian economies became closely integrated, creating a dependent relationship.

During the First World War there was naturally a setback in British trading – of which the United States was quick to take advantage – but after 1919 the British returned in strength, building up their investments. However, the Second World War completely changed the picture.⁵³⁰

Between 1946 and 1948 the railways were nationalised under the State Argentinian Railway Company (then Ferrocarriles Argentinos). This had a great impact on the Anglo-Argentinian community by breaking the connections between investment and

⁵²⁸ Ibid., p. 21.

⁵²⁹ Ibid., p. 22.

⁵³⁰ C. Hamshere, ‘The British in Argentina’, *History Today*, vol. 21, no. 7 (1971).

trade.⁵³¹ This episode clearly marked the ‘decline’ of the British community. On 30 October 1950, *The Standard* illustrated this by stating that:

The end of British ownership of the railways would mean the displacement of a large segment of the British community, which, in turn, buys British goods, British insurance and British institutions. The sale of the railway would go a long way towards getting the British out of Latin America.⁵³²

1.5.3 Public Works

British railways were essential arteries in the structure of the British empire.⁵³³ To complete these arteries, it was necessary to update the Argentinian ports. There was an inseparable relationship between railways and ports.⁵³⁴ As Roger Grivil has observed, a basic requirement for the growth of the export economy was the improvement of port amenities. Argentina was very well positioned for economic expansion as it faced the Atlantic and had an excellent river network. At the end of the nineteenth century, the country had twenty foreign ports: thirteen on the Paraná River, two on the Uruguay, two on the Plate, and three on the Atlantic. In addition, there were fifty-five river ports: six on the Paraná, eleven on the Uruguay, and four on the Plate. Ten ports situated mainly in Southern Patagonia handled coastal navigation.⁵³⁵ Improvements to the ports encouraged shipping companies to run services linking Great Britain and Argentina. However, the lines that usually operated between both countries were mainly of British origin: the Royal Mail Steamship Co, Prince, Allan, Houlder, Nelson, Lamport and Holt, Houston, Holland, McIver and Norton amongst others. Most of them linked Buenos Aires to Glasgow and Liverpool.⁵³⁶

⁵³¹ Rock, *The British of Argentina*, p. 41.

⁵³² *Ibid.*, p. 41.

⁵³³ Schmidt, *British Capital And Argentine Railroad Enterprises, 1860–1945*, p. 45.

⁵³⁴ Gazaneo and Scarone, *Arquitectura de La Revolución Industrial*, pp. 25–28.

⁵³⁵ Grivil, *The Anglo-Argentine Connection and the War of 1914–1918*, p. 3.

⁵³⁶ *Ibid.*, p. 6.

Scottish engineers Bell and Miller, Eduardo Madero and John F. La Trobe Bateman (who built the drainage and water supply systems in 1885) presented their sanitary schemes on different occasions but none of these were developed as costs associated with their projects were deemed to be too high.⁵³⁷ Eventually, in 1882, Madero came up with a new and more ambitious proposal backed by financial support from Baring Brothers and the project was approved. The professionals involved were Eduardo Madero and Sons and the British companies John Hawkshaw, Son and Hayter, Thomas Walker, and Armstrong Mitchell and Co.⁵³⁸ Not surprisingly, Puerto Madero bears a certain resemblance to the St Katherine Docks in London, designed by Thomas Telford in 1828, and the Albert docks in Liverpool, designed by the English Jesse Hartley and opened in 1845.⁵³⁹

The following British companies were also related with public works: the Anglo-Argentine Tramways Co. Ltd (1877), the River Plate Telephone and Electric Light (1889), the River Plate Electric Light and Traction Co., the United River Plate Telephone Co. Ltd., Buenos Aires Gas (1875), Belgrano Gas (1878), the Anglo-Argentine Tramways Co. Ltd. (1877), the Buenos Ayres Electric Tramways Co. (1901), the Buenos Ayres and National Tramways Co. (1899), the City of Buenos Ayres Tramways Co., Atlas Light and Power, and La Primitiva Gas (1855).⁵⁴⁰

In the Argentinian Republic the most important public works in the hands of the British were the plans made by Mr. Bateman for the ‘city of Buenos Ayres improvements’, for which the province of Buenos Aires obtained a loan

⁵³⁷ Chrimes, ‘British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century,’ .

⁵³⁸ Gazaneo and Scarone, *Arquitectura de La Revolución Industrial*, pp. 26–27.

⁵³⁹ N. Ritchie-Noakes, ‘Hartley, Jesse (1780–1860)’, <http://www.oxforddnb.com/view/article/12498> (accessed August 4, 2017).

⁵⁴⁰ J.F. (James F. Rippey, *British Investments in Latin America, 1822–1949* (Minneapolis, 1959), pp. 240–243.

of £2,000,000 in London in 1873.⁵⁴¹ The project was very controversial and it will be discussed in Section 3.

1.5.4 Migration. British Settlers in Argentina

The emigration of British people to Argentina in the nineteenth and twentieth centuries took several forms and was promoted in various ways, whether by the national or provincial governments, through advertisements or agents in Britain, private sponsors, or even by letter and word of mouth. Some migrants travelled in substantial groups, whilst others made their own way as families or individuals.⁵⁴²

Although there were seven Britons (all connected with the slave trade and the South American Company) living around Buenos Aires in 1744,⁵⁴³ settlement is usually considered to have started just after the invasions in 1806/7, with the formation of a small mercantile group.⁵⁴⁴ Some prisoners of war stayed, like Thomas Forbes who made a successful career as a doctor.⁵⁴⁵

Between 1802 and 1823 forty-nine Britons arrived in Buenos Aires as permanent residents. Some of them would become very important in Argentina's history and enforced the Anglo-Argentinian relationship. The most distinguished were Billingham, Robinson, Mackinlay, Brittain, Nelson, Davis, Newton, Thwaites, Harratt, Gowland, Broan, Fisher Lafone, Dillon, Duffy, Sheridan Fair, Wilson, John and William Parish Robertson, Campbell, Gibson, Miller and McDougall.⁵⁴⁶

Rivadavia actively encouraged British immigration. During his diplomatic mission to Europe in 1818, he went to London, where he reached an agreement with Barber Beaumont to send professionals, as well as agricultural and industrial colonists to the

⁵⁴¹ Mulhall and Mulhall, *Handbook of the River Plate Republics. Comprising Buenos Ayres and the Provinces of the Argentine Republic and the Republics of Uruguay and Paraguay*, pp. 70–71.

⁵⁴² Morrison, *Scots in Argentina and Patagonia Austral, 1800–1950*.

⁵⁴³ Fernández-Gómez, *Argentina: Gesta Británica: Revaloración de Dos Siglos de Convivencia*, p. 33.

⁵⁴⁴ Reber, *British Mercantile Houses in Buenos Aires, 1810–1880*, pp. 4–5.

⁵⁴⁵ Fernández-Gómez, *Argentina: Gesta Británica: Revaloración de Dos Siglos de Convivencia*, p. 35.

⁵⁴⁶ *Ibid.*, p. 36.

provinces of the River Plate. His objective was not purely ‘mercantile’, but was also ‘instrumental in importing to these new countries large numbers of British subjects’.⁵⁴⁷

Beaumont’s scheme attracted other propositions. In 1824 John and William Parish Robertson, two Scottish entrepreneurs, organised a Scottish settlement of around 220 immigrants (artisans, farmers and servants) in the Buenos Aires province. They departed from Leith in Edinburgh on board the *Symmetry* in May 1825.⁵⁴⁸

Neither Beaumont’s nor the Robertsons’ scheme proceeded as planned. The Beaumont settlers were destined for Patagonia but, when they arrived in Buenos Aires, they were informed that the government had lost the piece of land they were supposed to colonise. They were offered an alternative piece of land but, considering it to be of poor quality, they decided to invest their own money in better land in Lomas de Zamora and Esteban Echeverria in the vicinity of Buenos Aires.⁵⁴⁹ The colony was officially called ‘Santa Catalina’ but is better known as ‘Monte Grande’ (large wood) (see location in **Figure 1–17**). Even though the colony did not last, the area was redeveloped years later and Parish Robertson’s house is still standing and is now the head office of the University of Zamora.⁵⁵⁰ Nearby would come to stand the Monte Grande Station, featuring Scottish cast-iron elements that act as a tangible reminder of the area’s Scottish past.

Initially the colony developed rapidly. As was recorded in the *British Packet* on 25 October 1828:

The colony not only soon laid the foundation of a permanent prosperity, but in two years changed entirely that part of the country which it occupied, and at this moment the colony represents to the view of the realisation of all the proprietors could propose – a model of industry, comfort, agricultural

⁵⁴⁷ Dodds, *Records of the Scottish Settlers in the River Plate and Their Churches*.

⁵⁴⁸ Stewart, *From Caledonia to the Pampas: Two Accounts by Early Scottish Emigrants to the Argentine*, pp. 4–7.

⁵⁴⁹ *Ibid.*, pp. 4–7.

⁵⁵⁰ *Ibid.*, pp. 4–7.

improvement, and moral excellence, which is worthy of imitation, and highly creditable to the people who have produced this happy result.⁵⁵¹

Nevertheless the colony did not last long. The region was destabilised as a consequence of the war with Brazil and the civil wars. In 1829 the colony collapsed and its population dispersed to other areas near Buenos Aires, such as Chascomús and Bahía Blanca, where many of them later gained prominence.⁵⁵²

After the Treaty of Commerce and Navigation – which increased the commercial possibilities for the British – was signed, the British population in Buenos Aires rose around tenfold.⁵⁵³ By 1830 there were 4,000 Britons in Argentina.⁵⁵⁴ However, while Rosas's measures fostered local industry, Argentina no longer offered a warm welcome for European immigrants. Some, however, still saw an opportunity for doing business, as the country's instability meant that cheap farmland was available to buy. John Gibson from Glasgow, for example, set up a huge farm in Buenos Aires Province.⁵⁵⁵

Before the introduction of the railway, the British settled mainly in Buenos Aires and they were mainly artisans, traders and estancieros.⁵⁵⁶ The railway boom of 1862–1913 transformed the British community. The founding of the FCS, the FCCA and even the FCO offered jobs directly to the British at the same time as it connected the metropolis with British farms.⁵⁵⁷ The settler community diversified as railway entrepreneurs, financiers, accountants, engineers, and technicians joined its ranks. The lower ranks extended to include skilled railway workmen, and managers and employees of British import and shipping firms. Railwaymen and tramway men – drivers, engineers, repair specialists, workshop managers, and stationmasters –

⁵⁵¹ Dodds, *Records of the Scottish Settlers in the River Plate and Their Churches*, p. 38.

⁵⁵² Rock, *The British of Argentina*, p. 24.

⁵⁵³ Ferns, 'Beginnings of British Investment in Argentina'.

⁵⁵⁴ Dodds, *Records of the Scottish Settlers in the River Plate and Their Churches*, p. 22.

⁵⁵⁵ Rock, *The British of Argentina*, p. 23.

⁵⁵⁶ Hanon, *Diccionario de Británicos En Buenos Aires (Primera Epoca)*, pp. 12–13.

⁵⁵⁷ Rock, *The British of Argentina*, p. 27.

comprised a growing proportion of the community. Residents also included the employees of banks headed by the London and River Plate Bank (later the Bank of London and South America).⁵⁵⁸ The railway and the development of importing firms also prompted a boom in wool exports, encouraging the establishment of British farms along the Central Argentine Railway from Rosario to Cordoba.⁵⁵⁹

However, most British people lived in Greater Buenos Aires and suburbs in the Province of Buenos Aires. In the capital, the British neighbourhoods were Barrancas and Belgrano, located near to the British-owned railway lines. Smaller British concentrations emerged in nearby La Plata, the capital of the Province of Buenos Aires, and Rosario and Bahía Blanca, two major ports of the pampas that developed in 1870–1910.⁵⁶⁰

By the 1860s further Scottish settlement had occurred in Nueva Escocia (New Scotland, near Concordia, in Entre Rios province). There the Scots established many farms (estancias), giving them names such as Clyde, Kintail or Caledonia (**Figure 1–18**).⁵⁶¹ In other provinces, like Cordoba, Mendoza, and Tucuman in Jujuy, Scottish activity was more often concentrated in businesses related to farming. In Jujuy, a province bordering Bolivia, for example, Leach's Argentine Estates Ltd. employed British personnel to manage their 'Esperanza' sugar mill. The Forestal Land, Timber and Railway Co. established huge camps in northern Santa Fe and the Chaco region to exploit the hardwood forests. Liebig's Extract of Meat Co. Ltd., which used Scottish technology, located in the Uruguayan border town of Fray Bentos became the largest cattle breeding company in the world.⁵⁶² In Rio Gallegos a community of Scots who had re-migrated from the Falkland Islands worked in sheep farming. By 1885 there were around 2,000 Scots in Argentina.⁵⁶³ The location of British

⁵⁵⁸ Ibid., p. 36.

⁵⁵⁹ Ibid., p. 24.

⁵⁶⁰ Ibid., pp. 35–37.

⁵⁶¹ Morrison, *Scots in Argentina and Patagonia Austral, 1800–1950*, accessible in: <http://www.electricscotland.com/history/argentina/patchap1.htm>.

⁵⁶² Rock, *The British of Argentina*, p. 29.

⁵⁶³ Lynch, *The Oxford Companion to Scottish History*, p. 380.

settlements in Tucumán, Córdoba, Rosario and Entre Ríos can be seen in **Figure 1–19** and the location of Scottish settlements in Santa Cruz and Falklands/Malvinas in **Figure 1–20**.

The Welsh also established colonies in Argentina, settling in Puerto Madryn, Rawson, Trelew and Gaiman in Chubut Province, Patagonia in 1865. In the beginning there were only 300 settlers, but this number grew once the railway reached the area, facilitating wheat exports. By 1895 the population was ten times larger.⁵⁶⁴ The location of Welsh settlements in Chubut is shown in **Figure 1–21**.

The Welsh were so exclusive in that part of Patagonia that the Argentinian government feared the area might become a British protectorate. Consequently, it forced a mix of ethnic groups to locate there to dilute the Welsh presence. Even though the community declined, especially during the inter-war period, it remains today an enclave of Welsh identity and language.⁵⁶⁵

The first Irishman to arrive at the River Plate was Father Thomas O'Fihily, who arrived in 1586 to help the Spanish in the Christian mission.⁵⁶⁶ When the British invaded the River Plate there were many Irishmen on board and many decided to stay in Buenos Aires.⁵⁶⁷ They were later joined by William Brow, who arrived in Argentina in 1810 and took part in the naval campaign against Spain (1814–1816) and against Brazil (1826–1828).⁵⁶⁸

However, there were not many Irish until the 1840s, when the failure of the potato crop in Ireland made immigration necessary. In 1844, 114 Irish immigrants arrived in Argentina. The majority dedicated themselves to farming and by the middle of the century Irish sheep farmers had become the largest component of the population of British origin. It was estimated that by the end of the nineteenth century Irish and

⁵⁶⁴ Rock, *The British of Argentina*, p. 25.

⁵⁶⁵ Ibid., p. 25.

⁵⁶⁶ 'The Irish in Argentina', *America*, vol. 13, no. 6 (1915).

⁵⁶⁷ T. Murray, *The Story of the Irish in Argentina* (New York, 1919), p. 20.

⁵⁶⁸ 'The Irish in Argentina,'.

Scottish sheep farmers owned around 24 million sheep and around 11 million acres of land, with a total pastoral wealth of 33 million pounds.⁵⁶⁹ Other Irish settlers, such as the Mulhall brothers, William Bulfin and Michael Dineen, dedicated themselves to producing newspapers and literature for the English-speaking community.⁵⁷⁰ Commonly from a rural middle-class background, the settlers mainly originated in the Irish midland counties. Being Catholic, the Irish merged successfully into Argentinian society.⁵⁷¹

In 1889, the SS *Dresden* left the Deepwater Quay, Queenstown/Cobh, bound for Buenos Aires with 1772 emigrants on board, 1500 of whom were Irish. They began their stay in Argentina, as did most immigrants, in the migrants' hotel located in Darsena Norte, Buenos Aires.⁵⁷² Much of the success of these new emigrants was down to the influence of Father Anthony Fahey, who arrived in Buenos Aires in 1843 as chaplain to the Irish community. Father Fahey found them safe lodgings and helped them to find jobs as cattlemen, ditch-diggers and shepherds. They were hard workers and were able to improve their fortunes in a short time: 'The criollos had the land, so one criollo would give an Irishman, say, 2,000 sheep and he would commit himself to increase the flock to 10,000 in a few years and they would split the profits.'⁵⁷³

Father Fahey also lent the Irish immigrants money. Loans from Fahy assisted a few Irish immigrants to progress from being ditch diggers to being estancieros. Some, like Michael and Matthew Duggan, Edward Casey, and Patrick Ham, stood out among a select group of Irish landed magnates. Despite his Protestant background,

⁵⁶⁹ Bridger, *Britain and the Making of Argentina*, pp. 114–115.

⁵⁷⁰ 'The Irish in Argentina'.

⁵⁷¹ Rock, *The British of Argentina*, p. 23.

⁵⁷² P. Mulvany, 'The Irish in Argentina - Forgotten Emigrants', *North Irish Roots*, vol. 20, no. 2 (2009).

⁵⁷³ J. Winn, 'Into the Unknown – The Irish in Argentina', *World of Hibernia*, vol. 7, no. 3 (2001).

Thomas Armstrong, another notable Irishman, provided Fahy with the funds he lent out to Irish farmers.⁵⁷⁴

In Santa Fe province, around the town of Venado Tuerto alone, there are villages called Murphy, Cavanagh, O'Higgins, Gould and El Trebol (the shamrock) that clearly attest to the success of the Irish emigrants.⁵⁷⁵ Reports in the 1870s specified an Irish population of 15,000–20,000 in the province of Buenos Aires.⁵⁷⁶

Table 1–6 shows some of the British organised colonies in Argentina the nineteenth century, including Monte Grande.

Colonial Company	Origen of Population	Setlers	Port of Origen	Ship	Date and Port of Destination	Location	Result of Settlement
JA. Barber Beaumont	England	50	Glasgow	Lacy	15/5/1825 - Barragan	San Pedro	4 families settled. Rest dispersed by economic difficulties.
Beaumont	England	80	Liverpool	Cephr	28/5/1825 - Barragán	San Pedro	Few families settled. Rest dispersed by economic difficulties.
Beaumont	England	120	London	?	Junio 1825 - Barragán	Villagua y Entre Ríos	Few families settled. Rest dispersed by civil wars and war with Brazil.
J.A. Barber Beaumont (h) River Plate Agricultural Association (Lezica)	England	200	Plymouth	Countess of Morley	Abril 1826 - Montevideo (por bloqueo naval de Buenos Aires)	Villagua y Entre Ríos	Left because of the war with Brazil

⁵⁷⁴ Rock, *The British of Argentina*, p. 23.

⁵⁷⁵ Winn, 'Into the Unknown—The Irish in Argentina'.

⁵⁷⁶ Murray, *The Story of the Irish in Argentina* p. 375.

J. & W P. Robertson	Scotland	220	Leith	Symmetry of Scarborough	Mayo 1825 - Buenos Aires	Monte Grande	Prosperous initial settlement. Scattering by civil war in 1829.
Welsh Colonising Society	Wales	163	Liverpool	Mimosa	Mayo 1865 - Golfo Nuevo (Puerto Madryn)	Chubut YrHen	Successful settlement. Formation of Amdyffynfa (Rawson). And many towns.
Central Argentina Land Co. With Agent (William Perkins)	British	200	various	various	Rosario Port	Roldan, Carcarañá, Cañada de Gomez	In Roldan 21 English, Scottish and Irish families were settled. In Carcarañá 12 English families were settled, In Cañada de Gomez, 11 families were settled. In Tortugas just 1 English and 1 Irish family were settled.

Table 1–6. British organised colonies in the nineteenth century. Source: Fernández-Gómez, Argentina: *Gesta Británica: Revaloración de Dos Siglos de Convivencia*, p. 128. Translated by author

Table 1–6 demonstrates that, although not all of the settlements were effectively established, there was a real intention to bring British immigrants to populate Argentina. However, organised colonies were not the only means by which immigrants settled in Argentina. Many professionals were hired to do important jobs and many immigrants travelled on their own in search of new possibilities. During the first half of the nineteenth century, about 40 per cent of the English who emigrated to Argentina were artisans and pre-industrial skilled workers, a little more than a fifth were employees in and owners of the modern tertiary sector, and close to another fifth were linked to services and other activities. This proportion changed with the introduction of the railways, as can be seen in **Tables 1–7** and **1–8**. These tables also show comparatively the proportion of English and Scottish men by occupation in Buenos Aires in 1796–1849 and 1850–1888.

English and Scottish men by occupation in Buenos Aires period 1796–1849.		
Categories	English %	Scottish %
Artisan and pre industrial workers	39.17	44.76
Employees and owners of the modern tertiary sector	21.81	15.36
Rural activities	7.12	10.11
Services and other	19.36	13.48
Workers	11.71	15.17
Industrial workers	0.84	1.12

Table 1–7. English and Scottish men by occupation in Buenos Aires period 1796–1849.

Source: A. Silveira, ‘Ingleses y Escoceses en Buenos Aires. Movimientos Poblacionales, Integración y Practicas Asociativas (1800–1880)’ (PhD thesis, 2014), p. 100.

English and Scottish men by occupation in Buenos Aires period 1850–1888.		
Categories	English %	Scottish %
Employees and owners of the modern tertiary sector	40.67	33.30
Rural activities	32.93	43.70
Artisan and pre industrial workers	15.33	15.11
Services and others	7.74	5.68
Industrial workers	1.82	1.15
Workers	1.51	1.06

Table 1–8. English and Scottish men by occupation in Buenos Aires period 1850–1888.

Source: A. Silveira, ‘Ingleses y Escoceses en Buenos Aires. Movimientos Poblacionales, Integración y Practicas Asociativas (1800–1880)’ (PhD thesis, 2014), p. 100

Although there were clear differences between English, Scottish, Irish and Welsh people, this British national complexity went unnoticed by Argentinians who, in general, considered all English-speakers – including those from America⁵⁷⁷ – as simply ‘English’. For example, in 1830 the British consul declared that there were 4,000 British residents in Buenos Aires province, among which were 1358 Englishmen, 476 Scotsmen and 386 Irishmen, leaving more than 800 women and children and more than 800 British peoples whose country of origin was not registered.⁵⁷⁸ In 1930 the number of British in Argentina reached a peak of 60,000, and they formed the largest group outside the empire, excluding the United States.⁵⁷⁹

The British in Argentina had the local support of the ‘collaborative elite’. Even though the British formed a minority among European migrants in Argentina,⁵⁸⁰ they enjoyed a privileged experience that derived from their position as members of the so-called ‘advanced races’ ruling class, and the local anglophile oligarchy. They were also decision makers who ensured the success of British enterprises in Argentina because they also benefitted economically from them. Support for the British was sometimes too evident and some French companies complained that the Minister of Public Works, M. Ramos Mexia, had been ‘too favorable to England’.⁵⁸¹ Argentinians admired Great Britain and this helped to pave the way for the maintenance of British ways. Having their own institutions made British integration into the host society unnecessary,⁵⁸² and the Anglo-Argentinian community helped spread ideological and cultural models through associations, schools, and sporting

⁵⁷⁷ Silveira, *Ingleses Y Escoceses En Buenos Aires. Movimientos Poblacionales, Integración Y Practicas Asociativas (1800–1880)*, pp. 77–78.

⁵⁷⁸ Hanon, *Diccionario de Británicos En Buenos Aires (Primera Epoca)*, p. 12.

⁵⁷⁹ Rock, *The British of Argentina*, p. 27.

⁵⁸⁰ In 1869 Argentina’s first census revealed a population of 1,830,000 inhabitants. By 1871 there were 10,533 British people, 6,000 of whom lived in rural areas forming more than 1,000 estancias. By 1914 the population had increased to 7,904,000, half of which were foreigners; the majority were Italian, followed by Spanish and French, while the Germans and British were in the minority and numbered 28,300. See Ibid., p. 27; Fernández-Gómez, *Argentina: Gesta Británica: Revaloración de Dos Siglos de Convivencia*, p. 43.

⁵⁸¹ G. Clemenceau, *South America today; A Study of Conditions, Social, Political and Commercial in Argentina, Uruguay and Brazil* (New York, London, 1911), pp. 182–183.

⁵⁸² D. Jakubs, ‘The Anglo-Argentines: Work, Family and Identity (1860–1914)’, in O. Marshall (ed.) *English-Speaking Communities in Latin America* (New York, 2000), p. 155.

events in order to improve the standing of British businesses while at the same time reinforcing their identity, thus helping to expand imperial influence in the process.⁵⁸³

However, there was a close relationship between the development of British business and the British population in Argentina. Thus, the Second World War not only had an impact on investments, which fell from 356 million pounds in 1946 to 69 million in 1950, but also on British-born residents, whose numbers fell by 28,000 to 6,000 between 1914 and 1960.⁵⁸⁴

1.5.5 Culture

There is a close-knit relationship between culture and empire and, as Magee and Thompson emphasise, cultural factors influenced economic behaviour and consumption tendencies.⁵⁸⁵ As will be seen throughout this thesis, in the nineteenth century the growth in the number of British merchants in Buenos Aires was accompanied by the emergence of British institutions and the increasing visibility of British cultural symbols: tea rooms, clubs and sports, churches, schools, shops, and traditions. This allowed, and in fact encouraged, the development of a ‘culture-within-a culture’ for the Anglo-Argentines.⁵⁸⁶ From the beginning, the British took a strategic stance regarding the economy of the country, building and extending an essential ‘network’ to assure British interests in Argentina.⁵⁸⁷

1.5.5.1 Institutions

Not surprisingly, the first British institutions in Argentina were linked with commercial activities. The English, Scottish and Irish merchants, as we saw in the examples of Daniel Gowland, Thomas Armstrong, Edward Lumb and Patrick

⁵⁸³ Rock, *The British in Argentina: From Informal Empire to Postcolonialism*.

⁵⁸⁴ Rock, *The British of Argentina*, pp. 37–41.

⁵⁸⁵ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*.

⁵⁸⁶ Clemenceau, *South America to-Day; A Study of Conditions, Social, Political and Commercial in Argentina, Uruguay and Brazil*, p. 106.

⁵⁸⁷ Ferns, *Britain and Argentina in the Nineteenth Century*.

McLean overcame their national and religious differences to create narrow social, family and trade links with each other. They identified themselves first as merchants, and constructed associations that bound them together and strengthened ties between them. Associations such as the *British Commercial Rooms* (founded in 1810) and the Foreign Residents Club promoted the cohesion of the merchants of various nationalities.⁵⁸⁸

The commercial activities of the British paved the way for the ‘cultural settlement’ of Argentina, as British forms of religion and social concepts, along with the English language, took root, eventually mixing with the habits of the locals. British immigrants needed schools for their children, religious spaces for worship, and publications in their own language.⁵⁸⁹

Societies also helped the Scots create a little Scotland in Argentina. The St. Andrews's Society of the River Plate, which still has thousands of members, and celebrates St. Andrews night, Hogmanay and Burns Night, held an annual Caledonian Ball, regular clan gatherings, and a Children's Caledonia party. It also had a pipe band, and ran essay and golf competitions. Of course, sports cemented Scotland's contribution to Argentinian culture, too. Watson Hutton, who went to Argentina to organise the Scots School in Buenos Aires, formed the 'Alumni' football team – the first official team in Argentina – and later founded the Argentinian Football Association. But Scots were also among those that brought rugby and golf to South America. Finally, Scottish writers, such as Robert Bontine Cunninghame-Graham and Walter Owen, were to become important in Argentinian literature.⁵⁹⁰

Even though, Argentina has also been greatly influenced by European migrants that arrived in the country between 1860 and 1940 – particularly the groups from Spain and Italy that arrived towards the end of the nineteenth century – English has

⁵⁸⁸ Silveira, *Inglese Y Escoceses En Buenos Aires. Movimientos Poblacionales, Integración Y Practicas Asociativas (1800–1880)*, p. 253.

⁵⁸⁹ A. Graham-Yooll, ‘El Aporte Ingles a la Cultura Argentina’, *Revista de Instituciones, Ideas y Mercados* (2010).

⁵⁹⁰ Craig, ‘Scotland and Argentina,’ .

retained a place as the nation's second international language. English is deeply rooted in the country's history of independence struggles and its political relationship with Great Britain. British business and investments, without a doubt, increased the power of the English language.⁵⁹¹ Today, bilingual schools in Argentina fall under two of the types of immersion: immersion in a foreign language and immersion in a language of power. The latter refers to the fact that, language is linked to the economic growth of the country.⁵⁹²

1.5.5.2 Newspapers, hospitals, churches, schools and other cultural influences

The first English newspapers in Argentina were *The British Packet* and the *Argentinian News*, published weekly in Buenos Aires from 1826 to 1858. The pages of these publications reflected not only political events, but also the economic and social situation, customs, cultural activities and the impact of some external events, in addition to containing the maritime movements in the Rio de La Plata.⁵⁹³

Two Irish brothers, Edward and Michael Mulhall, founded *The Standard* in 1861 and it is still in print today, making it the oldest newspaper in Argentina. It was an essential tool for propaganda and a source of information for British investors and businessmen.⁵⁹⁴ It is also one of the most important sources of information on the history of the English-speaking communities in Argentina.⁵⁹⁵

⁵⁹¹ A. Tocalli-Beller, 'ELT and Bilingual Education in Argentina', in J. Cummins and C. Davison (eds.) *International Handbook of English Language Teaching* (New York, 2007).

⁵⁹² Ibid.

⁵⁹³ 'De Rivadavia a Rosas: 1826-1832', <http://abr.uns.edu.ar/cgi-bin/opacmarc/wxis?IsisScript=opac/xis/opac.xis&db=abr&task=BIB-H-SEARCH&index=NAME&query=%5EaThe+British+Packet>. (accessed September 14, 2017).

⁵⁹⁴ Rock, *The British of Argentina*, p. 24.

⁵⁹⁵ Mulhall and Mulhall, *Handbook of the River Plate Republics. Comprising Buenos Ayres and the Provinces of the Argentine Republic and the Republics of Uruguay and Paraguay*.

In 1876 the *Buenos Ayres Herald* was founded by the Scot William Cathcart. A year later he sold the newspaper to an American called D.W. Lowe, who changed it from a weekly to a daily publication. The newspaper is still in print today.⁵⁹⁶

The proliferation of English language newspapers seems excessive in a predominantly Spanish-speaking community. However, the large and prosperous British community was unable to read British newspapers because of the high transportation costs and the time taken for the papers to reach South America. The English press in Argentina summarised the local news for its British readers but also disseminated the news from Britain and Europe. There were newspapers written in English all over Latin America, but they flourished most in Argentina.⁵⁹⁷ Some Argentinian institutions, such as The Asociacion Argentina de Cultura Inglesa, also disseminated British language, culture, and arts.⁵⁹⁸

As already mentioned, the Scottish and Irish established their own churches but they also played a significant part in other areas, such as education. For instance, The Institute of Engineers of the River Plate was founded in 1898 on the premises of the 'Scotch' Church.⁵⁹⁹

Interest in the liberal arts and English education in Buenos Aires dates from immediately after May 1810, when several the British made donations to a library and supported the construction of a school in Buenos Aires. From then, English teachers travelled from city to city working as tutors in the homes of the wealthy. The formal beginnings of English education in Buenos Aires can be traced to an article in the *British Packet* on 30 September 1826, which reported that the president of a committee of fourteen British residents, Reverend John Armstrong of the Church

⁵⁹⁶ 'A Brief History of the Herald', <http://www.buenosairesherald.com/info/aboutus.aspx#1876>. (accessed September 14, 2017).

⁵⁹⁷ M.P. Moreira, 'La Comunidad Britanica en La Argentina. De Los Negocios al Futbol, la Fuerza de la Comunidad Britanica', in R. Gutiérrez (ed.) *Estudio de arquitectura Follett, 1891–2008 Conder, Follett, Farmer* (Buenos Aires, 2008).

⁵⁹⁸ Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, p. 32.

⁵⁹⁹ G.B. Magee and A.S. Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914* (Cambridge, 2010).

of San Juan (located on Calle 25 de Mayo), had initiated an investigation into the state of education in the community. In the same year, Henry Thomas Bradish opened a school for men. From then, the number of bilingual or British educational institutions steadily grew.⁶⁰⁰ The St Andrews Scottish School was founded, under the direction of the reverend William Brown, on the site of the Presbyterian church in 1838. In 1893 it was demolished as part of the extension of Mayo Avenue.⁶⁰¹ The church moved to Avenida Belgrano and Perú, where it has remained to this day. The school was later established in the Constitution. It moved to Olivos in 1947, where the St Andrews University (Universidad de San Andrés) opened in 1988.⁶⁰²

The British in each small community – Flores, Devoto, Belgrano, Quilmes, Hurlingham, Temperley – founded a school and a club, attaching great importance to sporting activities. Headmasters and teachers were brought from England, and they lived in the same schools as their pupils and taught according to the methods and discipline of English schools.⁶⁰³

Other institutions emblematic of the British community were St George's College, founded in 1895 in Quilmes by an Anglican priest named J. T. Stevenson,⁶⁰⁴ and the Buenos Aires English High School (initially tied with the Great Southern Railway, established by Hutton in 1880). By the 1920s more than sixty English schools were operating in Buenos Aires.⁶⁰⁵ These schools also propagated cultural imperialism. For instance, the mission of St George's School was to 'save the British Empire and British traditions for the numerous families in the Camp who, though of British

⁶⁰⁰ Graham-Yooll, *El Aporte Ingles a La Cultura Argentina*.

⁶⁰¹ Dodds, *Records of the Scottish Settlers in the River Plate and Their Churches*, pp. 175–179.

⁶⁰² The University's archive held important information related to the Scottish community in Argentina.

⁶⁰³ G.C. Moyano, 'English in Argentina', *English Today*, vol. 13, no. 1 (1997).

⁶⁰⁴ 'History of St George's College', <http://www.stgeorges.edu.ar/quilmes/> (accessed September 14, 2017).

⁶⁰⁵ Rock, *The British in Argentina: From Informal Empire to Postcolonialism*, p. 33.

lineage, are in danger of growing up in total ignorance of the language and ideas of their fathers'.⁶⁰⁶

For many years, these schools provided an education for Anglo-Argentinian pupils, guaranteeing them good positions in British firms. However, for the wealthy British in Argentina, British boarding schools still provided their children with the best foundations for successful careers and marriages.⁶⁰⁷ The Argentinian leaders, including Sarmiento, Roca and Juárez Celman, emulated these Britons and also sent their children to English public schools, as well as building English-style mansions on the pampas.⁶⁰⁸

1.5.5.3 Sports

Sport also played a role in cohering the British community in Argentina and providing a model that the Argentinians wanted to emulate. The British imported to Argentina cricket, football, polo, hockey and rugby, among other sports. David Rock believes that British sports became the covert arm of British imperialism. For instance, in 1897 Carlos Pellegrini, President of Argentina (1890 to 1892), who was educated at Harrow, said that: 'We should practice sports like the British, because they have made Britain into a manly nation that everywhere gives proof of its extraordinary strength.'⁶⁰⁹

Cricket was played for the first time in Argentina in 1806, when the British captured after the first invasion began to play. In 1831 the Buenos Aires Cricket Club was founded (See **Figure 1–22**). In 1867 the Buenos Aires Football Club was founded in Palermo. Alexander Hutton became the first president of the Argentinian Football Association. The first rugby game was played in 1874.⁶¹⁰ The first official polo

⁶⁰⁶ Ibid., p. 34. Taken from Monteith Drysdale, St Andrew's Scots Church, p. 25.

⁶⁰⁷ Rock, *The British of Argentina*, p. 34.

⁶⁰⁸ Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, pp. 293–294.

⁶⁰⁹ Rock, *The British in Argentina: From Informal Empire to Postcolonialism*, p. 72, taken from *The Standard*, 20 November 1897.

⁶¹⁰ 'Buenos Aires Cricket & Rugby Club', <http://www.bacrc.com/historia.php> (accessed September 14, 2017).

match in Argentina took place in 1879 after the sport had been introduced by Irish ranchers at Shennan's estancia.⁶¹¹

It has been said that outside sports, the British made little cultural impact and Britain's contribution was always greater in relation to the financial system, engineering and transport.⁶¹² However this needs to be examined in more detail, as not much research has been than on the topic.

1.5.5.4 Architects and engineers

British professionals, their goods, ideas and practices were able to 'move between and beyond different sites of colonisation', and such movements shaped experiences overseas and influenced and transformed those places.⁶¹³

The British usually commissioned British architects and engineers to develop their projects. Some of these projects were on a grand scale and made the most important urban changes in the city. Customs houses, piers, ports, water supply and other public works, banks, railways lines and stations, were all undertaken by British teams. These activities were at the same time connected with British trade, encouraging more British immigration and new buildings – clubs, schools, stores, factories, estancias – that used British professionals and British materials. This connection with networks of empire is a very important concept and it will appear many times during this dissertation.

It has been said that 'industrial architecture', especially the railways, meant a transculturation of British architecture. It was characterised by British materials, including iron, which lent a British character to Argentina. Most of the professionals involved in its construction implemented a functional architecture using revivalist styles that reflected their origins (for a list of the more prominent British architects

⁶¹¹ Rock, *The British of Argentina*, p. 37.

⁶¹² Cain and Hopkins, *British Imperialism: Innovation and Expansion, 1688–1914*, p. 29.

⁶¹³ Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*, pp. 11–13.

working in Argentina, see **Appendix A**).⁶¹⁴ The British character of iron railway architecture will be described in more detail in Section 3.

⁶¹⁴ P. Mendez, 'Arquitectos e Ingenieros Britanicos en el Rio de la Plata(1800–1920). Aportes biograficos', in R. Gutiérrez (ed.) *Estudio De Arquitectura Follett, 1891–2008 Conder, Follett, Farmer*, (Buenos Aires, 2008).

1.6 Conclusion

More than half century has gone since Gallagher and Robison presented their thesis for re-thinking the characteristics of British imperialism. Their argument that it is impossible to define imperial history without considering its ‘informal’ aspects has become significant. Even though a definitive definition of ‘informal empire’ has not yet been established, it is now widely recognised that these forms of informal influence were an integral part of the British World System.

That system was unplanned but powerful. It relied upon the links created via numerous elements, such as diplomacy and military force (with asymmetrical treaties and armed intervention if needed), commerce and finance (boosted by free trade), communication (including the development of the railways and boosted by technology) and migration (including British professionals) and culture. All these elements helped Britain to draw Argentina into its world-system of imperial power.

Even though the ‘British’ World System suggests an idea of integrity and cultural coherence, Britain was in fact a union of more than one nation, and these nations contributed to the empire to differing degrees. Indeed, Scotland’s involvement was outstanding, not only from a military and diplomacy perspective, but also financially, especially through the promotion of Adam Smith’s ideas on free trade that drove the imperial economy. Scotland also contributed substantially to several inventions and innovations that were essential for positioning Great Britain a world leader in terms of infrastructure and communications. The development of the iron-founding industry in Scotland was closely connected with these.

While Section 1 provides the basic historical and economic background to understanding how the British global system and networks of empire worked, how the Scots contributed to the empire, and how colonial patterns of investment, migration, culture and trade were followed in Argentina, Section 2 will explore more specifically the iron trade in Britain, Scotland, and Argentina and its role in the global imperial system.

Section 2: Iron Trade and Production in Britain, Scotland and Argentina

2.1 Introduction

The production and use of iron has always been associated with the cultural state of a civilisation. In addition, iron was an essential element for winning wars and became a crucial material for any people or civilisation wishing to progress and keep ahead of rivals or potential enemies. For that reason, *The Dictionary of Arts, Manufactures and Mines*, written in 1839, describes iron as follows:

Every person knows the manifold uses of this truly precious metal; drawn out into wires of any desired strength or fineness – of being extended into plates or sheets-of being bent in every direction-of being sharpened, hardened, and softened, at pleasure. Iron accommodates itself to our wants, our desires, and even our caprices; it is equally serviceable to the arts, the sciences, to agriculture, and war; the same ore furnishes the sword, the ploughshare, the spring of a watch or of a carriage, the chisel, the chain, the anchor, the compass, the cannon and the bomb....⁶¹⁵

The emergence of Great Britain as the world's most powerful trading nation was the direct result of the process of industrialisation in the Victorian period. During that time, the British Isles acquired a territorial empire a hundred times its own size. But thanks to trade, its influence went beyond that. This was achieved with the benefits of steam power, the production of coal and iron, the transformation of the country from an agricultural to a manufacturing country, command of the sea, and the finest merchant service in the world. As M. B. Synge had already pointed out in 1919: 'the British Empire was founded on trade, and exists on trade'.⁶¹⁶ In fact, it was the trade relationship that created the strong tie between Britain and Argentina. As mentioned in Section 1, after the failure of attempts to make Argentina a formal colony, Britain decided to approach the country 'only as traders' rather than as enemies, in order to

⁶¹⁵ Andrew Ure (1778–1857), chemist, born in Glasgow. He wrote several books and one of his major contributions was the *'Dictionary of Arts, Mines and Manufactures'*. See Scrivenor, *History of the Iron Trade. From the Earliest Records to the Present Period*, p. 2.

⁶¹⁶ M.B. Synge, *The Reign of Queen Victoria* (London, 1919), p. 209.

further expand its commercial interests.⁶¹⁷ A strong network of British immigrants, professionals, importers and traders, sustained by trade agreements, diplomacy and a pro-British local elite, paved the way for the easy introduction of British products (See Section 1). While to begin with the main imports of British products were related mainly to clothing, iron became more important from the second half of the nineteenth century.

John Darwin believes that British expansion was driven more by the pluralism of British private interests rather than by any official design. Nonetheless, the government also played a role in the system in guaranteeing free trade.⁶¹⁸ That was the merchants' principal demand, and it could only be achieved by agreeing commercial treaties that allowed them to trade with overseas markets on the same terms as locals and that encouraged investment (usually in canals, roads or railways, as happened in Argentina).⁶¹⁹

The iron industry soon became 'the most important staple manufacture of the United Kingdom'. Scotland in particular occupied a significant place in Britain's economic and industrial development, with Glasgow – one of its principal centres of industry – considered the 'workshop of the world'.⁶²⁰

Scotland was able to position itself as a leader in the iron industry, which allowed it to make a huge contribution to the empire. This was due to early developments in iron manufacturing, trade, and export capacity. As iron was an essential element for emerging cities – not only within Britain but also abroad – some countries, such as Argentina, ended up importing iron in huge quantities due to their rapid development. In addition, railways and sanitation systems facilitated the diaspora of British engineers who carried with them British imperial ideas, encouraging the

⁶¹⁷ L. Juárez, 'Scottish Cast Iron in Argentina: Its Role the British Informal System', in P. Dobraszczyk and P. Sealy (eds.) *Function and Fantasy: Iron Architecture in the Long Nineteenth Century* (Abingdon, 2016).

⁶¹⁸ Darwin, *The Empire Project. The Rise and Fall of the British World-System, 1830–1970*, p. 3.

⁶¹⁹ Ibid., p. 39.

⁶²⁰ Juárez, *Scottish Cast Iron in Argentina: Its Role the British Informal System*

consumption of British products. This ‘imperial network’ directly affected the iron trade between Great Britain and other countries that did not have a proper iron industry, as was the case in Argentina. In fact, it encouraged the construction of roads and railway lines for the distribution of imports (including iron manufactures), which in turn influenced product prices and reinforced the system. Last but not least, transport tariffs were often set high enough to discourage local production.

Pre-fabricated buildings and cast-iron elements offered a shortcut for cities undergoing rapid development. Cast iron also offered decorative elements that became very fashionable, at least until 1914. With the help of trade catalogues, cast iron – particularly Scottish products – became popular and was exported globally. These buildings and elements captured the spirit of technological and industrial progress, including the imperialistic ambition that characterised nineteenth-century Britain. Iron architecture and engineering followed this geopolitical influence, reflecting the architectural and technical spirit of the times.⁶²¹

Section 2 will explore the iron industry in Great Britain, with a special focus on Scotland, detailing the technological developments that helped the British empire establish its powerful position. From the consumer point of view, it will also highlight iron’s importance for developing countries such as Argentina and uncover the dependence that ensued, which in turn helped Britain keep its iron industry alive even when other countries’ production outstripped it. This corresponds to Robin Winks’ idea that the supremacy of an empire was closely related to technology and that an imperial relationship usually emerged as the result of a higher-technology society exerting influence over a lower-technology one. Britain’s body of expertise in manufacturing helped create areas of high demand in overseas markets like Argentina, giving it the chance to extend its imperial influence.⁶²²

⁶²¹ J. Clarke, ‘From Rational to Structurally Ornamental: Exported English Iron Architecture of the Mid-Nineteenth Century’, in P. Dobraszczyk and P. Sealy (eds.) *Function and Fantasy: Iron Architecture in the Long Nineteenth Century* (Abingdon, 2016), p. 134.

⁶²² R.W. Winks, ‘On Decolonization and Informal Empire’, *The American Historical Review*, vol. 81, no. 3 (1976).

Finally, this section will demonstrate how the ‘imperial style’ used in the iron industry was transported via illustrated trade catalogues, written both in English and Spanish, and extended the reach of British influence.

2.2 The Rise and Development of the Iron Industry in the British Isles

Iron was first worked in the Near East around 1500BC, and was introduced in Britain through Celtic immigration around 450 to 500 BC.⁶²³ The Romans were highly skilled in metal production and, Britain increased iron production considerably under their Roman under Roman rule. However, iron production development in Britain stalled after the fall of the Roman Empire. It only flourished again during medieval times, when important centres of iron production appeared in Kent, Sussex, the Forest of Dean and Rockingham. There were also centres that produced iron for their own needs, as was the case at many abbeys.⁶²⁴ In Scotland, however, the situation was quite different as there is no evidence of iron smelting until the second part of the seventeenth century.⁶²⁵

Iron is the fourth most abundant element on earth and the second most common metal, after aluminium. It is very difficult to find in a pure state and is more commonly found as ore.⁶²⁶ To understand the evolution of the iron industry it is important to recognise the three basics types of iron: wrought iron, cast iron and steel. The basic elements needed to obtain these are iron ore, a fuel source, and high temperatures.

While iron ore is the natural mineral, pig iron is a semi-processed product obtained by smelting iron ore and limestone in a blast furnace. The product is made into iron ingots or bars that can be converted into wrought iron, cast iron or steel through the use of different processes, as illustrated in **Graph 2–1**.⁶²⁷

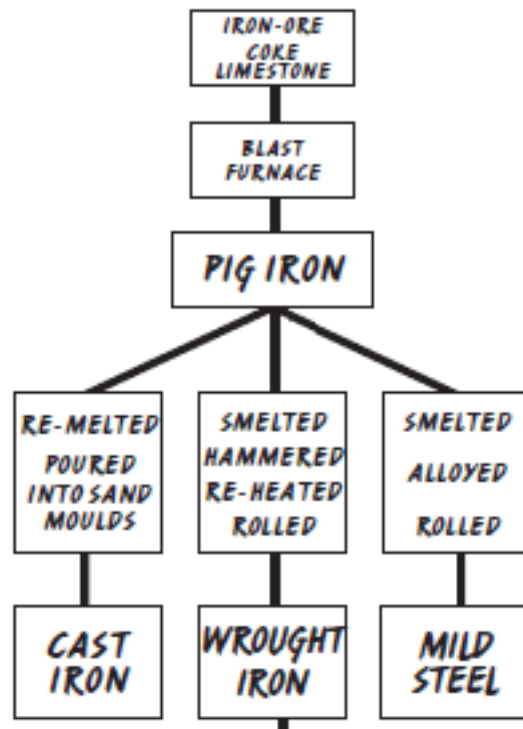
⁶²³ J.R. John R. Harris, *The British Iron Industry, 1700–1850* (Basingstoke, 1988), p. 11.

⁶²⁴ Gloag and Bridgwater, *A History of Cast Iron in Architecture*, p. 9.

⁶²⁵ Day, *Iron and Steel Industries of Scotland*, p. 30.

⁶²⁶ M. Campbell, *An introduction to ironwork* (London, 1985), p. 5.

⁶²⁷ Burnham and Hoskins, *Iron and Steel in Britain, 1870–1930*, p. 22.



Graph 2–1. Types of iron. Source: C. Richardson, ‘An Iron Will’, <http://www.buildingconservation.com/articles/anironwill/anironwill.htm> (accessed September 1, 2017).

Pig iron is usually used as a ‘raw material’ and to quantify iron production in general. Although cast iron is sometimes presented as an evolution of wrought iron, and steel as an evolution of cast iron, these three types of iron had different forms of technological development, strength and aesthetics. For those reasons, they were sometimes used together in the same construction, as commonly happened in railway stations. In fact, in some cases differentiating between the three can be extremely complicated. Although this thesis focuses on the cast iron industry, sometimes wrought, cast iron, and steel are referred to as ‘ironwork’ or ‘iron and steel’ when generalising, or when it has been difficult to make distinctions.

Nevertheless, it is essential to understand how wrought, cast iron, and steel are produced, and to understand the technical development that accompanied them, in order to understand the general history of the iron industry, and cast iron in particular.

Wrought Iron

From 500 BC to 1500 AD the most common method of obtaining metal from iron ore was to use charcoal to heat it to 1200 degrees centigrade. This produced a piece of iron mixed with impurities called ‘bloom’. A bloomery was generally a clay and stone furnace construction with a central chimney and an access hole at the bottom. The iron ore was mixed with the charcoal and hand-bellows got the fire going **(Figure 2–1)**.⁶²⁸ The metal produced, once impurities had been removed by hammering, would produce wrought iron, a material that could be forged to make different shapes. In fact, its name comes from the past participle of the Middle English word ‘werken’ (work), which indicates that that iron has to be worked into some kind of form.⁶²⁹ The process of converting iron ore into metallic iron without melting is called ‘direct reduction’.⁶³⁰

Water-powered bellows later replaced the hand operated ones and the bloomeries were made taller. As furnaces became bigger additional structures were needed to fill the furnaces, such as ramps.⁶³¹ Still, bloomeries were later supplanted by the blast furnaces – a furnace in which a blast of air is used to produce higher temperatures. Blast furnaces were much bigger than bloomeries and produced more iron. Although blast furnaces were common in China in the fifth century, the first blast furnace in Britain was built in Sussex in 1496. The blast furnace produced a molten metal that was drawn into narrow channels of sand to form bars of ‘pig iron’, a type of cast iron which, when re-heated in a process called ‘indirect reduction’, created wrought iron **(Figure 2–2)**.⁶³²

⁶²⁸ Campbell, *An Introduction to Ironwork*, p. 5.

⁶²⁹ ‘wrought’, <http://www.etymonline.com/index.php?term=wrought>

⁶³⁰ Campbell, *An Introduction to Ironwork*, p. 5.

⁶³¹ ‘Essential Elements for Early Iron Smelting’, <https://www.gooseygoo.co.uk/tag/bloomery/> (accessed September 14, 2017).

⁶³² J. Fearn, *Cast Iron* (Buckinghamshire, 2001), p. 3.

Cast iron

The Chinese were very skilled in cast iron production from around 600 AD,⁶³³ but their techniques only reached Europe in the late-fourteenth century. To produce cast iron, pig iron was melted with the use of blast furnaces, resulting in a new alloy that contained a higher proportion of pure iron. Once cooled, the alloy became so rigid that it could not be worked with a hammer. It was only useful when re-heated to a molten state and poured into moulds.⁶³⁴

Among early cast-iron products found in the British Isles were grave slabs, fire backs, anvils, mortars and cooking utensils made in Sussex, England. The oldest known cast-iron piece is Joan Colins' grave slab of 1350, located in Burwash Church. In fact, Sussex was an important centre of iron production due to its abundant supplies of fuel and good proximity to London. Moulded iron was put to early use making cannons⁶³⁵ and Henry VIII (1509–47) considered Sussex critical to the continued improvement of his army as it produced cannons and shot. As the armament industry became increasingly important it also required regulation; a patent for a casting cannon appeared in 1573, demonstrating how cast iron was used as a tool of power.⁶³⁶

As iron production increased, the problem of timber shortage grew considerably. As early as 1543, Parliament passed an Act to regulate tree felling. This stimulated not only the smelting of iron, as it required less charcoal fuel per ton of metal handled, but also research into alternative fuels. Finding successful substitutes nevertheless took time; a hundred years and many failed attempts would pass before Abraham Darby successfully used coke in a blast furnace at Coalbrookdale in 1709.⁶³⁷ Two years earlier, he had also patented his method of sand casting iron pots using re-

⁶³³ Ibid., p. 3.

⁶³⁴ R. Lister, *Decorative Cast ironwork in Great Britain* (London, 1960), p. 2.

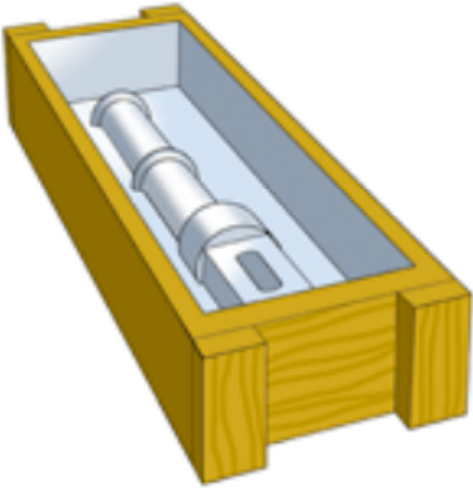
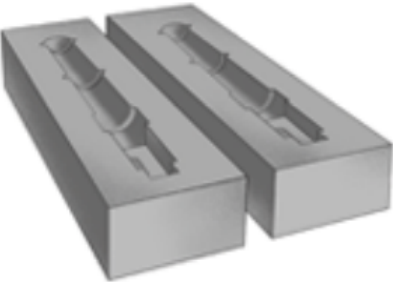
⁶³⁵ Fearn, *Cast Iron*, p. 4.

⁶³⁶ Gloag and Bridgwater, *A History of Cast Iron in Architecture*, pp. 11–18.

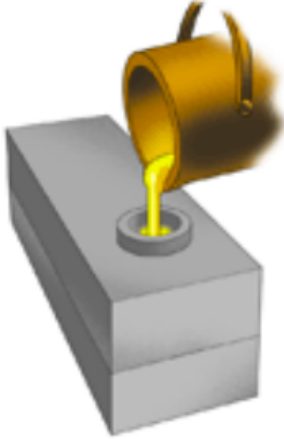
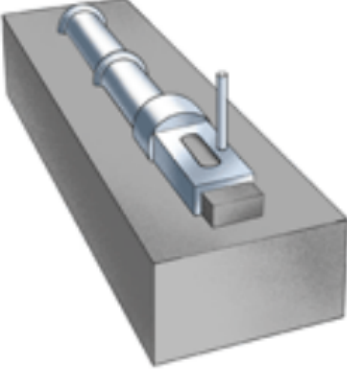
⁶³⁷ Ibid., pp. 11–18.

usable patterns, pioneering the use of dry sand moulds that allowed thin walled castings to be made. It was a valuable leap forward over the use of clay loam for moulding.⁶³⁸ Both Abraham Darby's patent for sand casting pots and the use of coke instead of charcoal as a fuel marked the beginning of mass production of cast iron goods, as these were now easier and cheaper to make than wrought iron products.

The most important stages for production of cast-iron elements were pattern making, mould making, and casting. **Table 2–1** briefly explains these stages.

 The pattern making	The pattern represents the final shape the casting will have. This was more commonly made of wood. The wooden pattern was placed in box ready for sand moulding.
	The moulding sand is placed in a metal box (the moulding box) that has two halves, which join together later on. The sand would be built up against the face of the pattern, facing sand (sand that covers the face of the pattern, facing sand (sand that covers the patter all around it, that will be in direct contact with the molten metal) first. More sand would be added and pushed to compress the sand against the

⁶³⁸ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 22.

Sand moulding in halves	pattern
 Sand core	A sand core is made that fits precisely within the mould leaving a space between the core and the mould that will produce a constant metal thickness.
 Pouring	The molten metal is carried from the cupola furnace by hand, bogie or crane and poured into the risers.
 Cooling	Once cooled sufficiently, the casting is removed and allowed to fully cool.

 Finishing	Gates and risers are detached and the casting cleaned up.

Table 2–1. Cast iron process. Source: Table made by author using images from

<http://www.hargreavesfoundry.co.uk/userfiles/attachments/pages/96/castironproduction.pdf> and

information taken from D. Mitchell, ‘The Development of the Architectural Iron Founding Industry in Scotland’ (PhD thesis, Edinburgh, 2012).

Steel

Steel is a material with carbon content between that of wrought iron and cast iron.⁶³⁹ It is produced in a liquid condition that can then be used for castings or to produce ingots. Like cast iron, steel was widely known in antiquity; but it was very expensive to make. What made a real difference in its production was the development of the Bessemer process, devised in 1855 by the Englishman Henry Bessemer.⁶⁴⁰ The process produced a more purified iron called ‘mild steel’ in only thirty minutes. This was a new and far more consistent material for engineering, being superior to wrought iron and far cheaper than tool steel. This new product, alongside Siemens-Martin open-hearth steel (1865), revolutionised the iron industry, where it replaced the use of cast iron, especially in structural components, as steel could performs

⁶³⁹ Harris, *The British Iron Industry, 1700–1850*, p. 41.

⁶⁴⁰ Burnham and Hoskins, *Iron and Steel in Britain, 1870–1930*, p. 23.

much better in tension than cast iron.⁶⁴¹ Today iron in the form of steel is a vital ingredient in the global economy, but its development is inextricably related to the cast iron industry, with as much as 65 per cent of world production starting as cast iron coke-fired blast furnaces.⁶⁴²

The machinery and improvements in foundry techniques introduced by the cast iron industry were essential to the success of the Industrial Revolution. Aside from coke smelting, further innovations drove the development of the British iron industry.

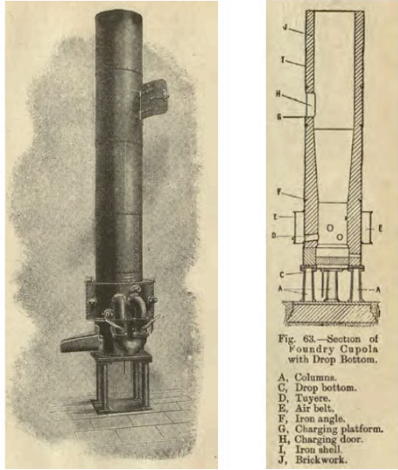
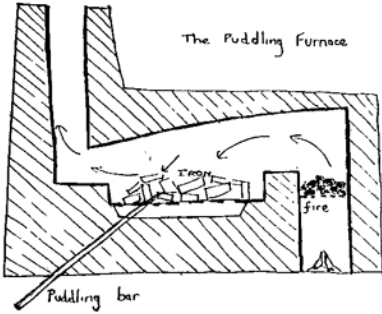
⁶⁴¹ G. Tweedale, ‘‘Bessemer, Sir Henry (1813–1898)’, <http://www.oxforddnb.com/view/article/2287> (accessed April 12, 2017).

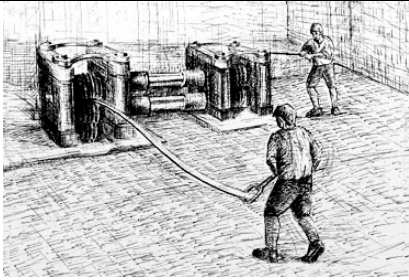
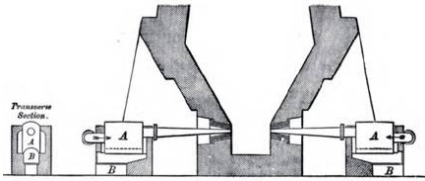
⁶⁴² Information taken from material exhibited at Coalbrookdale site.

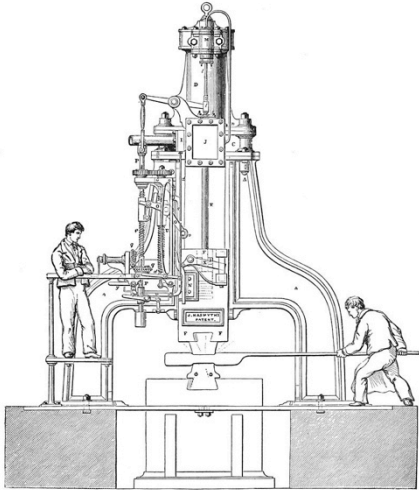
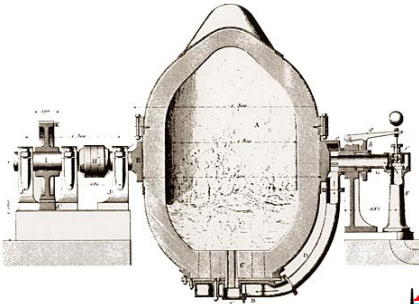
2.2.1 Technical Developments in the British Iron Industry

Table 2–2 summarises the most important technical developments in the iron industry in Britain. The table is organised chronologically and covers name and location of inventions, along with a brief explanation of devices and their significance for the iron industry.

Year / Place	Inventor	Discoveries, developments and devices	Significance for the Iron Industry
1709 England	Abraham Darby (1678–1717)	Successfully uses coke for smelting iron, thus preventing deforestation in Great Britain.  (Ironbridge over Severn River. Photo author)	Lowering the cost of iron production. High-quality iron could be produced in much larger quantities. In 1777 it made possible the construction of the Iron Bridge over the Severn (by Abraham Darby's grandson, Abraham Darby III (1750–91). The bridge has a single semi-circular arch of 30.6m span, made up of 10 half ribs, each cast in one piece. It contains 385 tonnes of ironwork and almost 1,700 components, the heaviest weighing 5.5 tonnes. The Ironbridge (UNESCO World Heritage since 1986) was a significant event in the use of cast iron as a construction medium.
1774 1776 1794 England	John Wilkinson (1728–1808)	In 1774 John Wilkinson invented a drill machine that improved James Watt's steam engine. In 1776 he developed a steam-powered furnace blower. In 1794 he invented the cupola furnace. A vertical cylindrical furnace used for re-melting pig iron with coke in foundries away from the blast furnace.	The introduction of the cupola furnace allowed the manufacture of castings without the initial expense of ore processing. As the pig iron produced from the ore was relatively portable it could be simply re-melted and cast into moulds. As a consequence, these advances stimulated the cast iron industry.

		 Fig. 63.—Section of Foundry Cupola with Drop Bottom. A. Columns. B. Drop bottom. C. Tuyere. D. Air belt. E. Iron angle. F. Charging platform. G. Charging door. H. Iron shell. I. Brickwork. (Cupola furnace. Ibid., p. 49)	
1783 1784 England	Henry Cort (1741–1800)	Developed the reverberatory furnace (puddling process) and grooved rollers (rolling process). The reverberatory furnace, or puddling furnace, was a furnace used for smelting iron in which the fuel was not in direct contact with the iron ore, but rather heated it by a flame blown over it from another chamber. As the molten pig iron was stirred (puddling) and decarbonised by air, it became thicker. The puddling also helped to remove impurities.  (Puddling Furnace. http://shropshirehistory.com/iron/iron_making.htm) Puddled iron, like wrought iron, was tougher and more malleable than pig iron and could be hammered and finished with grooved rollers (the rolling process). Grooved rollers shaped the puddled iron into bars. The rollers also helped squeeze out impurities, and preliminary shaping into bars made the iron more readily useable for the final product.	Made possible the large-scale and inexpensive conversion of cast iron into wrought iron. Rolling replaced hammering for consolidating wrought iron and was fifteen times faster. Puddling used the plentiful coke instead of more expensive charcoal. The combination of puddling and grooved rollers was a process that could be mechanised. The result was coordinated processes. The rolling process could be repeated several times to get better quality wrought iron. Increased production at reduced cost. Helped the British industry to produce iron in excess, thus making exports possible.

		 (Rolling Mill. Using grooved rollers http://shropshirehistory.com/iron/iron_making.htm)	
1801 Scotland	David Mushet (1772–1847)	Mushet discovered the so-called black-band or Mushet stone, which was a rich ore found near Lanarkshire in Scotland with a high phosphorus content.	The use of this stone allowed cast iron to flow more readily and gave it a high graphite content that could produce a high quality surface finish, making it particularly suitable for the production of highly detailed castings. However, it was not very suitable, for steel production.
1828 Scotland	James Beaumont Neilson (1792–1865)	Neilson invented the hot blast furnace. He discovered that by heating the blast, carbon generates three times its heat units. Less fuel is required with hot blasts and less time is needed for combustion.  (Neilson's original hot blast apparatus. Image http://himedo.net/TheHopkinThomasProject/Timeline/IndustrialRevAmerica/Iron/TurnerText.htm)	Hot blast technology reduced fuel consumption and production costs. Use of the hot blast tripled iron output per ton of coal. It also made possible the efficient use of raw coal and lower grades of coal instead of coke. Allowed the construction of larger smelting furnaces.
1839 Scotland	James Nasmyth (1808–1890)	Nasmyth used steam power for heavy hammering. The idea was to lift a vertically guided heavy mass or hammer-block by the direct action of steam.	This allowed working of large pieces for forging. Encourage mass production of wrought iron.

		 (Nasmyth Steam Hammer 'The Popular science monthly,' <i>The Popular Science Monthly</i>, vol. 38 (1890), p. 335)	
1856 England	Henry Bessemer (1813–1898)	Bessemer used an egg-shaped furnace (a converter), open at one end, blowing air into molten pig iron. Thus, the oxygen in the air-blast burnt out the carbon and other impurities. The oxidation also raised the temperature of the iron mass and kept it molten. Through this process Bessemer was able to obtain a more purified iron – mild steel – in only thirty minutes. Before the Bessemer process, Britain had no practical method for reducing the carbon content of pig iron. Steel was manufactured by the reverse process of adding carbon to carbon-free wrought iron, usually imported from Sweden. After 1890, the Bessemer process was gradually supplanted by open-hearth steelmaking.  (Bessemer Converter. http://www.industrie.lu/Thomas_Gilchrist.html)	Mild steel was a new and far more satisfactory material for engineering than cast iron, because steel is equally strong in tension and compression, while cast iron is very weak in tension. In addition Bessemer's process revolutionised steel manufacture by decreasing its cost from £40 per ton to £6 per ton. It helped increase the scale and speed of steel production. The process also decreased the labour needed for steel making. The Bessemer process was so fast that it allowed little time for chemical analysis or adjustment of the alloying elements in the steel. Thus it did not remove phosphorus efficiently from the molten steel.
1860 1865	Siemens (1823–	William Siemens, a German who lived most of his life in England, invented the	This process was slower than the Bessemer Process, thus easier to

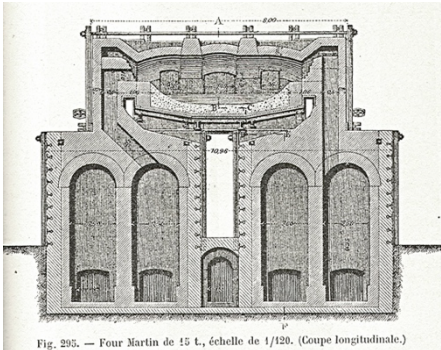
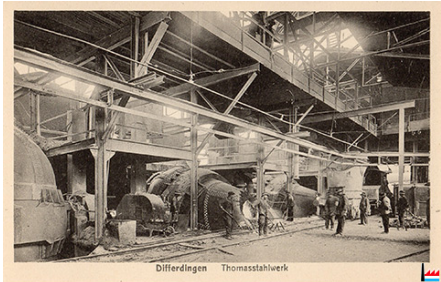
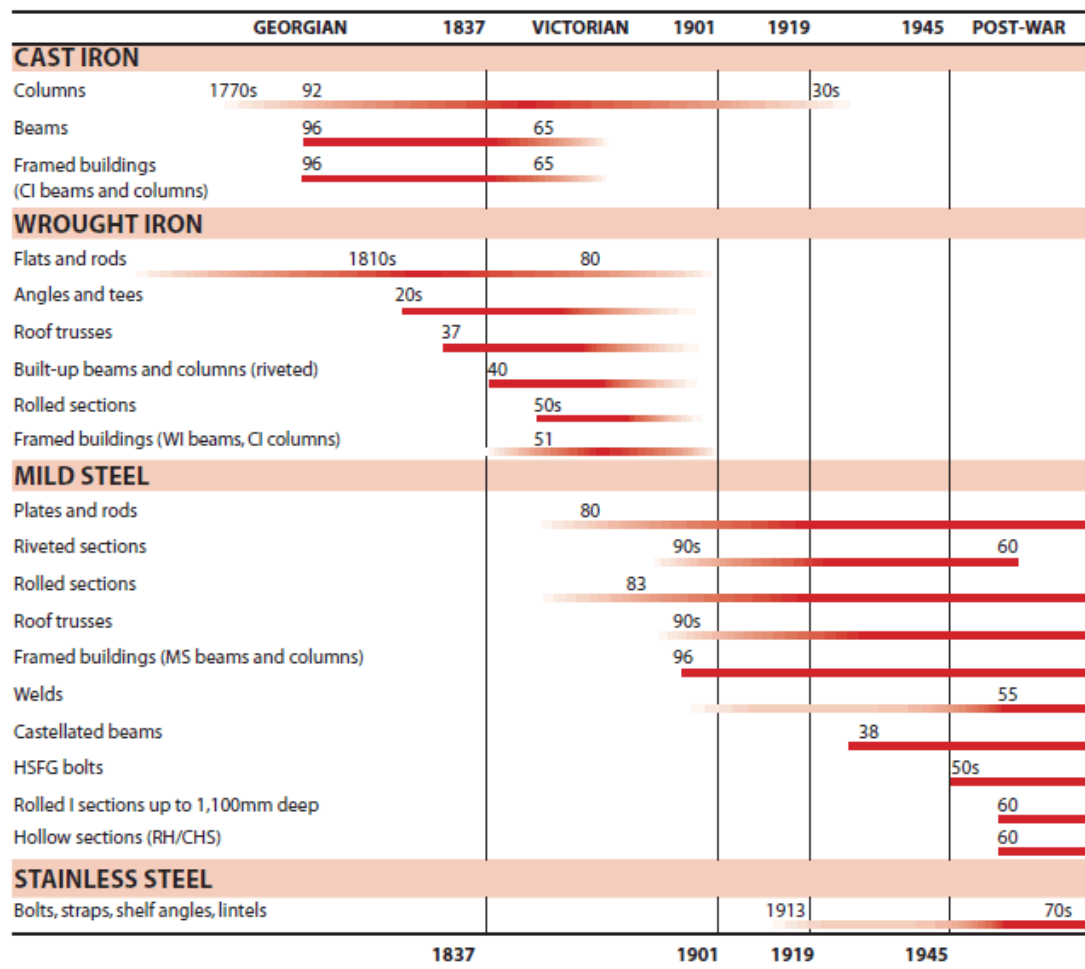
England	1883) and Martin (1824–1915)	regenerative furnace, which preheated the incoming air. In regenerative preheating, the exhaust gases from the furnace are pumped into a chamber containing bricks, where heat is transferred from the gases to the bricks. The flow of the furnace is then reversed so that fuel and air pass through the chamber and are heated by the bricks. In 1865 the French engineer Pierre-Émile Martin took out a licence from William Siemens for the regenerative furnace and was the first to apply it to making steel. This process is known as the Siemens-Martin or open-hearth process.  Fig. 295. — Four Martin de 15 t, échelle de 1/120. (Goupe longitudinale.) (Open-hearth process. Manual de la métallurgie du Fer, p. 547)	control. The open-hearth process used the gases from the molten charge to pre-heat the air blast and so economised on fuel. An alkaline lining was used if the ore contained phosphorus. Encouraged steel production.
1878 England	Sidney Gilchrist Thomas (1850–1885)	Thomas developed a lining for Bessemer converters that would absorb phosphorous from the iron. This is called as Thomas-Gilchrist converter  (Thomas Converter in use. http://www.industrie.lu/Thomas_Gilchrist.html)	The Thomas-Gilchrist converter was adopted in many European countries where their iron had a high phosphorus content. Encouraged steel production. However, the Siemens and Martin process was more widely adopted.

Table 2–2. Key technical developments in the iron industry. Source: Various⁶⁴³

⁶⁴³ This table was made by the author using information from different sources: *Mitchell, The Development of the Architectural Iron Founding Industry in Scotland*; information taken from NHIG (National Heritage Ironwork Group) course attended on 22–23 October 2012, Edinburgh; J.R. Harris, “‘Wilkinson, John (1728–1808)’”, <http://www.oxforddnb.com/view/article/29428> (accessed April 17, 2017).; ‘Henry Cort’, <http://www.encyclopedia.com/people/science-and-technology/metallurgy-and->

Progress in technical developments advanced in proportion to the needs of the population, the need for the material to improve its performance and for costs to be lowered. **Graph 2–2** shows a timeline illustrating the use of wrought iron, cast iron, and steel in construction.



Graph 2–2 Timeline showing the preferred use of iron. Source: Richardson, *An Iron Will*

mining-biographies/henry-cort (accessed April 17, 2017)., and T. Turner, 'The Metallurgy of Iron', <http://hinedo.net/TheHopkinThomasProject/TimeLine/IndustrialRevAmerica/Iron/TurnerText.htm> (accessed April 10, 2017).

The failure of cast-iron beams in buildings and bridges – especially the collapse of the Tay Bridge in 1879– brought an end to the use of cast-iron beams because it was not strong in tension.⁶⁴⁴ However, because of its structural characteristics, cast iron was good in compression, making it ideal for use in supporting columns. It also had the added advantage of being decorative and adaptable to many tastes. Wrought iron was also used decoratively until late nineteenth century, when it was utilised rather more as a complement to cast-iron structures. Indeed, wrought iron beams replaced cast iron in those parts of structures that were more susceptible to lateral forces (usually roof components). And with the proliferation of iron as a construction element, almost every type of building used both cast and wrought iron in combination to promote strength: cast iron was used in support work, mainly in columns and brackets, while wrought iron was used in tensile work such as roof beams and trusses.

As steel proved strong in both tension and compression, it became more popular for structural purposes, although it did not have the decorative advantages of wrought and cast iron. Towards the end of the nineteenth century, steel began to be mass produced and became widely used as a framing material. Iron became obsolete as a construction material around the turn of the twentieth century, and steel becoming more popular between the 1920s and the 1950s with the expansion of Functionalist architecture, that promoted steel-framed buildings.⁶⁴⁵

2.2.2 British Iron Production

Iron manufacture and trade gave Great Britain numerous advantages. As Scrivenor points out:

*If coal and iron have made Great Britain what she is, if this
has given her the power of 400,000,000 of men, and impelled*

⁶⁴⁴ Richardson, *An Iron Will*.

⁶⁴⁵ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 7.

the manufactories which have made us, like the rest of the world, *her debtors*, why should not we, with at least equal advantages, make them instruments of our own independence.⁶⁴⁶

As can be seen in **Table 2–3**, between 1740 and 1830 the production of iron increased almost forty-fold. This expansion was due to the technical advancements brought by Abraham Darby’s use of coke instead of charcoal,⁶⁴⁷ Cort’s puddling furnace and Wilkinson’s cupola furnace.

Pig iron production in Britain 1740–1830	
Years	Tons
1740	17,350
1788	68,300
1796	125,079
1806	258,206
1825	581,367
1830	678,417

Table 2–3. Pig iron production in Britain. Source: Scrivenor, *History of the Iron Trade*, p. 136.

Iron production kept growing in the following years and, all the while, steam power was becoming more and more common.

Before the development of the railways, iron foundries were located near coalfields or places where coal could be easily transported by water. The development of

⁶⁴⁶ Scrivenor, *History of the Iron Trade. From the Earliest Records to the Present Period*, p. 269. Emphasis by author.

⁶⁴⁷ The change from charcoal to coal took several years. For instance, in 1740 the quantity of charcoal pig-iron manufactured in England and Wales was 17,350 tons, decreasing to 13,100 by 1788. See: *Ibid.*, p. 87.

railways from the 1830s in Great Britain also helped the iron industry. By 1839 iron production in Great Britain was already double that in 1830. The majority of the furnaces were located in England, with Wales second and Scotland third, as illustrated in Table 2–4. However, in terms of iron production per furnace, the order is in reverse, with Scotland coming first, Wales second, and England last.

Production of iron in Britain in 1839			
	Furnaces in blast	Tons of pig iron	Average Annual production per Furnace
Scotland	54	196,960	
Scotland	54	196,960	3647.4
South Wales	122	453,880	
North Wales	13	33,800	
Wales	135	487,680	3612.4
Staffordshire, South	106	346,213	
Staffordshire, North	7	18,200	
Derbyshire	14	34,372	
Yorkshire	22	52,416	
Newcastle-on-Tyne	5	13,000	
Lancashire (charcoal)	0	800	
Forest of Dean	5	18,200	
Shropshire	29	80,940	
England	188	564,141	3000.8
TOTAL	377	1,248,781	

Table 2–4. Production of iron in Britain in 1839. Source: Made by author, using information from: Scrivenor, *History of the Iron Trade*, p. 256. Adapted by author

In the following years the production of iron increased considerably. New areas began to produce iron and there were substantial changes in which places produced the most iron. **Table 2–6** shows that, while England still had the most working

furnaces, Scotland was producing the most tons of pig iron per furnace by 1852; this was a direct consequence of the use of black stone and the hot blast furnace.

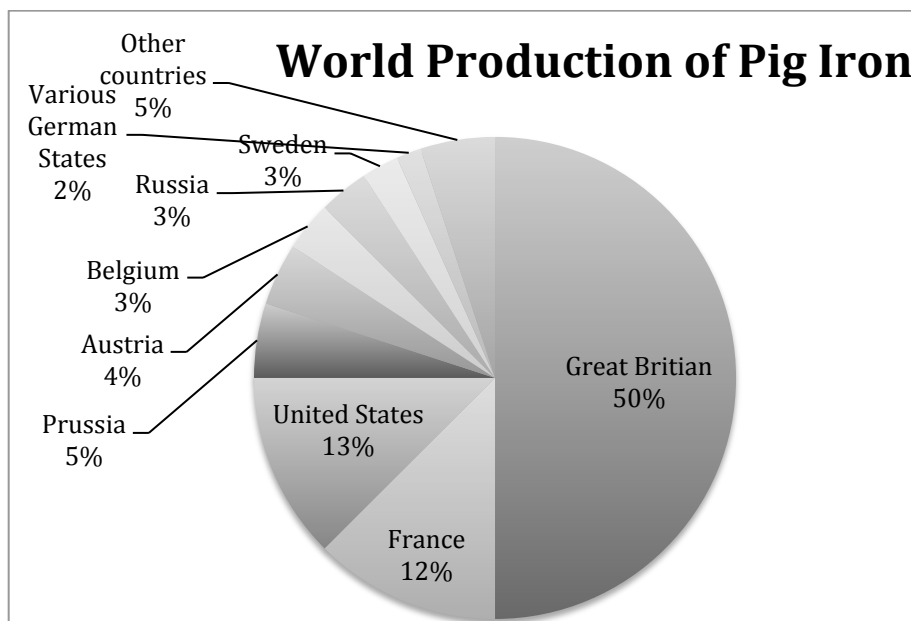
Production of Pig Iron in Britain in 1852			
	Furnaces	Tons pig-iron	Average Annual production per Furnace
Scotland	144	775,000	
Scotland	144	775,000	5381.9
South Wales	162	635,000	
South Wales, Anthracite	35	31,000	
North Wales	13	30,000	
Wales	210	696,000	3314.3
Staffordshire, South	159	725,000	
Yorkshire and Derbyshire	42	150,000	
Shropshire	40	120,000	
Durham	26	110,000	
Staffordshire, North	21	90,000	
Northumberland	13	35,000	
England	301	1,230,000	4086.4
TOTAL	655	2,701,000	

Table 2–5. Production of Pig Iron in Britain in 1852. Source: Scrivenor, History of the Iron Trade, p. 302

The fact that more iron could be produced per furnace in Scotland than anywhere else in the UK also reveals the extent to which the individual nations of the UK contributed to the empire (See Section 1). Undoubtedly, in terms of iron production, Scotland played a significant role at least until the First World War.

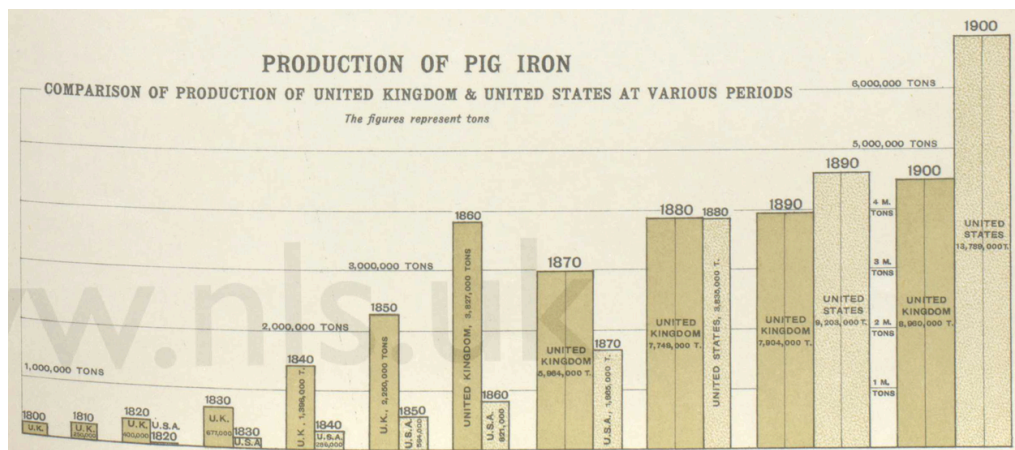
By the middle of the nineteenth century, iron had been successfully used for railways, ships, bridges and other engineering projects. However, after the construction of the Crystal Palace in 1851, it began to be used more frequently in buildings, and this encouraged iron production not only in Great Britain, but around

the world. France, the United States, Prussia, Austria, Belgium, Russian, Sweden and Germany were among Britain's competitors. Even so, by 1853 Great Britain was producing as much pig iron as all these other countries combined (**Graph 2–3**).



Graph 2–3. World Production of pig iron in 1853. Source: Graph made by author with information taken from S. Griffiths, *Griffiths' Guide to the Iron Trade of Great Britain* (London, 1873). p. 32.

World production of pig iron grew steadily over the years. By 1870 it had reached nearly 12 million tons, by 1895 almost 30 million, by 1913 about 78 million and, finally, by 1930 almost 80 million. Britain kept its lead in the industry until 1890, when it was surpassed by the US, as illustrated in **Graph 2–4**.



Graph 2—4. World production of pig iron. Source: J. Bartholomew, *Atlas of the World's Commerce* (London, 1907).

The growth of the United States was a consequence of the opening of large deposits of iron in America, the replacement of wrought and cast iron production by the Bessemer process and the use of open-hearth steel processes, which were in fact introduced by the Scottish company Carnegie (which became the largest manufacturer of pig iron, steel rails and coke in the world). At the same time, in Europe, Great Britain had started to feel the competition from Germany, whose steel production exceeded that of Britain's in 1893. By 1914 Germany was producing double the amount of steel of Britain and dominated all the major European Continental markets, except France. These changes in Europe and America, along with the comparative leanness of iron ores in Britain, were all significant factors that led to other countries outstripping Britain in the iron (mainly steel) market.⁶⁴⁸

Although the US and Germany dominated production, Britain continued to dominate overseas trade, and this helped to keep the British iron industry alive for much longer. One of the contributing factors to Britain's export success was the close relationship between railway and infrastructure developments, which coincided with the opening of new markets abroad. South American and other non-colonial countries, where big infrastructure projects were in the hands of the British,

⁶⁴⁸ 'The British Iron and Steel Industry', *Nature*, vol. 129, no. 3264 (1932).

stimulated the iron trade through imperial networks and helped maintain Britain and its position amongst foreign nations as ‘the great emporium of the iron manufacture’.⁶⁴⁹

⁶⁴⁹ Scrivenor, *History of the Iron Trade.*, p. 301.

2.3 The Overseas Iron Trade

It is well established that international trade played a key role in determining the character and development of the British economy. A significant proportion of its industrial output was exported. In 1907, for instance, 83.6 per cent of cotton textiles, 56.6 per cent of woollen goods, and 39.9 per cent of iron and steel, engineering, and shipbuilding output was exported from the UK.⁶⁵⁰ However, these numbers do not have much significance without an understanding of the importance of the trade in iron to the British imperial system.

In 1750 the development of the iron industry in colonial America began to interfere with British production and manufacturing, giving rise to a need to regulate and control the colonial iron industry. It was inconceivable to the British that the colonies would act as competition, as ‘colonies were expected to serve in the general scheme of the British Empire’.⁶⁵¹ However, an Iron Act was passed, with the intention of restricting growth by keeping the colonies as suppliers of raw metals. Hence, to meet British needs, pig iron and iron bars made in the colonies were allowed to enter England duty-free, whereas the establishment of new furnaces to manufacture iron in the colonies and export it to Britain and other parts of the Empire were strictly prohibited.⁶⁵²

The Act was ineffective. It was pointless for colonial iron masters to send their iron to Britain to be worked into products that would then be returned to the colonies at a higher price than those manufactured by skilled colonial ironworkers.⁶⁵³

Consequently, the US did not send large amounts of pig and bar iron as proposed, and the Act did not manage to stop the growth of the American iron industry. Indeed, ‘the antagonism towards British attempts to control the American iron industry was

⁶⁵⁰ T.J. Hatton, ‘The Demand for British Exports, 1870–1913’, *The Economic History Review*, vol. 43, no. 4 (1990).

⁶⁵¹ Bining, *British Regulation of the Colonial Iron Industry*, pp. 4–6.

⁶⁵² *Ibid.*, pp. 1–3.

⁶⁵³ *Ibid.*, p. 116.

contemporary with the increasing opposition to imperial supremacy⁶⁵⁴ and the Act was followed by a rapid expansion of the colonial iron industry that was hugely instrumental in helping the country gain independence. In fact, it has been suggested that ‘if the colonial iron industry had not reached such a high stage of development by 1775, the colonists would have had small chance for success in their struggle for independence’, as iron was essential for equipping armies.⁶⁵⁵

Nonetheless, the US scenario set an important precedent for the model Britain applied in Argentina, in which it discouraged local industry and promoted the consumption of manufactured iron products. In fact, this pattern came to define roles assumed by developed and developing countries for centuries, as by the end of the twentieth century, 96 per cent of steel output was produced by developed countries, and only 4 per cent by developing countries, while the consumption of steel by developing countries was almost the reverse.⁶⁵⁶

Even though the iron trade was already significant for Britain by the end of the eighteenth century, both iron production and trade increased further as a consequence of the technological developments of the first half of the nineteenth century. These allowed thousands of excess tons to be exported outside the UK. **Table 2–6** shows the increase in exports of British iron between 1840 and 1852.

⁶⁵⁴ Ibid., p. 117.

⁶⁵⁵ Ibid., pp. 3–4.

⁶⁵⁶ I. Walter, *Trade and Structural Adjustment Aspects of the International Iron and Steel Industry: the Role of the Developing Countries* (1978), pp. 48–49.

Exports of British iron, including unwrought steel	
1840–1844 (average)	381,254
1845–1849	534,120
1850	783,482
1851	919,479
1852	1,035,884

Table 2–6. Exports of British iron. Source: H. Scrivenor, *History of the Iron Trade. From the Earliest Records to the Present Period* (London, 1854)., p. 317

By 1852 large quantities of British iron were being sent to both Britain’s colonies and to other countries. Britain’s colonies in Asia, the West Indies, Australia, and Africa, received a total of 141,460 tons in 1852, with those in North America being the largest recipients. The non-colonial countries to which Britain exported its iron included the USA, France, Holland, Belgium, Spain Portugal, Russia, Sweden, Norway, Denmark, Prussia, Germany, Italy, Turkey, Greece and Egypt, Brazil, Mexico and other states of South America. These ‘non-colonies’ received far large quantities of iron –a total of 1,035,884 tons in 1852 – than Britain’s colonies, with the USA consuming almost half of the total amount exported (see **Table 2–7**).

BRITISH IRON EXPORTED, INCLUDING UNWROUGHT STEEL, IN THE YEARS 1839, 1851, AND 1852, And Declared Value of British Hardware and Cutlery, and Machinery and Mill-work, exported in the year 1851.					
Countries to which exported.	Iron exported.			Hardware and Cutlery.	Machinery and Mill-work.
	1839.	1851.	1852.	1851.	
	Tons.	Tons.	Tons.	£	£
BRITISH COLONIES.					
North America - -	21,547	90,933	85,764	184,086	5,031
Asia (including China) -	27,376	49,009	31,518	113,233	30,881
West Indies - - -	6,626	5,837	7,351	62,050	54,278
Australia - - -	- -	11,462	14,028	139,115	24,007
Africa - - -	4,868	2,468	2,799	29,395	3,362
Total - - -	60,417	159,709	141,460	527,879	117,559
United States of America	85,172	464,559	501,158	1,080,487	31,426
France - - -	14,934	14,661	22,325	87,152	77,150
Holland - - -	24,226	40,711	50,398	55,576	37,119
Belgium - - -	2,658	1,651	2,215	39,209	34,199
Spain - - -	1,244	11,549	27,369	44,445	141,136
Portugal - - -	6,721	11,776	9,498	21,320	13,151
Russia - - -	952	8,254	8,033	86,044	216,052
Sweden - - -	238	1,000	1,016	8,220	31,349
Norway - - -	308	7,261	6,739	12,670	16,553
Denmark - - -	6,180	14,718	22,322	14,583	5,247
Prussia - - -	3,384	33,113	39,430	9,196	23,305
Germany - - -	12,850	41,117	69,457	170,324	153,865
Italy - - -	19,125	45,830	53,153	66,589	63,270
Turkey, Greece, Egypt -	7,487	14,548	33,448	56,260	19,156
Brazil - - -	4,582	9,178	11,564	108,406	23,715
Mexico and States of					
South America - -	5,207	11,067	7,928	183,115	21,724
Other Countries - -	13,403	28,777	28,371	255,536	142,635
Total - - -	269,088	919,479	1,035,884	2,827,011	1,168,611

Table 2-7. British iron exports. Source: H. Scrivenor, *History of the Iron Trade*, p. 318.

In the 1870s the construction of railways gathered pace considerably, contributing significantly to the growth of pig iron production worldwide; it went from 8.9 million tons in 1866 to 11.1 in 1869 and 14.4 in 1872.⁶⁵⁷ Griffiths observed that 1872 will 'always be referred to as the most remarkable year on record, not only because of the great expansion of all metallurgical trades and manufactures but more especially on account of the greatly increased value of Iron which was established in the Great Britain'.⁶⁵⁸ By 1872 Britain was producing 42 per cent of the total of pig

⁶⁵⁷ Burn, *The Economic History of Steelmaking, 1867-1939: A Study in Competition*, pp. 13-19.

⁶⁵⁸ Griffiths, *Griffiths' Guide to the Iron Trade of Great Britain*, p. 1.

iron manufactured. Despite production increasing in other European countries, Britain dominated international trade: from 1866 to 1872 the British export of iron, excluding machinery, rose from 1.68 to 3.38 million tons.⁶⁵⁹

When the export of iron was at its highest point in Britain (1872), 46 per cent was taken by Europe, 30 per cent by the United States, 15.5 per cent by territories throughout the British empire, and just 6.5 per cent by Central and South American countries (see **Table 2–8**).⁶⁶⁰

Exports of pig iron in 1872		
Countries receiving exports	1871	1872
Germany	203,284	313,477
Holland	246,092	349,405
France	71,265	90,200
United States	190,183	193,957
Other Countries	346,634	385,687
Total	1,057,458	1,332,726

Table 2–8. British export of pig iron in 1872. Source: Griffiths, *Griffiths' Guide to the Iron Trade of Great Britain*, p. 28

Table 2–9 illustrates the export of general products in 1879, and shows that pig iron was amongst the most important.

⁶⁵⁹ Burn, *The Economic History of Steelmaking, 1867–1939: A Study in Competition*, pp. 19–20.

⁶⁶⁰ Ibid., pp. 20–21.

British exports of iron and steel 1872–1879 (in 000 tons)								
Type of product	1872	1873	1874	1875	1876	1877	1878	1879
Pig iron	1331	1142	776	948	910	882	923	1223
Railroad iron	945	785	783	546	415	498	439	464
Other malleable iron	673	639	587	662	597	652	640	678
Other iron and steel exports	325	362	299	280	279	291	251	283
Scrap	108	60	43	22	23	22	32	235
TOTAL	3382	2988	2488	2458	2224	2345	2285	2883

Table 2–9. British exports of iron and steel, 1872–79 (in 000 tons). Source: D.L. Burn, *The Economic History of Steelmaking, 1867–1939: A Study in Competition*, (Cambridge, 1961), p. 27

A series of factors curtailed Britain's lead in iron production and trade at the end of the nineteenth century. First, there was a general decrease in demand for railway materials in Europe.⁶⁶¹ Second, the rise in wages (which had been growing since trade union lobbying in 1863) had a significant effect on prices, making Britain less competitive: labour costs accounted for 90 per cent of the sale price of British iron, while in Belgium, for instance, these costs were 20–30 per cent lower. Third, British technological improvements were rapidly adopted in other countries and Germany, France, Belgium and the United States of America became Britain's main competitors. Even so, the United States was the only producer who could satisfy its

⁶⁶¹ Ibid., p. 27.

own internal demand, as it had both iron ore and coal and was very well located for distribution.⁶⁶²

Britain had no option but start looking for new markets and it turned its attention to the developing markets in Asia, Africa and South America. Not only was the use of iron new to many of the countries in those regions, but the countries were also, in some cases, independent, making it easier for Britain to penetrate their markets.⁶⁶³

Britain also had certain advantages over its competitors: not only was its geographical location more suitable than other European countries for trans-Atlantic trade but it also had a great deal of experience in shipping.⁶⁶⁴

Table 2–10 reveals that, amongst these new markets, South America received larger quantities of British iron than China, South Africa, Australasia, Canada, and even India from 1873 to 1889. This was possible for two reasons: (i) the South American countries were rapidly developing; and (ii) they relied on trade agreements signed in the 1820s when they were liberated from the Spanish crown. These countries were in need of railways and new buildings, and frequently imported whole prefabricated iron structures. South American countries did not have the necessary iron, technology, or industrialised production systems. Instead they imported these from Europe, and especially Britain, because that was where industrialised production was most advanced.⁶⁶⁵

⁶⁶² Ibid., pp. 13–19.

⁶⁶³ Ibid., p. 73.

⁶⁶⁴ Ibid., p. 79.

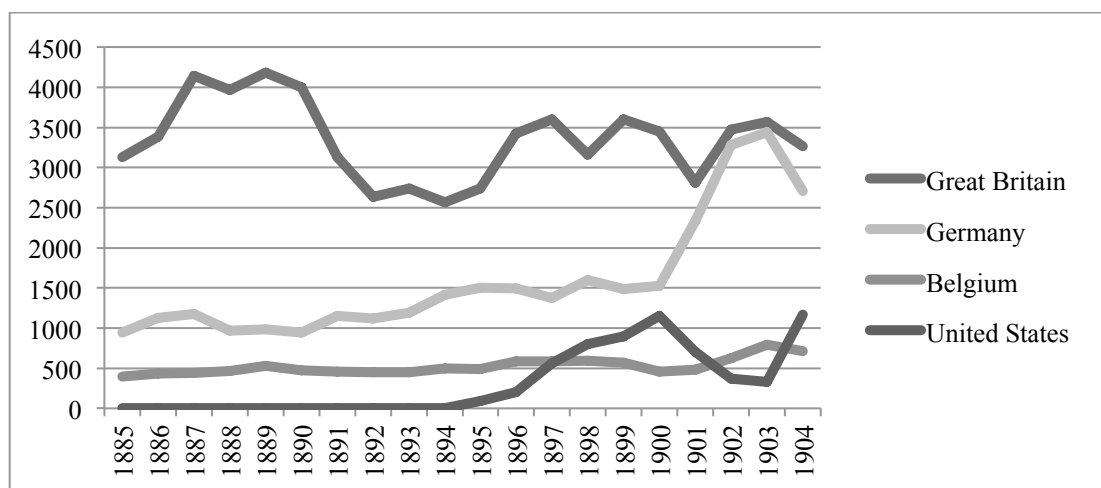
⁶⁶⁵ M. Lewis, 'The Asian Trade in Portable Buildings', *The Journal of the Society of Architectural Historians, Australia and New Zealand*, vol. 4, no. 1 (1993).

Exports of iron and steel from the United Kingdom (in 000 tons)	1873	1878	1883	1889
South America	155	128	379	693
China (inc. Hong Kong) and Japan	27	44	57	118
South Africa	17	31	72	106
Australasia	132	250	399	384
Canada	150	104	232	276
India	81	220	374	468
TOTAL	562	777	1513	2045

Table 2–10. Exports of iron and steel from the United Kingdom. Source: D.L. Burn, *The Economic History of Steelmaking*, p. 80

These new markets certainly stimulated iron production in Britain and this, along local demand from shipbuilding and other industrial engineering staples, allowed Britain to maintain its global supremacy for longer.

The growth and decline of exports in iron and steel of both Britain and its major competitors is illustrated for the period 1885–1904 in **Graph 2–5**.

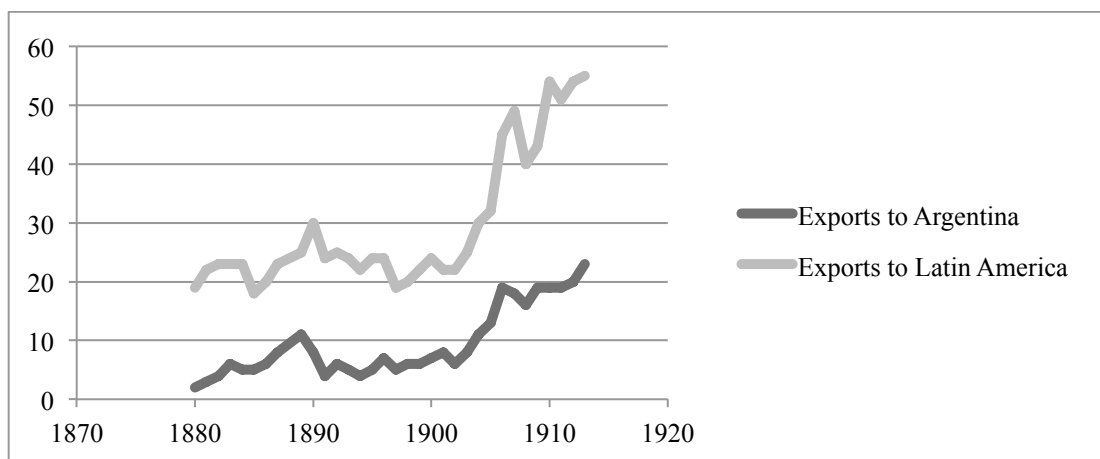


Graph 2–5. Exports of iron and steel 1885–1904 (in 000 tons). Source: Graph made by author taking information from tables in: Burn, *The Economic History of Steelmaking*, p. 81 and p. 84

As mentioned before, Britain's dominance of the iron market was helped hugely by the Latin American countries. A strong network formed in Latin America helped British business keep external competition under control. According to Platt, the British community were key to maintaining the level of British trade in Argentina.⁶⁶⁶

Britain was at the forefront of the coal industry until the First World War, and British coal was the principal element exported to Latin America. One of the advantages Britain had was that its coalmines were well placed to serve the export trade.⁶⁶⁷

Among the Latin American countries, Argentina was the most important market for British coal. In 1912, for instance, it imported 94.4 per cent of its coal from Britain.⁶⁶⁸ Coal and iron were closely connected, and both were among Argentina's main imports. British exports to Argentina were so important that they supported the whole Latin American trade, as can be seen in **Graph 2–6**.



Graph 2–6. British exports to Latin America and to Argentina 1880–1913 (in million Pounds).

Source: Graph made by author, information taken from: D.C.M. Platt, *Latin America and British Trade* (London, 1972), p. 275

⁶⁶⁶ Platt, *Latin America and British Trade*, p. 131.

⁶⁶⁷ Ibid., pp. 243–250.

⁶⁶⁸ Ibid., pp. 243–250.

The following **Table 2–11** shows iron exports from 1870 to 1930, from the main producers – Great Britain, Germany, France, Belgium and USA. It clearly reveals the declining fortunes of British iron exports during those years: in 1890 Britain provided 77 per cent of global iron exports, by 1913 this had declined to 30 per cent, even though that year Britain exported its highest amount, and by the 1930s its contribution had decreased to 18.2 per cent, and the tonnage of iron exported by Britain was lower than that of Germany, Belgium and France.

EXPORTS (000 TONS APPROX.), 1870–1930.						<i>Great Britain as per cent of the 5 countries</i>
<i>Year</i>	<i>Great Britain</i>	<i>Germany</i>	<i>France</i>	<i>Belgium</i>	<i>U.S.A.</i>	
1870	2,730	—	—	—	—	—
1880	3,650	750	100	300	150	—
1885	3,040	950	30	400	—	77 (1886)
1890	3,900	950	270	550	50	73.5
1895	2,800	1,500	—	500	120	64
1900	3,500	1,500	110	500	1,150	61
1905	3,800	3,360	600	920	1,050	39
1910	4,600	4,850	450	990	1,450	36
1913	4,980	6,200	540	1,550	2,800	30
1920	3,250	2,650	850	930	4,900	28.5
1925	3,750	3,200	3,960	3,150	1,750	22.5
1930	3,157	4,540	4,079	3,910	1,630	18.2

Table 2–11. Export of iron 1870–1930 for Great Britain, Germany, France, Belgium and USA.

Source: T.H. Burnham and G.O. Hoskins, *Iron and Steel in Britain, 1870–1930* (London, 1943), p. 30

Iron and steel played a vital role in the world wars, as the main aim of the industry was to contribute to the war effort. Unsurprising, this had profound consequences for iron and steel production and exports. Changes in the cost and availability of raw materials that were a consequence of the First World War remained until second. And, as German attacks on British ships from air and sea drastically reduced the amount of imported iron ore, the British government took control of supplies of iron

ore, pig iron and steel in order to maintain production of armaments, munitions and other war goods. The use of steel in 1942 was higher than before the war, but to achieve this it was necessary to sacrifice iron and steel exports, as it need to be storage to secure the country.⁶⁶⁹

2.4 The Iron Trade between Britain and Argentina

The remainder of this chapter will focus on the importance of the iron trade between Great Britain and Argentina from 1852 to 1948. While Great Britain was one of the most important producers and exporters of iron, Argentina was one of its most important consumers of both raw and manufactured iron. British iron played a critical role in Argentina's urban development, with the country consuming outstanding quantities compared to the rest of the world.

The two main questions this chapter aims to address are: (i) how much British iron was imported to Argentina between 1852 and 1948; and (ii) how much of it was Scottish. Answering these questions will help illustrate the significance of Scotland's imperial relationship both with the United Kingdom and with the wider British world. However, because of limitations to the accuracy of available data and the extent of the period studied here, it will only be possible to partially answer the first question.⁶⁷⁰ Data on Argentine foreign trade was collected from 1821, when Statistical Register of the State of Buenos Aires was created. However, it was only after 1880, after Buenos Aires and its port were federalised, that the National Statistical Office produced clear and systematic data.⁶⁷¹ While historical trade records before 1880 are scarce and classifications sometimes too general, data from the 1880s is too diverse: more than 300 different items imported from Great Britain were registered as using iron (and or steel) either partially or completely.⁶⁷² In addition, different types of iron are not always differentiated and their classification can differ from year to year. Similarly, measurement units are not consistent over time: weight could be recorded in kilograms or tons, or items could be registered in terms of the number of units traded.⁶⁷³ Thus, quantifying exactly the amount of

⁶⁷⁰ The main sources were: British Parliamentary papers, Argentinian customs reports, contemporaries' reports, and some secondary sources.

⁶⁷¹ The first of volume of *Estadísticas de Comercio Exterior y Navegación en Argentina* was published in 1881 and included data from the previous year).

⁶⁷² Wässman, *El Hierro Viejo y su Aprovechamiento en la República Argentina*, p. 6.

British iron imported into Argentina is not feasible. However, the ‘value’ in pesos of imported goods was a more constant form of measurement, and this at least helps to establish a general idea of the proportion of iron supplied by the UK.

Attempting to quantify what proportion of British iron imported into Argentina was specifically Scottish has proven even more difficult.⁶⁷⁴ While data exists on the number of ships arriving in Buenos Aires from Scotland, and the weight of the cargo they were carrying, the quantity of iron is not distinguished from the general cargo information. Furthermore, Scottish ironwork could have been carried on other nation’s ships. As the Clyde Port Departure Book of 1860 shows, ships of different nationalities often stopped at the port to collect products before making their way to Argentina.⁶⁷⁵

Despite these difficulties, providing indicators of the extent to which the Argentinian market was significant within the informal sphere of British imperial influence remains crucial for the purpose of this thesis. The aim is to demonstrate not only that Argentina was an important customer, but also that the iron trade shaped a dependent

⁶⁷³ General tools, scissors, saws, scrapers, wires of different types and diameters, nails, screws and nuts were expressed in kilograms; while chains, iron boxes, helmets and locks were expressed sometimes in units (locks were also expressed in kilograms during some years). Toilets and sanitary accessories were expressed in kilograms, while baths were expressed in units; iron valves and furniture in kilograms, but kitchens, stoves and fireplaces in units or kilograms, depending on the years. Iron for bridges was measured in kilograms, but locomotives in units. Iron could appear as ‘unworked’ but this could include not only iron ingots and iron bars but also steel in bars or plates, all expressed in kilograms or tons. Related machinery, spare parts and sundries might be expressed in kilograms or units: sewing machines were measured in units, but needles in kilograms. Engines for machinery made of iron were also expressed in units. Sometimes machinery and elements designed for a specific purpose appeared under a more general subtitle. Materials for sugar mills were expressed in kilograms or in value as they were imported tax free. In addition, while some constantly featured in lists of materials, others appeared intermittently: iron columns (expressed in kilograms) appeared in the records only after 1918 and sometimes would appear in conjunction with iron beams. When weight information is missing, the value in pesos was often used instead, especially for products – like iron for the railways – that were introduced tax free.

⁶⁷⁴ Even checking information from the Glasgow Navigation Trust Archive, this figure was impossible to determine, as information on cargoes (with iron products) were not detailed. See: REF TCN 21. Accounts and statistics, Report Books, which record ships entering and leaving the Clyde (both at Glasgow and Greenock) between 1819–1968, Clyde Bill of Entry listing arrivals and departures of ships for the Clyde, 1841–1887.

⁶⁷⁵ Clyde Navigation Trust, *Departure Book (Ref.TCN 21)* (1860).

relationship that negatively affected Argentina's local industry and favoured Britain and its global commercial interests. Therefore it is fundamental to present statistics around volumes or values of raw and manufactured iron imports, along with contrasting references to the local iron industry. The uses of iron of Scottish origin is examined through the case studies in Section 3, which illustrate the significance of Scottish ironwork in Argentina's architecture and urban development.

Taking into consideration not only the extent of the period studied (1852–1948) and the local and international circumstances that affected the iron trade, but also the limitations of the data and sources noted above, it has been deemed appropriate to divide the period into three intervals: (i) the opening of free trade and consolidation of the iron trade between Britain and Argentina (1852– 880); (ii) the apogee of the British iron trade in Argentina (1880–1914); and (iii) the world wars and the decline of the British iron trade (1914–1948).

2.4.1.1 The Opening of Free Trade and Consolidation of the Iron Trade Between Britain and Argentina (1852–1880)

The period between 1852 and 1880 is recognised as a period of 'National Organisation', characterised by efforts to unite Argentina politically and territorially. The starting point of this period is marked by the demise of President Rosas in 1852 and the opening up of the country to liberal ideas and free trade. However, as discussed in Section 1, Rosas's demise did not immediately settle the historical confrontation between the Federal and Unitarian parties. This confrontation was a direct result of trade activity around the port in Buenos Aires, which received 90 per cent of imports. The Federal party supported the autonomy of provincial governments and the distribution of revenue from external commercial taxes amongst the provinces. In contrast, the Unitarian party advocated a centralised government situated in Buenos Aires, with no participation from the provinces with respect to the revenues received by custom taxes at the port in Buenos Aires. The conflict started just after the May Revolution of 1810 and it was to be the cause of armed battles and constant conflicts until 1880, when Argentina was finally federalised.

Between 1852 and 1880 Argentina's new territorial configuration was shaped by two significant events: the construction of the railways and the colonisation of Patagonia.⁶⁷⁶ The new railway system not only facilitated communication across Argentina, it also created the right environment for the emergence of a huge market for British iron. The colonisation of Patagonia significantly increased the proportion of land suitable for agricultural exploitation, which in turn helped create a new market for British cast-iron agricultural machinery, iron wire for fencing and iron tools, amongst other items. Moreover, it contributed to an important increase in the number of passengers using the railway and in the volume of freight of the blooming exports in Argentinian agricultural products.

As can be seen in **Table 2–12**, as soon as the port in Buenos Aires was open to free trade in 1852, it received more than 2,200 tons of iron products, of which 15 per cent was registered as 'cast iron'. While cast iron was not recorded as a separate item in the following years, the numbers in the table illustrate the proportion of cast-iron products Buenos Aires was receiving before 1854, the year when the first railway projects started.

Iron items imported in Argentina (Buenos Aires port) from UK in 1852	Tons
Pig iron	20
Bar iron	950
Bolt and nuts	60
Cast iron	349
Iron wire	108

⁶⁷⁶ The architect Liliana Lolich has done some research on British iron in Patagonia. She has identified various English iron and steel suppliers for private residences and industrial buildings. See: L. Lolich, *Patagonia. Arquitectura de Estancias* (Buenos Aires, 2003)..

Wrought Iron (Anchors, grapnels, hoops, nails, all sorts except ordnance) ⁶⁷⁷	449
Iron, Old for re-manufacture	None
Unwrought steel	9
Hardware and cutlery	337
TOTAL	2,282

Table 2–12. Iron items imported from UK to Buenos Aires in 1852. Source: Account of Quantity of Iron imported and exported from United Kingdom, 1851–52, Parliamentary Papers

By 1853 there was a clear mandate from the government to promote the construction of railways and canals, and to promote private business, as noted in the National Constitution document. One way to encourage this was by allowing the material needed for these networks to be imported with reduced duties or no duties at all. Table 2–16 shows tax-free imports of iron products and coal imported from Great Britain in 1862 for the construction of the first railway lines and material for building the first Gas Factory.

Tax-free imports in 1862 (1st semester)	Tons	Value (\$)
Coal	10,580	8,142,765
Materials for the Western railway		31,060
Materials for San Fernando railway		376,200
Materials for the Gas Factory		82,200

Table 2–13. Tax-free imports in 1862 (1st semester). Source: Estadística de Aduana de Buenos Aires for the year 1862

⁶⁷⁷ Curiously enough, the British invasions of Buenos Aires (1806–7) showed the Argentinians the importance of iron for military purposes. After the invasions, Great Britain became the main supplier of iron defensive armaments, especially balls and cannons. Although though an Act was passed on 1859 that allowed the Ordnance to have its own furnace, importing these products was more convenient. It was not until the end of the nineteenth century and beginning of the twentieth that this industry started to be more prominent. See: R.A. Villanueva, *Historia de la Siderurgia Argentina* (Buenos Aires, 2008), pp. 13–30.

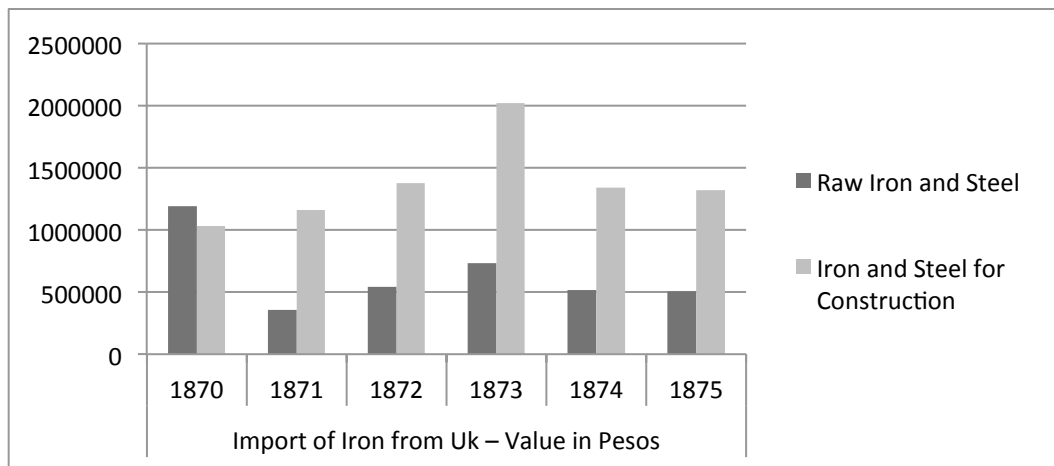
It is worth noting that all these tax-free imports had a connection with Great Britain through specific projects. Even though the Western Railway (FCO, inaugurated in 1857) and the San Fernando railway (inaugurated in 1862) were part of the Argentinian railway line, they involved the participation of British professionals and iron materials. The same was true of the gas works erected in 1856 in Buenos Aires, for which William Bragge undertook the building work and E. T. Bellhouse and Co. from England supplied the iron, at least 2,000 tons of which was needed.⁶⁷⁸

From 1872 the amount of iron exported from the United Kingdom increased.⁶⁷⁹ Coincidentally, 1872 was the year when the exhibition in Cordoba promoted British cast-iron elements – amongst which were the cast-iron fountains that would later be located in Tucuman (see Section 3). In addition, sanitation projects had been started in Buenos Aires and they needed cast-iron pipes and other elements. By 1873 iron imports from the UK reached their highest peak, with an increase of around 43 per cent in relation to the previous year.

Graph 2–7 shows that iron and steel used for construction was imported in higher quantities than raw materials. This can be explained by the expansion of cities, in particular Buenos Aires.

⁶⁷⁸ Bellhouse, *David Bellhouse and Sons, Manchester*

⁶⁷⁹ Griffiths, *Griffiths' Guide to the Iron Trade of Great Britain*, pp. 5–10.



Graph 2–7. Chart showing the growth of imports of raw iron and steel and iron and steel for construction from 1870 to 1875. Source: Chart made by author using information from Estadística de Aduana de Buenos Aires 1870–1875

Raw iron and steel were mainly imported for use in Argentina's few local foundries. Between 1852 and 1880 the following foundries were in operation: Jaunet Hermanos (1848), which worked on wheels, guns, bullets and bombs; Fundición Argentina de Don Francisco Carulla (1853); Fundición Casa Amarilla (1858); Los Hermanos Schwartz (1863); and Don Silvestre Zamboni (1860), best known for its architectural and decorative ironwork.

2.4.1.2 The Apogee of the British Iron trade in Argentina (1880–1914)

The period of urban change that had started in the 1860s reached its peak between 1880 and 1914. An important factor driving this change was the federalisation process, begun in 1880 when Buenos Aires became the capital of the country and the seat of its government.⁶⁸⁰ This helped resolve some governmental issues and brought about political and economic stability, which in turn encouraged investment (See Section 1). At the same time, the introduction of the railways, the proliferation of agricultural activity and population growth further stimulated the growth of infrastructure. Iron was essential for the construction of public buildings such as

⁶⁸⁰ The City of La Plata (founded ad hoc) became the capital of Buenos Aires Province.

government houses, post offices, legislatures, libraries, banks, theatres and hospitals, amongst others. These improvements were aided by substantial investments from Britain, which in turn reinforced trading relations between the two countries.⁶⁸¹

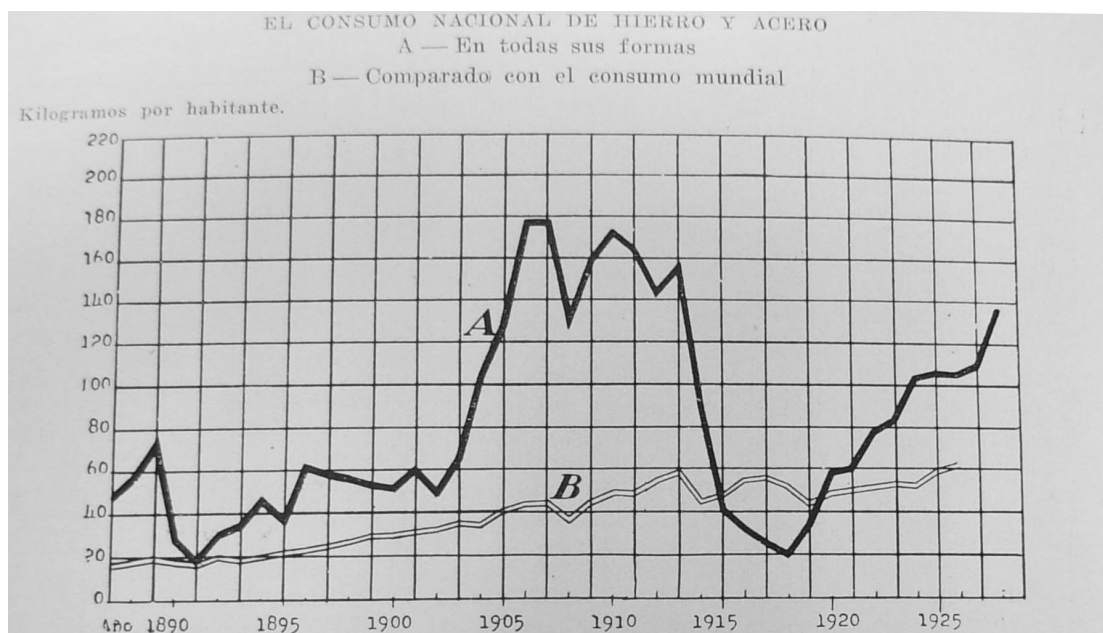
Between 1880 and 1914 the government's immigration policies stimulated a dramatic increase in Argentina's population. The first national census in 1869 recorded a population of 1,830,000 inhabitants. This number had more than doubled 2.2 times by 1895 and by 1914 Argentina had a population of 7,904,000. This demographic expansion was accompanied by the increasing consumption of iron and the growth of the country's major cities: Buenos Aires, Rosario, La Plata, Bahia Blanca, Paraná, Mendoza and Tucuman. In Buenos Aires alone, 3,000 buildings were under construction in 1912, and the majority used iron and steel for their structures.⁶⁸² The same year, *The Times* commented on the rapid rate of Argentina's development and its demand for iron and steel.⁶⁸³ In fact, in the years before the First World War, Argentinian iron consumption was higher than the average consumed by the rest of the world, as can be seen in **Graph 2–8**, which shows the average consumption of iron (in all its forms) in Argentina, measured in kilograms per inhabitant (A) and the average consumption of iron worldwide (B) between 1888 and 1925.⁶⁸⁴

⁶⁸¹ F. Ortiz, 'La arquitectura Argentina después de 1880: Una introducción', in M. Waisman, R. Gutiérrez, and A. Nicolini (eds.) *Documentos para una Historia de la Arquitectura Argentina* (1978).

⁶⁸² J.P. Santamarina, *The Argentine Republic: Development, Facts and Trade Features* (New York, 1912)..

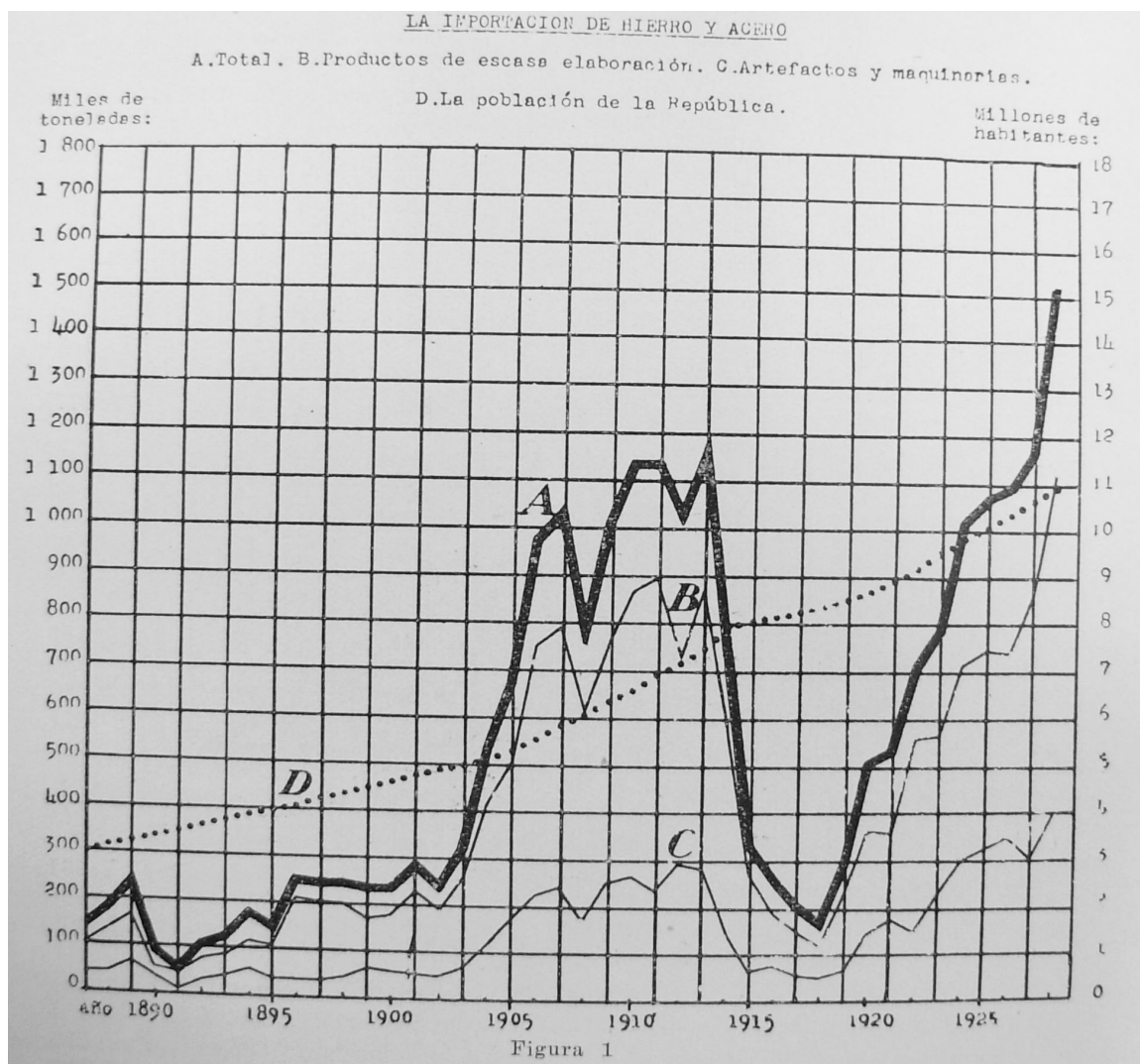
⁶⁸³ 'Argentina's Increasing Demand for Steel And Iron,' *The Times*, April 22, 1912. <http://www.newspapers.com/newspage/33231209/>.

⁶⁸⁴ Wässman, *El Hierro Viejo y su Aprovechamiento en la República Argentina*, p. 9.



Graph 2–8. Consumption of iron in Argentina. Source: S. Wässman, *El Hierro Viejo y su Aprovechamiento en la República Argentina* (Buenos Aires, 1934), p. 9

The increase in population, along with railway construction, definitely influenced iron imports in Argentina. **Graph 2–9** shows: (A) total iron imported to Argentina; (B) products of low production; (C) machinery and artefacts; and (D) changes in Argentina's population.



Graph 2-9. Import of iron and Steel in Argentina. Source: Ibid., p.7

The peak seen in the years between 1904 and 1913 corresponds to the expansion of the rail network in Argentina.⁶⁸⁵ In 1907 President Mitre encouraged the import of materials for the railways by instituting a law that, among other things, dictated that ‘the materials and articles of construction and exploitation that are introduced to the

⁶⁸⁵ Wässman, *El Hierro Viejo y su Aprovechamiento en la República Argentina*, p. 10.

country will be free of customs duties'.⁶⁸⁶ As can be seen in the following table (Table 2–14), the majority of iron used in Argentina was related to the railway industry.

Iron usage in Argentina	
Iron consumption	Type of industry
42%	Railways, trams, constructions, bridges, telephone and telegraph
22%	Railway rolling stock, automobiles and other motor vehicles
20%	Other mechanical industries, workshops, arts, agriculture
10%	Nails, bolts, screws, studs, rivets, chains, cables, shafts, elastic, etc.
6%	Shipyards

Table 2–14. Iron Usage in Argentina in 1928. Source: Wässman, *El Hierro Viejo y su Aprovechamiento en la República Argentina*, p. 17

As will be seen in Section 3, between 1880 and 1914 many of Argentina's railway stations were either built or refurbished, largely using iron. And, while the majority of it came from Great Britain, ironwork of Scottish origin has been identified in the following stations: Tornquist (1883), Iraola (1885), Coronel Vidal (1886) Tandil (1883), Monte Grande (1890), Tucuman Mitre (1891), Lobos Junction (1898), La Plata (1906), Hipolito Irigoyen (1908), Retiro (1909–1915), and Plaza Constitucion (alterations done between 1902–1907). New railway infrastructure, such as bridges, appeared even in central areas; the bridge at Palermo was built in 1914. Scottish professionals involved in railway construction in Argentina could afford to build

⁶⁸⁶ 'Ley Sobre Concesiones De Ferrocarriles', <http://servicios.infoleg.gob.ar/infolegInternet/anexos/175000-179999/175380/norma.htm> (accessed August 30, 2017).

sumptuous palaces – like Alexander Hume’s in Buenos Aires (1893) – for their homes.

Sanitation and water supply systems – such as those at the Wilde Plant (1887) and the Palace of Running Waters (1887–1894) – also used Scottish iron for piping and plant buildings. In addition, as part of new hygiene programmes, parks were built or extended using Scottish cast-iron elements. These parks included 3 de Febrero Park (inaugurated in 1875 but with further alterations in 1888 and 1892–1912), the Buenos Aires Zoo, and San Martín Park (1907–1908) in Mendoza.

The period 1880–1914 was a period of profound change both in territory and in society. New types of commercial buildings appeared, such as markets and department stores like Harrods and the Maple Store, built in 1914 using Scottish iron.

Driven by changes in the iron industry, new local foundries were founded: Coppola Hnos (1882); Rezzonico and Ottonello (1882); and Talleres Metalúrgicos Vulcano (1896). However, these foundries were small and mainly cast columns, pulleys, gears, brackets and other small elements that were used every day in local industry. Only Taller de Pedro Vasena, whose work included the first Abasto Market (1893), expanded its work to include architectural cast iron and steel structures. Even then, Pedro Vasena’s expansion required British investment and it became the Argentina Iron and Steel Manufactory in 1912. Despite these efforts, Argentina could not compete with the British industrial behemoth. By 1892 Buenos Aires had thirty-three foundries, only a handful compared to the more than 200 working on architectural cast iron listed in the *Glasgow Post Office Directory 1891*.⁶⁸⁷ By 1904 there were still only thirty-five local iron foundries – fourteen of which mainly worked bronze – but 417 smithies working with iron bars imported mainly from Britain.⁶⁸⁸

⁶⁸⁷ Juárez, *Scottish Cast Iron in Argentina: Its Role the British Informal System*.

⁶⁸⁸ B.A.A.D.G. de Estadística Municipal, A.B. Martínez, and D. de Estadística Municipal, *Censo General de Población, Edificación, Comercio e Industrias de la Ciudad de Buenos Aires* (1906), p.198.

The majority of blacksmith workshops in operation in Argentina worked forging beds, lifts and presses, amongst other things. By 1892 there were fifteen factories specialising in iron beds but these depended on raw material from abroad.⁶⁸⁹

Manufacturers of other small products, such as screws and bolts, iron boxes, scales and iron kitchens, also tried to replace foreign imports⁶⁹⁰ but they had a rather modest decorative production. For example, in 1892, 13,927 kilograms of iron kitchens were imported and were considered ‘luxury artefacts’ or pieces of art; as less decorative and of less quality could be manufactured locally.⁶⁹¹

At the end of the nineteenth century steel had started to become useful for structural purposes. The first steel rolling mill in Argentina was installed in 1890 in the El Carmen foundry, which changed its name to La Cantábrica in 1902. Around the same time, Rezzónico, Ottonello & Cía (a metallurgical workshop) merged with (S. A. Ernesto Tornquist & Co. Ltda. (a financial house) to create TAMET.

Table 2–15 provides a list of the most common iron elements imported from Great Britain. It is worth noting that the products subject to higher taxes –iron furniture, iron boxes, and ordnance – were the ones that faced competition from local industry. Although this indicates some level of protection for local production, the poorer quality and small output of local foundries meant that they could never totally replace Great Britain as suppliers of manufactured iron products.

Iron elements and custom duties	
Wires for fences	25%
Wires for fences	Free
Weapons, munitions, etc	50%

⁶⁸⁹ Juárez, *Scottish Cast Iron in Argentina: Its Role the British Informal System*, p. 201.

⁶⁹⁰ Helguera, *La Produccion Argentina en 1892, Descripcion de la Industria Nacional*, p. 201.

⁶⁹¹ *Ibid.*, pp. 202–205.

Iron needles	25%
Wires (other than for fences)	5–25%
Kitchenware	25%
Nails,	25%
Chains of all kinds except iron clocks	25%
Iron boxes	45%
Iron pipes	25%
Kitchens, stoves and fireplaces,	25%
Cutlery	25%
Shafts and elastics for cars and carriages	25%
Iron beams	10%
Miscellaneous fittings	25%
Iron and steel unwrought	10% to 25%
Tools of craftsmen and domestic use,	25%
Iron furniture	45%
Beams and columns of iron	25%
Ploughs: ploughs, mowers and threshers	5%
Agricultural tools: shovels, picks and hoes	25%
Water pumps	25%
Sewing machines	25%
Presses and printers	5%
Machines and motors	(5% steam engines and 25% machines)
Other articles of iron	25%

Table 2–15. Import duties for articles made of iron. Source: Statistics on Commerce and Navigation in Argentina, 1885, p. 103

The average tax on iron products between 1880 and 1914 was around 25 per cent. Having said that, iron products considered as material for the construction for public works entered the country tax-free. While this policy was surely designed to promote public works, it also stimulated British business, which was often involved, as

corroborated by British involvement in work and material-supply not only related to the railways, water supply, gas works, telephones and tramways, but also to other industries, including sugar mills.

2.4.1.3 The World Wars and the Decline of the British Iron Trade (1914–1948)

During World War I it was impossible to obtain structural iron or steel from any of the Allied nations. The United States saw an opportunity and started to supply iron and steel products to Argentina. However, this proved quite difficult at first and there were delays in supply. To ease the situation, and further reduce costs, low production products were imported from the north and the work completed in Buenos Aires.⁶⁹²

The difficulties that Argentina experienced in importing iron during the war highlighted the country's dependence on foreign markets. This prompted Argentina to try to reduce this dependency by encouraging local producers. But this proved hard to do as the local industry still had to import raw materials, fuel, and the necessary machinery from overseas. The pig iron consumed mainly by local foundries, for instance, was generally imported from Britain, specifically from Gartsherrie No.1 in Scotland. As the war took its toll, prices increased and Argentina had to turn to France and Belgium for iron. In some cases, in spite of the high costs, local foundries still bought Gartsherrie iron to mix with scrap iron in order to improve its quality.⁶⁹³ The war may have made British iron scarce and expensive, but its quality meant it was still highly desirable.

For several Argentinian firms, especially those with ties to British businesses, it was important to keep importing iron products from Great Britain. For example, the British firm who held the contract to supply over 3,000 tons of iron to the Harrods store preferred to buy 'unworked iron' from Britain, which attracted fewer taxes, and

⁶⁹² *Report on the Market for Iron and Steel in the Argentine Republic* (London, 1922)..

⁶⁹³ Ibid.

finish the work themselves rather than import iron elements from elsewhere.⁶⁹⁴

Robert Prentice, an independent Scottish architect, preferred to use imported decorative cast iron for the Alzaga Unzué Palace (1916). For more details see Section 3. The British railways also imported British (including Scottish) iron for their projects, even though they used steel for structural purposes and cast iron was mainly used for decorative elements. This was the case with the Tolosa Bridge (1926), Plaza Constitucion Station IV (1927), and Cervino Bridge (1931). English steel and Scottish decorative elements can be found in the sanitary plants of Caballito (1915) and Devoto (1917) (See Section 3).

Still the national government continued to try to encourage local production. Several research programmes and expeditions were undertaken in the early 1920s in order to identify local sources of iron ore and fuel, find alternative transportation options and increase the production capacity of local firms. From this work, a large iron deposit was found in a place called 'Filo de la Cortadera', in the province of Catamarca, but the quality of the iron was poor. To obtain a ton of iron from this deposit at least 2.1 tons of ore were needed, along with 1.3 tons of coke and 1.5 tons of limestone. To make it profitable it would be necessary to produce double the amount of iron. But the main problem with working the deposit was the cost of railway transport; it cost \$40 Argentinean pesos per ton to transport the iron from Catamarca to Buenos Aires, where the majority of the foundries were located. This amount was more than half of that paid for imported crude iron.⁶⁹⁵ In fact, low transport costs gave the British their best competitive advantage.⁶⁹⁶ By 1930 it was calculated that it would cost at least 25 or 35 pesos more per ton to produce cast iron in Argentina than to buy it from abroad.⁶⁹⁷

⁶⁹⁴ The difference between unworked and worked iron was that worked iron attracted more tax; worked iron was taxed at 20 per cent, unworked iron and ingots for casting at 5 per cent, iron in columns, window frames and gates at 25 per cent and 7 per cent for other (non specified products). See: Ibid.

⁶⁹⁵ Helguera, *La Produccion Argentina en 1892, Descripcion de la Industria Nacional*, pp. 2–3.

⁶⁹⁶ Platt, *Latin America and British Trade*, p. 226.

⁶⁹⁷ Wässman, *La Base de una Producción de Hierro en las Provincias de Salta y Jujuy*, p. 18.

Another change that affected the iron trade between Britain and Argentina in the years after the First World War, was the rise in the popularity of steel. This had a positive effect on Argentinian industry as petroleum (discovered in Comodoro Rivadavia 1907) could be used as fuel in steel production (in Siemens Martin open hearth furnaces) and this lessened the country's dependence on imported coal, as much as 94.4 per cent of which came from Britain.⁶⁹⁸ The other advantage that steel production had over cast iron in Argentina was that it could use scrap iron, of which Argentina had a plentiful supply left over from railway construction.⁶⁹⁹

Argentina was also affected by the worldwide economic crisis of 1929. There was a sharp fall in Argentina's exports and consequently a decrease in the inflow of the foreign exchange that usually allowed the country to import British and European goods. Argentina's relationship with the international economic system, and its relationship with Britain in particular, was deeply affected. Britain turned to the Commonwealth countries for products previously acquired from Argentina, leaving it in an unfavourable situation. Under these circumstances it was necessary to undertake a series of adjustments in the primary export sector and in the organisation of the Argentinian economy in general.

From a political point of view, there were also important changes: a coup d'état led by General Jose Felix Uriburu in 1930 overthrew President Hipólito Yrigoyen. The new state aspired to assume a new role, intervening more directly in economic issues and developing policies that could help the development of local industries. Until then, Argentina had mainly been a producer of raw materials. It now had to start manufacturing the products, like iron, that it had previously imported. This process of industrialisation was known as 'import substitution'.

⁶⁹⁸ Platt, *Latin America and British Trade*, pp.243–50. In Argentina comes almost exclusively from sites located in South Wales and called 'Carbon Cardiff'. See: Wässman, *El Hierro Viejo y su Aprovechamiento en la República Argentina*, p. 47.

⁶⁹⁹ *Ibid.*, p. 7.

Argentina continued to import all the iron and steel it needed for its development until 1935, and the country was still consuming large amounts of British iron in 1937. In fact, while *The Engineer* magazine announced a drop of 3,241 tons in the total amount exported compared to the previous year, it reported that the largest customer that term had been Argentina, with 323 tons.⁷⁰⁰

Given that a military regime now ruled the country, it is unsurprising that it encouraged the iron industry to produce military products. The Fabrica Militar de Aceros (Military Factory of Steel) was founded in 1933, and within ten years had acquired an additional twelve plants. In times of peace the factory could diversify its production into non-military products and contribute to public construction. Consequently, it furnished the materials for the extension of the General Paz ring road in Buenos Aires and the Banco de la Nacion headquarters; and bridges, dams, irrigation works, and gas pipelines, were among the items, commissioned by the Ministry of Public Works and supplied by the Fabrica Militar de Aceros.⁷⁰¹

Alto Hornos Zapla was also founded for military purposes in 1943 in Jujuy, near a recently discovered iron deposit. The steel produced there was used mainly in bars for dams, bridges and housing, piping for water supplies, and some items required by the national railways.

At the end of the Second World War (1939–1945) there were three major rolling mills in Buenos Aires, producing rounds, squares, other special sections and joists, etc. These mills also manufactured a wide range of cast-iron goods and a growing variety of steel goods, such as domestic hardware, window frames, shutters, furniture, agricultural tools, domestic appliances, windmills and simple road-making machines.⁷⁰²

⁷⁰⁰ 'No Title,' *The Engineer*, August 20, 1937.

⁷⁰¹ Duggan, *Iron and Steel Production in Argentina c.1920–1952: Attempts at Establishing a Strategic Industry*.

⁷⁰² *Report on the Market for Iron and Steel in the Argentine Republic*.

In spite of all the effort put into developing a local industry, it could still not produce enough iron and steel (both raw and manufactured) to successfully supply local demand, which could thus only be met through additional imports. **Table 2–16** shows iron and steel consumption, imports, and local production in 1930–1949. It shows that, even at the end of the period when local output was at its height, Argentina could produce only 23 per cent of its own consumption needs.

Period	Consumption (Tons)	Imports (Tons)	Local output (Tons)
1930–1934	510,900	510,900	–
1935–1939	668,800	664,200	4,600
1940–1944	312,500	243,700	68,800
1945–1949	732,800	560,800	172,000

Table 2–16. Iron and steel consumption, import and production in Argentina 1930–1945.

Source: B. Duggan, *Iron and Steel Production in Argentina c.1920–1952: Attempts at Establishing a Strategic Industry*. (PhD thesis, 1999), p. 167

In 1948 new petroleum deposits were found, and local scrap iron complemented some of the iron imports. The problem created by transportation tariffs was then addressed by nationalising the railways. There was no import of British pig iron that year and this marked the start of ‘iron independence’ from Great Britain, as can be seen in **Table 2–17**.

YEAR	UK	BELGIUM	FRANCE	GERMANY	BRAZIL	INDIA
1921	35.7	9.4	15.6	6.6	-	-
1922	32.1	35.8	9.8	16.4	-	-
1923	28.9	29.7	20.2	11.5	-	-
1924	39.0	29.4	13.0	2.3	-	-
1925	34.5	22.2	30.3	4.3	-	-
1926	26.0	41.3	18.8	5.0	-	-
1927	31.5	25.2	27.5	6.8	-	-
1928	20.3	29.8	13.7	7.5	-	-
1929	44.4	23.2	8.1	18.7	-	-
1930	40.4	16.8	1.7	32.2	-	-
1931	16.5	17.5	1.9	9.4	35.7	-
1932	16.4	19.4	15.4	1.0	26.2	19.5
1933	17.3	12.9	41.5	0.8	-	19.0
1934	19.7	15.8	22.1	3.1	-	13.9
1935	25.9	14.6	21.5	1.1	-	-
1936	15.8	15.5	4.2	1.8	-	-
1937	17.5	4.0	69.1	0.3	-	0.1
1938	13.6	12.7	60.5	-	7.7	-
1939	4.2	8.6	50.5	0.4	29.2	-
1940	9.2	1.4	9.8	-	70.7	-
1941	-	-	-	-	94.4	-
1942	-	-	-	-	74.8	20.2
1943	-	-	-	-	75.5	9.5
1944	-	-	-	-	37.1	8.8
1945	-	-	-	-	75.6	-
1946	7.2	1.0	-	-	54.5	0.6
1947	16.7	1.1	0.6	-	42.5	0.9
1948	-	19.1	9.5	-	49.6	0.9

Table 2–17. Imports of pig iron by country during the period 1921–1948. Source: B. Duggan, *Iron and Steel Production in Argentina c.1920–1952: Attempts at Establishing a Strategic Industry*. (PhD thesis, 1999)

2.5 Scottish Iron Foundries and their Contribution to the Empire

Before England and Scotland were united in 1707, iron production was not well developed in Scotland, even though it had already been recognised as an important activity. Although Sir George Hay had established the first blast furnace in 1610,⁷⁰³ John Meikle is credited with bringing the iron founding industry to Scotland. His work, casting balls and cannon, was deemed so important that in 1686 the Scottish Parliament passed an Act to further encourage him:

His Majesty and Estates of parliament, taking into consideration the great advantage that the nation may have by trade of Founding, lately brought into Kingdom by John Meikle, for casting balls, cannons, and other such useful instruments, do, for encouragement to him, and others in the same trade, statute and ordain, that the same shall enjoy the benefit and privileges of manufacture in all points as the other manufactures newly erected are allowed to have by laws and Acts of Parliament, and that for the space of nineteen years next Following the date hereof.⁷⁰⁴

This measure even encouraged English ironmasters and company branches to settle in Scotland. The Blackbarrow Company, for example, founded by William Rawlinson and John Machell, opened a Scottish branch in 1729 that produced 2,450 tons of iron in its first seven years. Other early foundries were established by English ironmasters at Loch Fyne (1775–1813), Aberthspey (1730–1739) and Bonawe (1730–1866).⁷⁰⁵ These foundries were controlled from England and were regarded as branches of the English iron industry; their location in Scotland merely allowed them to be close to resources such as timber for making charcoal.⁷⁰⁶

⁷⁰³ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 51

⁷⁰⁴ Ibid., p. 51. Taken from W. Macadam, 'Notes on the Ancient Iron Industry of Scotland', *Proceedings of the Society of Antiquaries of Scotland*, vol. 21 (1887).

⁷⁰⁵ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 52.

⁷⁰⁶ Campbell, *Carron Company*, p. 5.

This changed, however, with the establishment of Carron Company in 1759. The company was still connected to England as two of its founders – Samuel Garbett and John Roebuck – were English, but they were aided by the Scot William Cadell. It was established near Falkirk close to the river Carron, with easy access to coal and ironstone, and it was the first one to use coke for smelting in Scotland (Abraham Darby's method). Materials came from Bristol and the company's first full-time employee was Robert Hawkins, who had previously worked at Coalbrookdale. Cannon balls were things produced at the foundry, as these were easy to make and sell.⁷⁰⁷

The Carron Company foundry was more a product of the 'fruitful age of co-operation' that stemmed from the Union than those foundries founded before. In fact, it was funded by Scottish capital, while English counterparts provided business knowledge. By the middle of the eighteenth century, Scotland's economic growth had gained attention, and the country was established as an intellectual centre (See Section 1). Glasgow merchants were already leveraging the tobacco trade, poised to take advantage of the worldwide market.⁷⁰⁸ It should not come as a surprise then that Carron was designed in advance for large-scale production and strategically located to take advantage not only of access to good natural resources but also of the growing overseas markets.

Carron made a significant contribution to the industrial revolution, as it cast parts of James Watt's first steam engine. By the time the company received its royal charter in 1773, it was already a major manufacturer of the iron guns and carronades that would be so important to Britain's imperial expansion.⁷⁰⁹

Before 1828, the rich deposits of black band ironstone discovered by Mushet in Scotland were almost impossible to use when smelted with cold air because of its refractory nature, despite being considered exceptionally good for casting. This

⁷⁰⁷ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 56.

⁷⁰⁸ Campbell, *Carron Company*, pp. 2–8.

⁷⁰⁹ *Carron Co*

technical difficulty was overcome in 1828 when the Scotsman J. B. Neilson patented the hot blast process. Combining black band ironstone with the hot blast furnace process halved production costs and meant that Scotland could produce pig iron cheaper than everywhere else.⁷¹⁰

The effects of these new developments in Scotland were seen in the increase of furnaces and production of pig iron, as can be seen in **Table 2–18**.

Production of pig iron in Scotland from 1830		
Year	Furnaces	Tons of pig iron
1830	24	37,500
1838	41	147,500
1839	50	195,000

Table 2–18. Production of iron in Scotland from 1830. Source: Scrivenor, *History of the Iron Trade*, p. 99.

By 1840 there were more than fifty-two foundries in Glasgow, ranging from small to large engineering works.⁷¹¹

Scottish foundries soon monopolised the markets, especially foreign markets, as they enjoyed not only the advantages of lower production costs but also benefited from being situated near the Clyde and therefore able to export their produce without

⁷¹⁰ R.H. Campbell, 'Developments in the Scottish Pig Iron Trade, 1844–1848', *The Journal of Economic History*, vol. 15, no. 3 (1955).

⁷¹¹ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, p. 14.

incurring heavy transport charges. In a period of only ten years, from 1835 to 1845, the production of Scottish iron increased about 700 per cent (475,000 tons in 1845).⁷¹² English and Welsh competitors did not enjoy the same advantages and, as a result, by the mid-1840s almost all pig iron exported from the United Kingdom originated in Scotland. The benefits of global exports, however, were counterbalanced by the negatives brought by speculation and a heavy dependence on overseas markets,⁷¹³ even though large amounts of iron were also consumed locally.⁷¹⁴

With the help of transport developments, pig iron and associated manufactured products were soon being consumed in the rest of Britain and the world. By 1873 Scotland's iron industry had already consolidated its contribution to the Empire's trade: 'Nothing can be more interesting than to see the activity at the gigantic yards, on both banks of the Clyde and elsewhere in this growing and most important iron industry of the British empire. Iron is not only our steam ship the pioneer to commerce, but in every social phase is the willing and useful handmaid of civilization at home and abroad. ... It must not be forgotten that no make of pig iron in the world can replace Scotch, for foundry purposes'.⁷¹⁵ According to Griffiths, the essential element for such profitable manufacture was the good quality and low cost of coal for smelting iron.⁷¹⁶

Graph 2–10 illustrates the astonishing progress made in the production of iron in Scotland between 1700 and 1874.⁷¹⁷

⁷¹² D. Bremner, *The Industries of Scotland: Their Rise, Progress, and Present Condition* (Edinburgh, 1869).

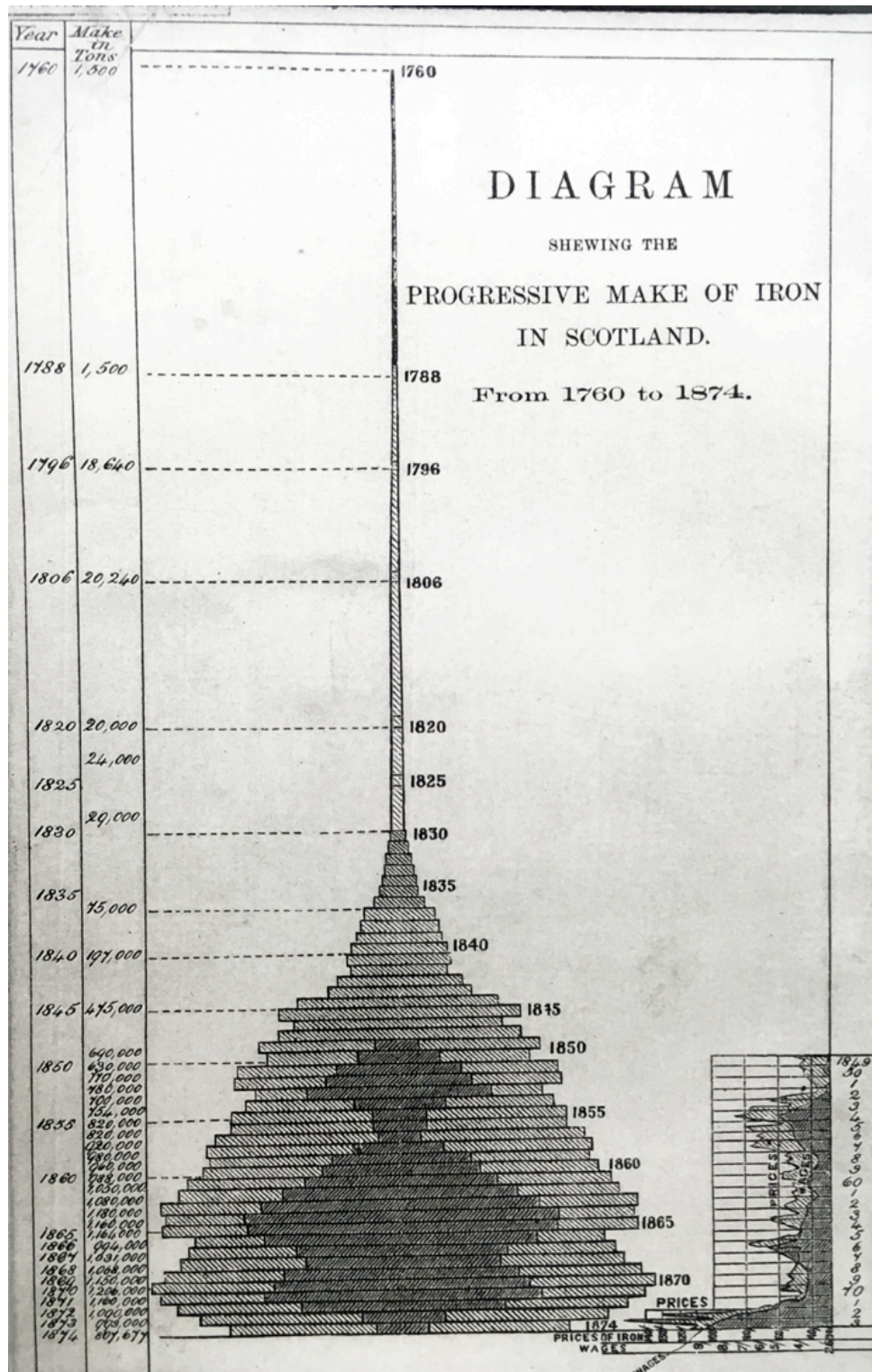
⁷¹³ Campbell, 'Developments in the Scottish Pig Iron Trade, 1844–1848,' .

⁷¹⁴ In 1853, consumption of pig iron in Glasgow and surroundings alone was 200,000 tons a year. Scrivenor, *History of the Iron Trade.*, p. 110.

⁷¹⁵ Griffiths, *Griffiths' Guide to the Iron Trade of Great Britain*, pp. 10, 27.

⁷¹⁶ *Ibid.*, p. 163.

⁷¹⁷ Day, *Iron and Steel Industries of Scotland*, frontispiece.



Graph 2-10. Diagram of Scottish iron production 1700-1874. Source: J. V. Day, *Iron and Steel Industries of Scotland* (Glasgow, 1876)., frontispiece

Scottish smelting firms were the most extensive in the world and had the ability to make very large quantities of the best quality iron.⁷¹⁸ According to Scrivenor, the main advantage of the commercialisation of manufactured cast iron was the profits it offered. For instance, cast iron ornaments could cost around 55,000 l (shillings) per ton, while the cost of raw ore was only around 30 l (shillings) per ton.⁷¹⁹

In 1872, David Colville & Sons, set up the Dalzell plant in Motherwell. The company adopted the open-hearth method that allowed impurities and carbon to be successfully burnt out of the crude material and meant they could make steel. This contributed an increase in steel production in Scotland, which grew from 1,199 tons in 1873 to 50,593 tons in 1879. Other steel companies – such as Alexander Findlay in Motherwell – followed, making Glasgow the steel production capital of Scotland. Steel became cheaper to produce than wrought iron and demand for it from bridge and ship builders grew considerably. This stimulated the growth of Scottish industry in general and, by 1913, the Clyde area was building a quarter of the world's ships.⁷²⁰

By the First World War, steel was already more popular than cast iron, but both, iron and steel were essential materials for urban development, especially at the end of the nineteenth century and beginning of the twentieth. It was used to construct extensive railway lines, railway stations, ports and bridges that helped to unify countries, improving the means of communication and transport between people and of goods. It was also crucial for new urban and sanitary facilities, such as drinkable water and gas and electricity; new public spaces, like parks; and new public and private buildings, including government buildings, hospitals, markets, theatres, libraries, schools, factories, departments stores, shops, houses and palaces. The main

⁷¹⁸ Griffiths, *Griffiths' Guide to the Iron Trade of Great Britain*, p. 162.

⁷¹⁹ Scrivenor, *History of the Iron Trade. From the Earliest Records to the Present Period* p.2 and taken from a German book –Dr. Friedenberg's German edition of Mr. Babbage's *Economy of Machinery and Manufactures*.

⁷²⁰ A. Campsie, 'Steel industry in Scotland - a short history', <http://www.scotsman.com/news/steel-industry-in-scotland-a-short-history-1-4243119>

destinations for Scotland's iron and steel products were Australia, Malaysia, South America (mainly Brazil, Argentina and Chile), the West Indies, India, South Africa, and Canada. But Scottish cast-iron elements were of such good quality that they could also be found in European countries that even had their own well-developed iron industries, such as France. As an example, one of the most important railway stations in Paris, Gare Du Nord, was built using Scottish ironwork.⁷²¹

Scottish iron foundries were able to contribute to global development by shipping a wide range of products. Cast-iron buildings, such as bandstands, and architectural elements, such as gates, railings, lamps and fountains, supplied by Walter Macfarlane & Co., George Smith & Co., Carron, P. & W. MacLellan & Co., McDowall Steven, Lion Foundry, David King and Sons, Mackenzie Moncur, and even smaller foundries like J. & A. Law can be found in distant parts of the world.

Less decorative, but no less important, were cast-iron elements used in water and sewage systems. Glenfield Hydraulic Engineers, for example, provided a hydraulic water supply system for Buenos Aires.⁷²² Indeed, cast-iron pipes for water and sewage were provided by many different Scottish companies, including David King, Forth & Clyde, Shaw & McInnes, D.Y. Stewart & Co., and Thomas Edington & Sons.⁷²³

Scottish structural cast iron, wrought iron, and steel were used in many places around the world for various purposes. For instance, David Colville, Alexander Findlay & Co, Sir William Arrol and Arrol Brothers supplied several bridges in Argentina (See

⁷²¹ The Gare Du Nord was built between 1861 and 1865; its roof was made by P. & W. MacLellan & Co. and the cast-iron columns were supplied by & Gourley's ironworks, as can be seen from the nameplates on the columns.

⁷²² Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, p. 146.

⁷²³ From the Baring Archives it can be seen that Baring provided loans to these companies for cast-iron pipes in 1873. The Baring Archive, 'Series Hc4 Spanish And Portugese Latin America', http://www.baringarchive.org.uk/materials/the_baring_archive_hc4.pdf

Section 3). In addition, the agricultural industries (meat, wool, grain and sugar, among others) in Brazil, Argentina, West Indies and Madeira, among other countries used Scottish cast-iron machinery made by Glaswegian companies, including Mirrlees Watson and Co.⁷²⁴, Duncan Stewart & Co, McOnie & Co, and A. Harvey and Co.⁷²⁵

It is worth noting that all these products – even iron bars to be cast or forged in local foundries abroad – were transported by sea in iron ships made by Scottish companies such as Alexander Stephen and Sons.⁷²⁶ Overseas, railway lines and locomotives – such as those built by the Scottish North British Locomotive Company⁷²⁷ – created from Scottish iron assisted in transporting people and goods all over the world.⁷²⁸

Difficulties within the iron industry in Scotland, as elsewhere, began to arise from the time of the First World War. Before the war the price of pig iron was around £3 pounds per tonne, but by 1920 it had risen to around £11 as it became more difficult to produce and trade. In addition, wages had increased around 300 per cent. The war also affected the frequency and costs of shipping. Moreover, architectural and ornamental iron founding – one of Scotland's specialities – was affected by changes in taste, the low level of building activity in the 1920s, and the gradual replacement of cast iron by steel, which became more evident during the Second World War. The war also negatively affected the availability of skilled men. Around 1920 there were only around fifty iron foundries in Falkirk who had been able to adapt to new

⁷²⁴ This firm supplied sugar machinery for the San Isidro sugar mill in Salta; some machinery is now exhibited in the garden. In 1908 Mirrlees Watson also supplied complete sugar processing factories for a sugar mill in Formosa. *The Times*, 11 November 1908 in 'Mirrlees Watson Co', https://www.gracesguide.co.uk/Mirrlees_Watson_Co (accessed July 3, 2017)..

⁷²⁵ M. Watson (2000).

⁷²⁶ 'Alexander Stephen and Sons', https://www.gracesguide.co.uk/Alexander_Stephen_and_Sons (accessed September 6, 2017).

⁷²⁷ The Scottish North British Locomotive Company produced over 600 locomotives a year. M. Nicolson, *Glasgow, Locomotive Builder to the World* (Edinburgh, 1987), p. 10.

⁷²⁸ D.S. Purdom, *British Steam on the Pampas: the Locomotives of the Buenos Aires Great Southern Railway* (London, 1977)..

technologies and taste, and associate themselves with engineering firms in order to survive.⁷²⁹ This can be exemplified by the case of the Plaza Constitucion Station in Argentina, for which Lion Company supplied the cast-iron material and Alexander Findlay & Co. the structural iron and steel for work commissioned through Livesey Sons & Henderson in London.

Figure 2–3 shows the location of the most important ironworks in the Clyde and Forth area, while **Figure 2–4**, shows the location of most important ironworks around Clyde and the Forth.

While there were hundreds of general foundries in Scotland, some of them started to become specialised between about 1850 and 1870 in order to make their products competitive and suitable for new necessities. In the following the most important Scottish foundries working in the areas of sanitary, architectural, and engineering ironwork are presented. Unfortunately, it is impossible to consider them all, so the focus will be put primarily on those companies that shipped ironwork to Argentina, with the objective of gaining a deeper understanding of their background before presenting the case studies in Section 3.

2.5.1 Cast-iron Pipes and Sanitary Products

Scottish cast-iron pipes were used in sewage systems and water distribution systems around the world and, at one point, Glasgow was producing more than 50 per cent of the UK's whole output of cast-iron pipes.⁷³⁰

One of the first iron foundries to manufacture cast-iron pipes in Britain was Carron Company in Scotland. In 1764, it began to attempt to persuade many water contractors in London to install cast-iron instead of wooden pipes. However, the initiative failed to take hold due to the high cost and poor quality of the pipes. A year

⁷²⁹ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, p. 24.

⁷³⁰ Ibid., pp. 19–20.

later, however, the company's luck changed when it successfully provided the Duke of Marlborough with 1,500 yards of pipe for Blenheim Palace. The project received positive feedback and the pipes were described as working 'extremely well'. Being praised for their durability, it was noted that they were 'much sweeter than lead pipes and will require infinitely less repair'. Good publicity boosted sales and led to cast-iron pipes becoming one of the company's main sources of income.⁷³¹ Cast-iron pipe production soared as sanitation projects became increasingly important and other companies, such as Robert Napier who manufactured pipes for the Glasgow Water Company at his Camlachie foundry in 1820, soon began to produce pipes.⁷³² Even so, mass production was still difficult as all pipes had to be moulded by hand horizontally until 1846, when the Scotsman D. Y. Stewart of Montrose patented a vertical pipe-moulding machine.⁷³³

D.Y Stewart & Co.'s vertical pipe-moulding machine also compressed the iron during the casting process, which increased its tolerance to pressure (**Figure 2–5**).⁷³⁴ The machine could mould 44-inch diameter pipes, and work at a rate of ten tons of pipe per hour.⁷³⁵ Mass production allowed the company to provide cast-iron pipes for the whole Empire. As early as 1851 D.Y. Stewart supplied the pipes for a water supply system to India. It featured an artificial lake four times greater than any reservoir constructed in Europe or elsewhere and distributed water from Bombay to the island at Salsett. According to *The Engineer*, it was the 'largest overseas work undertaken by the British engineers to date'.⁷³⁶

⁷³¹ Campbell, *Carron Company*, pp. 75–76.

⁷³² Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, p. 19.

⁷³³ Gloag and Bridgwater, *A History of Cast Iron in Architecture*.

⁷³⁴ Ibid.

⁷³⁵ 1851 Great Exhibition: Official Catalogue: Class VI.: D. Y. Stewart and Co, p. 238. See: http://www.gracesguide.co.uk/1851_Great_Exhibition:_Official_Catalogue:_Class_VI.:_D._Y._Stewart_and_Co.

⁷³⁶ K. Lalvani, *The Making of India: The Untold Story of British Enterprise* (London, 2016), p. 132.

With time and growing demand from abroad, cast-iron pipes became a very profitable business and other companies soon set themselves up in Scotland to produce pipes. The most important were, Shaw & McInnes of Firhill Ironworks (1846–1999, see **Figure 2–6**), David King & Sons of Keppoch Ironworks (1873–1960, see **Figure 2–7**), and Thomas Edington and Sons of Phoenix Ironworks (1797–1903, see **Figure 2–8**) all located around Glasgow area. Thomas Edington was among the largest firms to produce cast-iron pipes. Its production reached 2000 tons of finished pipes a month and helped to consolidate Glasgow as the leading centre of cast iron production. Large contracts were sometimes split between the leading firms: in the 1870s an 80,000-ton order for Rio de Janeiro was shared between Thomas Edington & Sons, R. Laidlaw & Son, and Macfarlane, Strang & Co. (**Figure 2–9**).⁷³⁷

Indeed, Macfarlane, Strang & Co. grew its cast-iron pipe production so fast that after only ten years it was already positioned as one of the most important foundries in the United Kingdom, ‘recognized in almost every quarter of the globe’ for its excellence in quality and its ability to manufacture pipes with the largest dimensions.⁷³⁸ The company was able to manufacture cast-iron pipes measuring from 1½” to 48” in diameter, and was capable of producing over 1000 tons of cast-iron pipe on a weekly basis.⁷³⁹ The company’s specialisation and production volumes allowed it to obtain many important contracts. It supplied pipes for Manchester Waterworks (27,000 tons of 40-inch pipes) and for water and gasworks in, among other places, Glasgow, Edinburgh, Dublin, Limerick, Liverpool, and Oldham, as well as in a number of cities around the world, including Paris, Boulogne, Oporto, Naples, Venice, Constantinople, and Tokyo. Among the British colonies, the company’s customers included Bombay Waterworks (50,000 tons of 48-inch pipes) and Sydney

⁷³⁷ Moss and Hume, *Workshop of the British Empire: Engineering and Shipbuilding in the West of Scotland*, p. 20.

⁷³⁸ ‘Macfarlane, Strang & Co., Limited’, http://www.glasgowwestaddress.co.uk/1888_Book/Macfarlane_Strang_&_Co_Ltd.htm (accessed April 2, 2017).

⁷³⁹ Anonymous, *Local Industries of Glasgow and the West of Scotland*.

Waterworks (20,000 tons of 42-inch and 48-inch pipes). In 1900 Messrs. Macfarlane, Strang & Co. delivered about 10,000 tons of 36-inch and 48-inch pipes for the sanitation company Obras de Salubridad de la Capital in Buenos Aires.⁷⁴⁰

Another company that achieved worldwide recognition was Glenfield & Kennedy (1899–). Its founder, the Scotsman Thomas Kennedy, designed and patented the world's first water meter in 1852, but gradually widened his interests to more general hydraulic engineering works. He formed Glenfield and Kennedy Ltd. in 1899 (**Figure 2–10**) and, fuelled by substantial global export orders and contracts received from abroad⁷⁴¹, the company became the largest of its type in the Commonwealth.⁷⁴²

Cast-iron pipes and other sanitary products produced in Scotland eventually reached every corner of the globe, where developing countries were in direct need of these essential elements for their expanding cities. In Argentina, these products were supplied by companies such as D.Y. Stewart & Co., Shaw & McInnes, David King, Thomas Edington & Sons, and Macfarlane, Strang & Co., while Glenfield & Kennedy provided hydraulic pumps and other associated products.⁷⁴³

2.5.2 Architectural and Engineering Foundries

Carron Company appears again as a pioneer in the field of architectural products and it produced ornamental railings, stoves, and grates, as well as cooking and domestic appliances (**Figure 2–11**).

Carron Company made an extensive contribution to British imperial trade. It was one of the oldest iron foundries in the world and occupied an important place in the industrial history of Great Britain. From the start, the company utilised state-of-the-

⁷⁴⁰ Ibid.

⁷⁴¹ 'Glenfield History', <http://www.glenfield.co.uk/history> (accessed January 21, 2017).

⁷⁴² 'Engineering Firms Glenfield & Kennedy', <http://www.futuremuseum.co.uk/collections/life-work/key-industries/engineering-firms/glenfield-kennedy.aspx> (accessed February 1, 2017).

⁷⁴³ Juarez, 'Documenting Scottish Architectural Cast Iron in Argentina'.

art technology, such as the water wheel and James Watt's steam engine, to become the first large-scale iron foundry. By 1814 the company employed 2,000 workers and was the largest ironworks in Europe.⁷⁴⁴ Furthermore, it manufactured the engines for the world's first practical steamship, built in the United Kingdom in 1789, adding yet further evidence of its contribution to the development of empire.⁷⁴⁵

The company also enjoyed great influence over industrial design by hiring the most important designers. James Adam, brother of John and Robert – the famous Scottish architects – was one of the earliest partners in the company, and the brothers' influence can be seen in many of the company's castings. Henry and William Haworth also worked as designers and wood carvers for the company, the latter for over fifty years.⁷⁴⁶

Carron Company also produced iron pigs and even ran its own shipping line – The Carron Line – that not only lowered its transport costs but also provided Scottish manufactures with a regular and safe service to the London market.⁷⁴⁷ The company had offices in Glasgow, Edinburgh, London, Manchester, Liverpool and Bristol.⁷⁴⁸

Even though Carron Company was hugely significant, it was Walter Macfarlane Co. of the Saracen Foundry (1850–1966) that was considered the key figure in the history of architectural iron founding in Scotland. Founded in 1850 by Walter Macfarlane and James Marshall (Thomas Russell was later included as an associate), the Saracen Foundry is probably the most famous iron foundry in the world; no other company gained so great a reputation and international profile. Its greatest growth

⁷⁴⁴ Ibid.

⁷⁴⁵ 'Carron Company,' *The Times. Trade & Engineering Supplement*, November 1934.

⁷⁴⁶ Ibid.

⁷⁴⁷ Ibid.

⁷⁴⁸ London: 15, Upper Thames Street; Liverpool: 22–30 Redcross Street; Glasgow: 125 Buchanan Street; Bristol: 62 Prince Street; Edinburgh: 114 George Street.

was in the late nineteenth and early twentieth centuries, when demand for highly ornamental cast iron was very high (**Figure 2–12**).⁷⁴⁹

Although Walter Macfarlane is better known for his decorative cast iron, his company specialised in producing sanitary products in its first decades. In 1857 Macfarlane patented improvements in the moulding and manufacturing process for cast-iron pipes, and in 1859 improvements in the machinery or apparatus for drawing off or discharging liquids in fountains and baths. He even published a paper in the Philosophical Society of Glasgow in 1857 entitled ‘Sanitary Arrangements for converting the excrementary refuse, dry garbage, ashes etc. of towns into their most valuable purpose’.⁷⁵⁰ In 1858 *The Sanitary Engineer and Architects Journal* described Walter Macfarlane’s foundry as:

having attained considerable celebrity as sanitary engineers
having obtained considerable improvements in the
manufacture of cast-iron pipes under their patented
process.⁷⁵¹

Macfarlane’s company successfully combined the practicalities of sanitation with the aesthetics of decoration. It designed many cast-iron urinals that were used during the nineteenth century throughout Britain and its colonies, including in Argentina where, as it will be described in Section 3, they were installed in railway stations (see Tornquist, Iraola and Coronel Vidal stations). It also built cast-iron baths, drinking fountains and other products related to sanitation, including decorative pipes and gutters.

Among the most significant architectural examples of Macfarlane’s work in the UK are its buildings and shop fronts, including those at: the Cotton Exchange, G.H. Lee & Co. in Liverpool; Selfridges and John Barker & Co. in London; University College and Elvery & Co. in Dublin; and the Coates building in Belfast. The company also

⁷⁴⁹ Juarez, ‘Documenting Scottish Architectural Cast Iron in Argentina,’

⁷⁵⁰ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, pp. 400–402.

⁷⁵¹ *Ibid.*, p. 446.

produced bridges, including those over the River Exe and in Rochester and New Southwark in England, and the Kelvin and Union Bridge in Scotland; many shelters and bandstands; and railway stations, such as Glasgow Cross and Central in Scotland. Amongst the most significant works that were shipped abroad were the Summer Palace in Sipri (Shivpuri), India; arcades and verandas in Johannesburg; the Durbar Hall in Mysore; and a number of banking premises in India. Although Walter Macfarlane's castings can be found almost everywhere in South America, the most significant ones are in Brazil: Luz Station in Sao Paulo, the market in Manaus, and the José de Alencar Theatre in Fortaleza (**Figure 2–13**).

There were two well-known spin-off foundries from Walter Macfarlane (Saracen) – Lion and George Smith (Sun Foundry) – both of which were founded by former staff of Walter Macfarlane.⁷⁵²

The Sun Foundry (1858–1899) was created in 1857 by a former foreman in the pattern shop at Saracen named George Smith. The company was short-lived but very successful. In fact, in 1867 it was forced to move to larger premises to fulfil important commissions such as the large ornamental spray fountain for Paisley (**Figure 2–14**). A new foundry was built on a green field site at Kennedy Street/North Wallace Street in Glasgow in 1870–71 (**Figure 2–15**).

At one point the Sun Foundry was one of Walter Macfarlane's main competitors, but the company suffered many setbacks. Yet, it still spawned two other important iron foundries. George Smith's son Alexander left the Sun Foundry for his own enterprise, the Star Foundry, built in Kirkintilloch in 1861. The company specialised in rainwater goods and pipes. In 1867 it was taken over by Cameron & Robertson and became the prolific Southbank Foundry, which operated until 1981. Another former Sun worker, Colin Stewart, left for Australia and set up his own Sun Foundry in Adelaide in 1867. It is not known if this was undertaken with the blessing of George

⁷⁵² Ibid., p. 105.

Smith & Co., but the designs found in their trade catalogues were copies of the Glasgow foundry's work.⁷⁵³

The Glasgow George Smith & Co. produced a range of excellent designs for gates, railings, and, their speciality, ornamental fountains. In the UK they provided extraordinary designs for bandstands, shelters, clock towers, and a number of small drinking fountain canopies, which are often mistaken for Macfarlane's work. The Sun Foundry examples have a solid domed roof and alligators to the internal four corners. Examples can be found in Portmahomack, Dornoch, Burntisland, Newcraighall and, ironically, outside Alexandra Park in Glasgow, the location of the Saracen Foundry. Unusual drinking fountains, cast by Sun in 1869, can still be found in Edzell, Angus, and Elie in Fife. Much of the decorative ironwork in the Glasgow Necropolis is also the work of the foundry.⁷⁵⁴ Cast-iron elements from George Smith can also be found in South America: ornamental fountains located in Montevideo (Uruguay) and Alajuela (Costa Rica), and a gazebo in Buenos Aires (Argentina).

The Lion Foundry (1880–1984) was founded by former employees of Walter Macfarlane, who originally called the company Jackson, Brown and Cuthbert. The foundry was erected near the North British Railway and the Forth and Clyde Canal, via which raw materials could be brought and finished products easily distributed. It specialised in fine ornamental and architectural cast ironwork, including front panels for buildings, fire-escape stairs, bridge parapets, bandstands, arcades, verandas, balconies and shelters, as well as sanitary ware and building and plumbing castings.⁷⁵⁵

The Lion Foundry produced ornamental cast ironwork similar to its competitors in its early days, but quickly expanded its range, moving from railings, cresting and terminals to include fountains, bandstands, canopies and larger structures. It also

⁷⁵³ 'George Smith and Co.', https://www.gracesguide.co.uk/George_Smith_and_Co (accessed September 10, 2017).

⁷⁵⁴ Ibid.

⁷⁵⁵ Juarez, 'Documenting Scottish Architectural Cast Iron in Argentina'.

produced pattern books, which grew larger as the company developed (**Figure 2–16**).

The first large project the foundry undertook was to supply cast and wrought iron for the construction of the County Arcade in Leeds in 1898. The foundry developed a reputation for theatre projects, which can be seen in the work produced, with Frank Matcham, at the London Hippodrome (1900) and Finsbury Park Empire (1908). From 1918 to 1950, Lion Foundry competed with Walter Macfarlane and Co. in making cast-iron fronts, and in 1921 it received a commission to supply windows, breast panels, other ornamental features, and escape stairs for Adelaide House in London. Stairs would become a staple product of the company years later. Building facades and larger structures became a major part of the foundry's work too and it produced them for Mappin House in Oxford Street (1908), Unilever House on the Thames Embankment (1931), Lambeth Bridge (1932), and finally Lothian House in Edinburgh (1939).

With the decline in demand for architectural ironwork after the Second World War, firm began to specialise in engineering castings, including the famous red telephone kiosks, which were also manufactured by competitors Carron, Macfarlane, McDowall Steven, and Bratt Colbran. For the Lion Foundry, however, the end of the contract for telephone kiosks marked the end of its existence.⁷⁵⁶

Other smaller companies like J. and A. Law of Pinkston Foundry (1858–1963) were small, but even so their products still travelled to every corner of the globe, including Argentina. (**Figure 2–17**).

Another company to gain an international reputation was William Arrol & Co. of Dalmarlock Ironworks (1868–1969). One of its most significant projects was the

⁷⁵⁶ A company archive composed of 1,000 photographs and 2,300 drawings, financial records, staff and administrative records, advertising and publicity material is held by the East Dunbartonshire Archives in the William Patrick Library in Kirkintilloch. Also original patterns made in wood, plaster or iron and other artefacts of the foundries can be found at the Auld Kirk Museum, also in Kirkintilloch.

Forth Bridge, designed in 1882 by Benjamin Baker and John Fowler and completed in 1890. It was the first cantilever bridge on a giant scale, and the first long-span railway bridge built in steel.⁷⁵⁷ The bridge was soon acknowledged as one of the wonders of the modern world. After its involvement in the construction of Tower Bridge in London (1894), the company's reputation spread. Cities in the UK and abroad commissioned many projects, and the company was recognised as the leading bridge builder in Britain. Contracts included the second section of the bridge over the Clyde at Central Station (1901–6), the Nile Bridge at Cairo (1904–8), the Redheugh high-level bridge at Newcastle, twelve of the largest bridges on the Manchester Ship Canal, and the Wear Bridge at Sunderland (1905–9).⁷⁵⁸

Similar in name if not in scale, Arrol Brothers of Germiston Works (1883–1906) also contributed to the construction of the Forth Bridge, providing caissons with a diameter of 70 feet, in which there are upwards of 2, 000 tons of iron and steel.⁷⁵⁹ Arrol Brothers also opened up an extensive network of connections with different customers around the world, especially with the railway companies in Canada, South Africa and Australia, where they had agents. In South America, especially in Argentina, many Arrol Brothers' footbridges have been identified in several railway stations, including Colegiales, Martinez, Nuñez, Florida, Casilda and Pergamino (See Section 3). These types of footbridge were so common in Britain and the rest of the world that they became a constant image of the 'railway empire' (**Figure 2–18**).⁷⁶⁰

Handyside and Co. of Britannia Ironworks (1848–1911), although based in England, is being considered in this thesis because its founder, Andrew Handyside, was Scottish. Handyside became a leader in the manufacture of iron products for

⁷⁵⁷ 'Iron Pioneers', *The Architectural Review*, no. April (1962).

⁷⁵⁸ M.S. Moss, 'Arrol, Sir William (1839–1913)', <http://www.oxforddnb.com/view/article/30460> (accessed July 18, 2017).

⁷⁵⁹ Caissons are large watertight chambers, open at the bottom, from which the water is kept out by air pressure and in which construction work may be carried out under water.

⁷⁶⁰ J. Harter, *World Railways of the Nineteenth Century: A Pictorial History in Victorian Engravings* (Baltimore, 2005), p. 291.

export.⁷⁶¹ In 1866 it fabricated, what *The Builder* magazine described as, ‘perhaps, the most remarkable specimen of ornamental ironwork yet erected’: a kiosk in Bombay designed by Owen Jones and the engineer R. M. Ordish (see **Figure 2–19**).

⁷⁶²

In the UK Andrew Handyside supplied many bridges, general railway equipment, and ironwork for station buildings, including the roofs of Broad Street, London (1864–5), Liverpool Central (1872–3), and Manchester Central (1876–80) stations. The same range of products was exported for railways throughout the world, and their bridges were sent to India⁷⁶³ and Australia, while a 120-foot span roof was sent for use in the main station in Amsterdam. Prefabricated buildings, supplied ready for erection and complete with doors, windows and fittings, were also part of Handyside’s export offering.⁷⁶⁴ Handyside had a far-reaching export capacity and examples of its work can still be found around the world.⁷⁶⁵

Alexander Findlay of Parkneuk Works (1888–1985) was less decorative than the companies described above. It specialised in the manufacture and erection of steel structures for bridges, buildings and industrial plants, as depicted in an advert from

⁷⁶¹ R. Thorne, ‘Handyside, Andrew (1805–1887)’, <http://www.oxforddnb.com/view/article/47598> (accessed July 15, 2017).

⁷⁶² Lewis, ‘The Asian Trade in Portable Buildings’.

⁷⁶³ Handyside was not specifically orientated towards India: It exported everywhere from Sweden to South America and Australia; Asia as a whole represented quite a small proportion of their market. Nonetheless, they supplied bridges for Japan and India. The Japanese bridge was a road bridge for Osaka, of 81 metres, in eight spans. One of the Indian bridges was for the Holkar Indian State Railway over the Nerbudda River at Khunda, 565 kilometres from Bombay, which was designed by A. M. Rendell in the form of fourteen warren, girder spans of 60 metres, each of which was erected complete at Derby before being exported. The other was a floating bridge on pontoons over the Hooghly at Calcutta, designed by Bradford Leslie. Handyside was responsible for the girders and superstructure, but not for the pontoons themselves, nor for the adjusting gear, chains or anchors. The Magazon Pier at Bombay, designed by J A McConnochie, was 102 metres long and 9 wide and was carried on cast-iron columns with their bases formed into screw piles. See: Ibid..

⁷⁶⁴ Ibid.

⁷⁶⁵ Andy Savage is a photographer from Derby who has spent years making a digital map showing the location of the elements made by Handyside around world. A. Savage, ‘Andrew Handyside and Company, Map locations of all work’, https://www.google.com/maps/d/viewer?ll=-3.81666561775622e-14%2C30.76171700000009&spn=114.338888%2C270.527344&msa=0&mid=1lJOLmnVvh2lCOiJXDYZCM_3Vwco&z=1 (accessed May 1, 2017)..

1918 (**Figure 2–20**). One of the company's first significant contracts was for the supply of iron and steel work for the Glasgow Harbour Tunnel Rotundas (1890–1896) in the Finnieston area of Glasgow.⁷⁶⁶ By 1909 the company had an output of 12,000 tons of manufactured products per year. Highlights at the time included the Pier extension at Egremont on the Mersey and bridgework for the Great Northern Railway in Ireland and the Highland and North-Eastern Railways, while contracts abroad included the Great Indian Peninsular Railway, and work in South America for erecting locomotive shops, sheds, piers, water tanks and towers for several railway companies.⁷⁶⁷

The company expanded to four works in 1913 in order to keep up with its worldwide contracts for structural steelwork and bridges. According to its job book from 1910–1938, Findlay Company had around sixty contracts for several railway companies in Argentina, all of them British, with some work commissioned from its London offices.⁷⁶⁸

⁷⁶⁶ 'Alexander Findlay and Co', https://www.gracesguide.co.uk/Alexander_Findlay_and_Co (accessed August 10, 2017).

⁷⁶⁷ 'No Title,' *The Engineer*, August 13, 1909.

⁷⁶⁸ From job books of Findlay Company, the list of contracts for Argentina's railways between 1910 and 1938 is as follows. In 1910: job no. 478, to provide steel structure for Buenos Ayres Western Railway; job no. 482 for Argentine North East Railway; job no. 493 for Buenos Ayres West Railway; job no. 577 for Central Argentine Railway, to provide 70 metres spans trusses. In 1911 job no. 593 for the Buenos Ayres Midland Railways to supply 6 spuds oil tanks; job no. 612 for the Central Argentine Railway, to supply 16 metres spans roof structure; job no. 627 for the Argentine North Eastern Railway to build a landing stage; job no. 629 for the Buenos Ayres Western Railway, to supply 5 plates girder of 102 metres span; job nos. 640, 641, 642, 643 and 644 for the Central Argentine Railway, to supply mainly between 30.5–50 metres span; job no. 649 for the Buenos Ayres and Pacific Railway, to provide a steel double truss span. In 1912: jobs 664, 672, 673, 674, 675 for Central Argentine Railway; job 681 for the Buenos Ayres Western Railway to supply 8 tanks and 6 towers; job 689 for the Buenos Ayres Western Railway to supply 10 metres plate ginger spans; job 698 for the Central Argentine Railway to supply water tanks and 2 towers; job 706 for the Central Argentine, to supply 155 m spans trough decking, job 768 for the Buenos Ayres y Pacific toughing bridges of 5 m span. In 1913: many jobs 789, 790, 791, 792, 793, 804, 833 for the Buenos Ayers Great Southern, .to provide different ironwork for trusses, trough decking , and bridges; job 831 for the Buenos Ayres Western Railway, steel girder wall req. n 636. In 1914: jobs 916, 917, 918 and 919 for Buenos Ayres Western, to build substations at Once, Liniers and Moreno.

Job records stopped during the First World War and until 1922 when the company was commissioned by Buenos Ayres Great Southern (job 481) for 183 metres trough decking spans. In 1926, job 712 was to provide the footbridge at Tolosa station (See Section 3). That year jobs were also commissioned by

the Buenos Ayres & Pacific Railway (job 715), and the Buenos Ayres Western Railway ordered four bridges. In 1927 the Buenos Ayres Western Railway commissioned Findlay to provide an electric coach revision shed at Castelar. Work followed for the Cordoba Central, the Central Argentine railways (job 801), and the Buenos Ayres Great Southern including job 821, to supply steel work for Plaza Constitucion's Enlargement and job 825, to supply Buenos Ayres G.S, railway with ironwork and glazing for the train shed walls for Plaza Constitucion (see Section 3).

In 1929 there were many jobs for the Central Argentine (jobs 853, 854, 855, 856, 857 and 858), and some for the Buenos Ayres & Pacific (job 893) and for the Central Argentine Railway (job 917). Years later, in 1934, Findlay worked for the Cordoba Central Railway (job 140). However, works were decreasing to just one per year, reflecting the general trend in the iron trade between Argentina and Britain. In 1936 only one job (no. 331) was commissioned, to provide a plate girder double track through spans of 25metre for the Central Argentine Railway, and in 1937 there was only job 420 for Buenos Ayres G. S., to provide more steel deck spans. See: Findlay Company Records, *Job Book 1910–1938* (Ref: U51/8/3), North Lanarkshire Archives.

2.6 Trade Catalogues and Sales Representatives

Printed material has always been an essential tool for promoting trade. The first examples comprised simply a list of products and prices, or instruction pages, but these were slowly integrated into the practices of buying and selling goods. One of the first comprehensively illustrated trade catalogues was published by John Wyke in 1758 to promote horological tools, but the first ones to really make an impact on artistic products was created by the Englishman Josiah Wedgwood to promote his first pottery in 1773.⁷⁶⁹ In the same year, the Scottish architects Robert and James Adam published *The Works in Architecture*, promoting the use of cast iron in a decorative context.⁷⁷⁰

The Adam brothers were the key designers at Carron Company, which published its second edition of the Carron trade catalogue as early as 1780. Containing 100 pages of engravings of cast-iron ornamental products, the company became a pioneer in the publication of illustrated ornamental cast iron trade catalogues.⁷⁷¹

The popularity of catalogues grew considerably in the middle of the nineteenth century, after the ‘Great Exhibition of the Works of Industry of all Nations’ took place at the Crystal Palace in 1851. The exhibition, along with the building itself, contributed to a growing desire for cast-iron elements. Furthermore, the exhibition evidenced the significance of publicity and the new culture of display. New technologies in printing machinery were showcased at the event, including Applegarth and Cowper’s printer, capable of printing 5,000 pages per hour. This undoubtedly contributed to a new era of illustrated catalogues that became a powerful media for promoting Britain’s growing industries; especially the cast iron industry as it took its first steps towards globalisation.⁷⁷²

⁷⁶⁹ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 31.

⁷⁷⁰ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*.

⁷⁷¹ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 36.

⁷⁷² Juarez, ‘Documenting Scottish Architectural Cast Iron in Argentina’.

Trade catalogues had several various great advantages for the cast iron trade: they recorded standard offerings, making ordering easier and reduced mistakes to a minimum; they showed customers the wide variety of a company's products, including their dimensions, possible combinations, and assembly instructions; they kept wholesalers and retailers around the world up-to-date with the latest designs; they mitigated the need for face-to-face business and, as a consequence, extended the reach of British imperial commercial interests.⁷⁷³

Although it is difficult to describe a 'Scottish' cast iron style, iron foundries used the most prominent artists and designers at the time. Walter Macfarlane, for example, commissioned ornamental designs from the finest architects, including Alexander 'Greek' Thomson, James Boucher, and Charles Driver at Carron. And, in a noteworthy change of job, William Cassells, Chief Draughtsman and Designer for Walter Macfarlane & Co. at Saracen was persuaded to take a similar position at Lion. James Leitch, who was responsible for many Art Nouveau designs, succeeded Cassells.⁷⁷⁴ The quality of decorations and the influence of these artists were remarkable, as drawing books and catalogues became one of the most powerful tools utilised in the promotion of cast-iron architecture.⁷⁷⁵

While Carron Company was a pioneer in the development of trade catalogues; Walter Macfarlane published catalogues that became the most widespread. The first edition of a Macfarlane illustrated catalogue was published in 1857. The company put a lot of effort into publishing high-quality illustrated catalogues with plenty of information, a characteristic that distinguished them from other manufacturers. To showcase the extent of its manufacturing range, it also published some sample books that showed cast-iron elements it had produced *in situ* in different parts of the world. In general, there was a significant increase in the number of designs of cast-iron elements offered by iron foundries from the second half of the nineteenth century. For instance, Macfarlane was offering hundreds of designs by 1865 and thousands

⁷⁷³ Ibid.

⁷⁷⁴ Ibid..

⁷⁷⁵ Ibid.

just ten years later. In fact, the 6th edition of the catalogue, from 1882, remains one of the most important for both the quality and quantity of the company's designs.⁷⁷⁶

Lion Company records reveal how its draughtsmen re-used and recombined old designs to create new ones and added in more fashionable designs. The variety was enormous and the company also offered bespoke services to its customers.⁷⁷⁷

The production and publication of these catalogues took a lot of effort and time, as the drawings had to match exactly the finished product. For that same reason, it is difficult to know precisely when they were published, especially as they tended to be printed without a publication year, most likely to prevent them from going out of date. The catalogues required so much work that many years could pass between editions: Lion's second edition of its catalogue was published in 1895 while its third had to wait until 1912.⁷⁷⁸

British traders put a lot of effort into promoting sales, not only printing brochures and catalogues for English-speaking markets, but also advertising in newspapers that reached imperial markets.⁷⁷⁹ They also began to publish catalogues and promotional material in other languages. Indeed, by 1775 the ceramics manufacturer Josiah Wedgwood had already published trade catalogues in French, German, Italian, Dutch and Russian. These publications were distributed amongst traders, customer professionals and also distributed at local exhibitions. At the Buenos Aires exhibition in 1910, organisers expressed the 'desirability of having their [exhibitors] trade catalogues and price lists in the Spanish language'. Similarly, in 1931, in a promotional piece on the British Exhibition of Arts and Industry in Buenos Aires in an Anglo-Spanish supplement of *The Engineer*, it was noted that all the exhibitors had made catalogues and pamphlets in English and Spanish.⁷⁸⁰

⁷⁷⁶ Ibid.

⁷⁷⁷ Ibid.

⁷⁷⁸ Ibid.

⁷⁷⁹ Platt, *Latin America and British Trade*, p. 166.

⁷⁸⁰ Juárez, 'Documenting Scottish Architectural Cast Iron in Argentina'.

It is not clear exactly when the iron foundries began to produce catalogues in other languages. However, one of the earliest catalogues written in Spanish was a bilingual catalogue, published as early as 1857 by the Scottish firm Messrs Charles D. Young and Company. The *Illustrative and Descriptive Catalogue of Machinery, Implements, Tools, Manufactured articles...Iron Architecture* certainly targeted South American markets. Interestingly, the publication has a frontispiece dedicated to a powerful Chilean coal magnate called Matias Cousiño, who was certainly in a position to promote the import of machinery, railway elements, pumps and other iron products published in the catalogue. During this research none of Charles D. Young and Co.'s ironwork was found in Argentina, but this type of catalogue, whether written in English or Spanish, played a vital role in promoting the use of Scottish, and British, iron in Latin America.

Scottish foundries such as Macfarlane or Carron Company tailored their trade catalogues to suit the Latin American market by presenting an aspiration vision of a modern city. Macfarlane even went so far as to publish an illustrated catalogue depicting a city fully equipped with its cast iron products (**Figure 2–21**).

The designs found in the iron foundries' catalogues were usually very detailed and frequently imitated by local foundries, as can be observed in **Figures 2–22** and **2–23**.⁷⁸¹

The use of trade catalogues was so popular in places like Argentina that local architects designed according to the options exhibited in their pages and elaborated their plans and drawings according to the dimensions and information presented by catalogues.⁷⁸² Foundries also received orders from local architects from around the world.

Carron produced two catalogues in Spanish in 1913 to support its trade with South America. They contain electrical and gas appliances for cooking, stoves and fireplaces, iron elements for stables, ploughing tools, iron structures – such as

⁷⁸¹ Juárez, *Scottish Cast Iron in Argentina: Its Role the British Informal System*

⁷⁸² Ibid.

bandstands, stairs and canopies – gates and railings, and furniture and domestic utensils like pots and toasters (**Figure 2–24**). One of these South American catalogues reveals both the addresses of Carron's offices and the names of its representative in South America: Mr. Trevor H. Bell is listed as the representative for the whole of the South American market, and he was based in Buenos Aires (**Figure 2–25**).

The catalogue's introduction suggests that Carron's products had been promoted through agents, and probably via English-language catalogues, but that this was the first time the company had produced a Spanish catalogue:

When Carron Company was determining to give light to this catalogue especially for export to South America, recognises that it comes to fill a gap that existed for a long time, and sincerely hopes to find a welcome among its overseas friends, while at the same time serving to develop, with mutual advantage, business.

The Carron Company was established more than 150 years ago and it has maintained, from the beginning, friendly relations and comprehensive knowledge of the conditions of South American market, through frequent personal visits.

While this catalogue gives a good idea of the kind of articles that Carron manufactures, it will be easily understood that it is impossible to publish and illustrate in a catalogue of this size, the whole variety of articles manufactured in Carron, Scotland. Therefore if any item you desire does not appear in it, the company expects to be given details of what is required, with the assurance that it will be able to satisfy all requirements.

The company Carron paid particular attention to the packaging of the articles for that market.

For the quality, style and efficiency of its products the Carron Company has no equivalent, while on the other hand its prices compare favourably with those of manufacturers anywhere in the world.

All communication will receive our greater and prompt attention and all the orders will be executed with care and speed.⁷⁸³

The same catalogue illustrates the possibilities offered by re-purposing patterns for other uses; the design of a balcony rail could also be employed for perimeter railings and gates, for example. In addition, similar designs were offered in English and Spanish catalogues. (**Figure 2–26**).

The other Carron catalogue, which is actually an ‘Abbreviated Catalogue’ of engineering products (**Figure 2–27**), included ploughing machines, pig iron bars, and even machines for use in local foundries in Argentina (**Figure 2–28**).

Among the most the most decorative products in this catalogue are seats and benches. See **Figure 2–29**.

As we have seen, the imperial trade system was sometimes supported by local or travelling agents who provided market analysis and helped distribute catalogues and generate sales. For example, Carron Company sent a Mr. Fraser to Argentina and other South American countries in 1928 to assess the market and to hire new local sales agents for the company. Fraser considered the River Plate to be a ‘large market’, and he noticed that there was not much competition, as ‘well-known competitors’ had ‘abandoned all attempts at business’. This was probably due to the fact that most of the British businesses were connected with railway projects that had almost concluded by that time. Fraser also investigated the market for domestic appliances and found them to be a most suitable product to promote in Argentina.⁷⁸⁴ During his ‘sales visits’ he would meet with many import companies, stores, and railway companies, and trade catalogues were his greatest sales tool. Notes from his meetings reveal:

⁷⁸³ Carron Company Records, *South America Catalogue* (1913), NRS (Ref: GD58/16/42), translation by author.

⁷⁸⁴ Carron Company Records, *Sales visits. July 1928. Report on Journey by S. Fraser*, pp. 22–26. NRS (Ref: GD58/6/11/41)

Great Southern Railway: ‘meeting with Mr. Smith⁷⁸⁵ architect and Mr. McDonald, chief draughtsman...left catalogue...Mr. Smith promised to use Carron in next specifications.’

Central Cordoba and Retiro Station: ‘Saw chief engineer who recommended we send particular cooking apparatus for hotels’

Central Argentine Railway: ‘send catalogues to chief engineer department.’

Pacific Railway: ‘M. Barton, acting chief mechanical engineer promised to mention out name in next specifications. Left catalogue.’⁷⁸⁶

These notes also provide an insight into how the imperial network functioned. Many British professionals working in Argentina as railway engineers would develop projects and drawings, liaise with contractors and ensure that work would be undertaken according to their specifications. Finally, they decided which firms would provide the materials, and, as we can see here, they tended to choose the British companies they knew and trusted.⁷⁸⁷

Some foundries, however, did not have representative offices or agents in Argentina. Walter Macfarlane, for example, had no representative in Argentina or in any other Spanish speaking country, even though it did have agents in other parts of the world, including Cape Town. This was driven by a strategic decision to eliminate intermediaries and focus on direct sales: orders were made directly using information from catalogues, and sales were mainly managed from Macfarlane’s London office.⁷⁸⁸ As its catalogue stated: ‘With the view of simplifying the ordering of our goods, we refer you to the “Directions for ordering” on first page of each section’.

⁷⁸⁵ This could be a reference to James Smith, the Scottish architect of the FCS.

⁷⁸⁶ Ibid., p. 30–32.

⁷⁸⁷ For networks of empire see: Magee and Thompson, *Empire and Globalisation: Networks of People, Goods and Capital in the British World, C.1850–1914*.

⁷⁸⁸ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, pp. 436–51.

A trade catalogue supplement written in Spanish for Macfarlane (**Figure 2–30**) can be found in the Ironbridge Library. It is unfortunately unclear whether the main catalogue that the supplement accompanied was written in Spanish or English. The year of the supplement's publication is also unknown. Although the fact that it showcases a cast-iron gate made for San Martin Park in Mendoza in 1909 suggests that it may have been published, like Carron's, just before the First World War. Unlike Carron Company, Walter Macfarlane focused on whole pre-fabricated buildings, listing theatres, such as the José de Alencar in Brazil, markets, bandstands, gates and railings as the main items its supplement.

The Lion Foundry, like Carron Company, did have a representative agent in Buenos Aires: L. P. Winby Engineers and Contractors (**Figure 2–31**), who also had an office in London. However, while examples of Lion's work can be traced in South America, no Spanish catalogue or other promotional materials have been found. Yet, the cast-iron window that the company supplied for Plaza Constitucion station in 1929 featured in their English catalogues (See Section 3).

Last, but by no means least, Glenfield & Kennedy published a catalogue in Spanish in 1913 (**Figure 2–32**), a copy of which is held at the Museum of Water and Sanitary History, located inside the Palace of Running Waters (See Section 3).

2.7 Conclusion

The British empire was founded on commerce, and iron was an excellent product for trade, as it could so easily be adapted to different purposes. Sometimes these purposes were related directly to power, as when iron was used for guns and canons. But sometimes they brought power incidentally, as when iron was used for railways, sanitation projects, and engineering and architectural projects in general. Essentially, during the nineteenth and beginning of the twentieth centuries, whoever had iron had power, as was demonstrated during the struggle for American independence. The British were aware then, that in order to keep the iron industry alive, they had to discourage the development of any iron industry outside the British Isles.

Not being part of a formal colony offered countries no protection from the power that Britain exerted through its dominance of the iron industry. For some time, Britain had the most advanced iron industry and the greatest production output in the world. This supremacy was directly related to technology and, as Winks has shown, the imperial relationship that Britain sometimes had with informal colonies such as Argentina, was shaped by the higher-technology society exerting influence on the lower-technology one.

The need for iron was so great in developing countries like Argentina that they could not live without it. Yet, they failed to develop their own iron industry not only because they lacked good iron deposits, but also because they depended on British railway tariffs, which in turn marked their dependency on Great Britain, at least until 1914.

The iron trade between Great Britain and Argentina proved to be extremely significant for both countries, but in very different ways. Great Britain needed important customers outside the European continent to safeguard the future of the industry, while Argentina needed iron for their railway system, sanitation works, parks and other urban developments; developments that were, in fact, financed by British investments, managed by British professionals, who in turn chose British materials, particularly Scottish. Argentina depended on British iron because it could

not produce its own in the quantity and at the speed needed, but also because the local industry could not be efficiently developed.

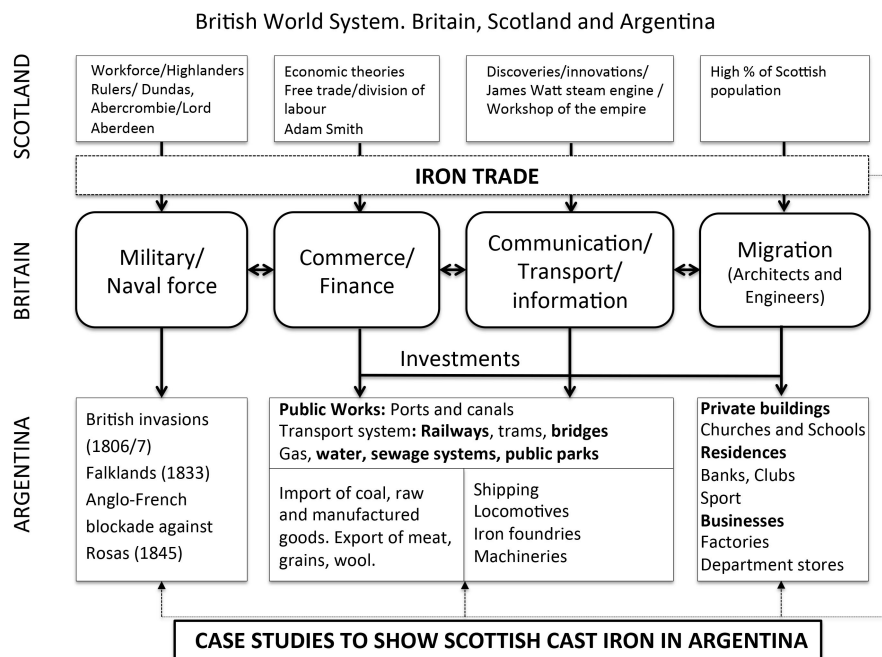
Even though it was not possible to measure the quantity of Scottish iron exported to Argentina, this section has demonstrated that Britain could only achieve its dominant position in the iron trade thanks to Scotland. Without the combination of factors that helped Scotland make its distinctive contribution to the empire – such as the early development of iron manufacturing, an abundance of good and well-placed iron ore deposits, and business and trade capacity nursed by the development of new means of transport – Britain's influence in places like Argentina would have been significantly reduced. Yet, Scotland could not have developed as it did without the symbiotic relationship with England offered by the Union of 1707. The Union gave Scotland access to both trade with English colonial markets, and to English investment, which helped fund the early stages of the establishment of the iron foundries.

Access to global trade was undoubtedly one of the most significant factors that allowed the iron industry to develop not only in Scotland, but also in England and Wales. But Scottish foundries, especially Walter Macfarlane, capitalised on this opportunity by developing trade catalogues that could reach the whole world and that were even written in Spanish especially for the Latin American countries, where Argentina was one of the most important costumers. This will be reflected in the case studies that will be developed in Section 3.

Section 3: Scottish Cast Iron in Argentina. Cases Studies

3.1 Introduction

The British empire, like any other empire, imposed its presence and power through both spatial and physical forms. In formal colonies like India, imperial architecture had three objectives: (i) to offer a very visible spectacle of domination; (ii) to organise the physical space of the city according to policies based on racial divisions; and (iii) to develop a style of architecture that represented ‘British character’.⁷⁸⁹ This last objective was also implemented in informal colonies like Argentina, as the following case studies attempt to demonstrate. The studies also demonstrate that a great amount of the iron introduced into Argentina was not only British but was, more specifically, Scottish. Although, as was demonstrated in Section 2, it is difficult to know exactly how much Scottish iron was imported to Argentina, a great amount can still found in around the country. These examples of Scottish ironwork are considered in this thesis to be a tangible result of an informal imperial system, which played an important part within the British world-system, as illustrated by **Graph 3–1**.



Graph 3–1. The British World-system, Scotland and Argentina. Source: Graph made by author

⁷⁸⁹ P.K. Nayar, *Colonial Voices: The Discourses of Empire* (Oxford, 2012), Conclusion.

The first step and the most challenging task in preparing Section 3 was to identify the Scottish ironwork in Argentina, which involved many fieldtrip visits and hours in the archives. The identification provided by nameplates was crucial. However, not all companies used nameplates on their products and, as has been mentioned, some objects – for example – never carried nameplates. In these cases, the information provided by catalogues and in archives was invaluable. All this was, of course complicated by the fact that, as mentioned, in Argentina there was no distinction between English, Welsh, Scottish or Irish. To Argentinians, they were all considered ‘English’, and ‘England’ is often used as a synonym for Great Britain.

In the examples here, the ironwork described is considered Scottish because it fulfils one of the following criteria and was: (i) manufactured in Scotland and shipped to Argentina; (ii) manufactured in another part of Great Britain with the involvement of Scottish people, as was the case at Andrew Handyside Iron Foundry; or (iii) manufactured outside Scotland but imitated Scottish ironwork’ designs.

It has also been necessary to classify the Scottish ironwork items found in Argentina. Thus, I have divided them into two main categories according to the site and buildings where they were found, namely: (i) infrastructure and public buildings, which include railways buildings and bridges, sanitation projects, parks and street furniture and (ii) private buildings, which include residences and stores.

The information related to the examples chosen was very uneven. Public works are usually well documented but private buildings may have undergone renovations or, in some cases, been completely demolished. The private buildings that do survive are often more difficult to access. The case studies are also geographically limited and the majority of the case studies are located in Buenos Aires. The reason for this is not only that, as the capital, Buenos Aires consumed more iron than the rest of the country, but also that it was where my fieldwork was concentrated. Of course, Scottish ironwork could well be waiting to be found in every corner of the country. In spite of these limitations, all the examples found here try to demonstrate to different degrees the role of Scottish iron foundries in assisting the expansion of both the British global market and the empire itself, and to record the contribution of Scottish iron to Argentina’s development.

3.2 Scottish Ironwork Used for Infrastructure and Public Buildings

3.2.1 Scottish Cast Iron in the Railway System in Argentina

In Argentina the railway system boosted the agro-export industry and became essential to the country's development. Being mainly funded and built by the British, the railways represented a strong imperial presence in Argentina.

British involvement in railway building was not just the result of Britain's skill in landscaping and engineering. The railways were designed to mirror the British system in style and form and acted as an immovable symbol of the presence of the empire.⁷⁹⁰ Railway stations were also built in the style of the British model, with British methods of construction and British materials. The railways were indelibly associated with iron, as most of the constituent parts of a railway station were made of iron, and utilised its three different forms (wrought, cast, and steel). Given that Great Britain was responsible for the development and production of railway systems as well as the producer of the iron needed to build them, the two factors combined to give Great Britain the advantage and aided the growth of her iron industry.⁷⁹¹

Railway stations were very important not just from an engineering or architectural point of view but also as an important element in the development of social history.⁷⁹² From the beginning, railway stations were perceived as symbols of movement, providing a new and far-reaching form of travel. They were not only 'gates to the glorious unknown', but also geographic reference points.⁷⁹³ They symbolised contact with what was different and diverse. They had a special charm

⁷⁹⁰ Ibid., Conclusion.

⁷⁹¹ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 229.

⁷⁹² D.W. Lloyd, *Railway Station Architecture* (Newton Abbot, 1978), Introduction.

⁷⁹³ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 265.

and were used as gathering places where the latest news and products could be received from the farthest corners of the globe.⁷⁹⁴

Railways transformed not just common means of transport but cities, countries, and continents. Trains and their engines became emblems of the new era, and the buildings, which housed them, were called the ‘cathedrals’ of the new age. This type of building presented an entirely new challenge for architects and engineers, for nothing like a railway station had ever been built, or needed, before.⁷⁹⁵

Two types of railway station were constructed: terminal and intermediate. Terminal stations were those located at the end of the physical railway line. These were usually bigger than intermediate stations, which were built along the rail route. Terminal stations were usually characterised by a dual architectural identity: an exterior structure, designed by an architect, built with conventional building materials and referencing historical styles; and an interior space, conceived by an engineer and supported by an independent iron structure. This approach was used for the first time in London’s Euston terminal (1835–39), and was applied in railway terminals all over the world.⁷⁹⁶ While Thomas Hardwick (1792–1870) designed the historic classical-style exterior, the independent train shed at Euston (**Figure 3–1**) was designed by the engineer Charles Fox (1810–74).⁷⁹⁷

The completion of Euston Station set a precedent; iron became the principal building material used in the construction of railway stations, in which wrought-iron roof trusses rested on cast-iron columns joined by decorative brackets.⁷⁹⁸ Most of the iron used in the construction of train sheds was in the form of wrought and cast iron but ornamental cast iron was most consistently used in platform canopies and in the

⁷⁹⁴ Jorge Tartarini, *Arquitectura Ferroviaria*, (Ediciones Colihue; Buenos Aires, 2001), p. 11.

⁷⁹⁵ C. Sheppard, *Railway Stations* (New York, 1996)., back page.

⁷⁹⁶ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 229.

⁷⁹⁷ *Ibid.*, pp. 232–233.

⁷⁹⁸ *Ibid.*, pp. 232–233.

covered entrances to the stations. Although present in large terminal stations, iron was also very common in smaller (intermediate) stations.⁷⁹⁹

Before the 1800s no single space was comparable in scale and height to the archetypal cathedral, although seventeenth- and eighteenth-century palaces, such as Louis XIV's at Versailles, might compete with them for overall size. The Hagia Sophia in Istanbul, measuring 250 feet (76 metres) long by 107 feet (33 metres) wide and 180 feet (55 metres) high at the crown, was probably the largest enclosed space in existence at the beginning of the nineteenth century. Although serving a totally different purpose, railways stations – especially terminals – were constructed on a similar scale.⁸⁰⁰ This was the first time in history that commercial structures began to rival religious and state architecture in both size and design.

Intermediate stations were smaller but were complemented by a number of components that were essential to the station's function: including passenger buildings, staff residences, safety guard towers, warehouses, shelters, water towers, water cranes and toilets (**Figure 3–2**).

In Argentina, as in many other countries, there was a direct process of transculturation in terms of British railway architecture. Building projects were usually designed in Great Britain, with British professionals and labour bringing British styles, technology, structures, materials, equipment, and even whole buildings to Argentina. Given that Argentina had no existing railway network, it was effectively a blank slate upon which all the elements of British design were directly transferred with perhaps only a few adjustments for scale and a few adaptations to suit the country's climate and topography.⁸⁰¹

In the beginning (1860s–1880s), intermediate stations in Argentina were very simple, comprising of one-storey buildings that included a ticket office, waiting room, and

⁷⁹⁹ Ibid., pp. 242–243.

⁸⁰⁰ Sheppard, *Railway Stations*, p. 10.

⁸⁰¹ Tartarini, *Arquitectura Ferroviaria*, p. 40.

manager's house. They usually also had a diversion platform for cargo loads and a shed for storage.⁸⁰²

During the period of railway expansion in Argentina (1880–1910), the existing buildings became obsolete and new ones were needed. Relatively new passenger buildings were replaced and redesigned: bigger in size but also with different characteristics. The single-storey building was typically replaced by a two-storey structure with a built-in tower – which housed the station manager – that sometimes adopted a sober Tudor-revival style, as evidenced by the use of timber framing.⁸⁰³ One of the main characteristics of these buildings was the use of visible brick with flush joints.⁸⁰⁴ Brick and iron were the fundamental mode of expression and provided the railway companies with a kind of early corporate identity.⁸⁰⁵ Interestingly, many of the bricks for the Argentinian railways were manufactured and branded in Scotland, as can be seen in **Figure 3–3**.

According to Jorge Tartarini, railway architecture can be considered ‘the most coherent and integrated system in history’, as it followed detailed guidelines with regards to construction (and ornamentation), equipment and techniques, all of which usually had British architectural terms of reference. Evidence of this can be seen in the iron components that were directly imported to Argentina.⁸⁰⁶ Scottish iron foundries were among the best positioned to offer all the elements required for the building of railway stations. Companies such as Lion Foundry boasted that they could ‘build stations entirely consisting of columns, brackets and girders, castings and all that is needed ‘in these [*sic*] iron “covered ways”’, as well as provide ‘all kinds of sanitary goods, urinals, water closets, for stations’.⁸⁰⁷

⁸⁰² Ibid., p. 110.

⁸⁰³ Tartarini, *Ferrocarriles Provincia Buenos Aires*, Ch. 2.

⁸⁰⁴ The use of bricks in façades had strongly influenced architecture in Argentina. Ibid., Ch. 2.

⁸⁰⁵ Ibid., Ch. 2.

⁸⁰⁶ Ibid., Ch. 2.

⁸⁰⁷ D. Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland* (PhD thesis, Edinburgh, 2012), p. 202.

Scottish foundries provided a wide range of iron elements essential for the construction and functioning of the Argentinian railway system and its stations: roof structures, columns and brackets; sanitary products such as urinals, pipes, gutters and rainwater heads and fountains; iron clocks, benches and lamps that were both functional and decorative; machinery, rails, signals and even locomotives (including water tanks and water cranes); and railway bridges and footbridges.⁸⁰⁸

Among the most important British railway companies in Argentina were the Central Argentine Railway (FCCA) and the Buenos Ayres Great Southern (FCS). Research for this thesis suggests that the company that used the most Scottish iron was the FCS. Many Scottish people relocated to Argentina to work for the company, and the majority of its directors were Scottish – a fact that reinforces the network of empire theory developed in Section 1.

Although it is difficult to know exactly how many Scottish people worked for the FCS, some Scottish names have been identified, as can be seen in **Table 3–1**.

Name	Forename	Occupation	Railway Line
Alexander	James Frederick		FCS
Alexander	James Manning	Stationmaster	FCS
Buish	William Fraser	Stationmaster	FCS
Burns	William Keedy	Employee	FCS
Fair	John	Director	FCS
Gifford	Edward Kellas	Employee	FCS
Graham	John Adams	Stationmaster	FCS
Harvey	Thomas		FCS
Hawkes	Charles	Engine Driver	FCS
McHardy	John	Railway Stocker	FCS
Macintosh	Alexander	Traffic Superintendent	FCS
MacLuskie	Henry	Traffic Manager	FCS
Mailer	James H.	Chief Mechanical Engineer	FCS
Meldrum	James	Chief Constructional Engineer	FCS
Montgomery	Robert	Chief Accountant	FCS

⁸⁰⁸ Tartarini, *Ferrocarriles Provincia Buenos Aires*, Ch. 2.

Moore	William	Stationmaster	FCS
Murray	William Robert	Engineer	FCS
Prosser	John	Employee	FCS
Robertson	David	Chairman	FCS
Scott	Charles	Engine Driver	FCS
Shennan	David Anderson	Director	FCS
Smith	James	Architect	FCS
Stewart	Thomas Buchan	Traffic Superintendent	FCS
Sturgeon	Ambrose	Engine Driver	FCS
Sutherland	John	Employee	FCS
Bell	Henry	Director	FCS, FCBByNO
Gibson	Herbert	Director	FCS, FCBByNO, FCE
Davidson	John Colin Campbell	Director	FCS, FCO, FCCA, FCBByNO

Table 3–1. List of Scottish people working for the FCS. Source: A. Morrison, ‘Scots Railwaymen’, <http://myweb.tiscali.co.uk/scotsinargpat/scotsrailwaymen.htm> (accessed March 3, 2016).

As can be seen, many Scotsmen held important positions as directors or chairmen. This fact does not mean that the whole of these companies’ boards of directors were formed of Scottish people, but they were generally made up entirely of British or Anglo-Argentine men, whose families owned businesses that would benefit from railway construction. According to Winthrop R. Wright, this fact allowed Britons who invested in Argentina’s railways to extend the hegemony of their own commercial interests. These investors were well aware of the mercantile possibilities the railway offered; their own commercial houses would provide the interior settlements with imported goods and serve as clearing houses for the shipment of wool, hides, and agricultural products.⁸⁰⁹

As an example, **Figure 3–4** shows the composition of the board of directors of the Buenos Ayres Southern Railway in 1899. That year the president was Frank Parish, son of Woodbine Parish, the first official British Consul, who signed The Treaty of

⁸⁰⁹ W.R. Wright, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854–1948* (Texas, 1974), p. 30.

Friendship and Navigation in 1825.⁸¹⁰ Frank Parish was also a relative of John Parish Robertson – the merchant who organised the first Scottish colony in Argentina (see Section1). George W. Drabble was the son of George Wilkinson Drabble, who was a member of many railways companies, president of the London and River Plate Bank, a pioneer in the chilli meat trade⁸¹¹ and owner of the trade company Drabble Hermanos in Buenos Aires. Similarly, Edward Ashworth, was owner of Edward Ashworth & Co, an import and trade firm. John Fair, was son of a prominent Scottish merchant in Buenos Aires called Thomas Fair, who started out as an importer, dabbled in mine exploitation and colonisation and became an extensive landowner. Among the Fair family's land was the Monte Grande settlement organised by the Parish Robertsons brothers.⁸¹² Another Scot, David Shennan, was a specialist in agro industry, especially shipping, and an extensive landowner.

The consulting engineers for the company – Livesey, Son & Henderson – would subcontract a great amount of ironwork to Scottish firms such as Alex Findlay Company. In addition, having Scottish engineers in the company – such as Chief Mechanical Engineer James H. Mailer and Chief Constructional Engineer Meldrum James – could certainly have influenced the firm to use ironwork produced by Scottish rather than English firms in the construction of the FCO.

Scots were also to be found on the boards of other British railway companies in Argentina. Sometimes the same person acted as director in more than one company at the same time as can be seen in the following table (**Table 3–2**), which shows the make-up of the four most important companies in 1908 (Scottish names in bold).

⁸¹⁰ H.S. Ferns, 'Beginnings of British Investment in Argentina', *The Economic History Review*, vol. 4, no. 3 (1952).

⁸¹¹ Hanon, *Diccionario de Britanicos En Buenos Aires (Primera Epoca)*, p. 288.

⁸¹² *Ibid.*, p. 312.

Buenos Aires Great Southern Railway (FCS)	Buenos Aires Western Railway (FCO)	Buenos Aires and Pacific Railway (FCBP/FCP)	Central Argentine Railway (FCCA)
<i>Director:</i>			
Jason Rigby (Chairman), Sir Henry Bell , Bart., A. E. Bowen, Col. Sir C. Euan Smith, K.C.B., Woodbine Parish, D. A. Shennan , D. Simson.	Sir Henry Bell , Bart. (Chairman), A. E. Bowen, D. Simson, Woodbine Parish, J. W. Todd.	Rt. Hon. Lord St. Davids (Chairman), T. P. Gaskell, C. E. Günther, E. Norman, Hon. A. Stanley, M.P., F. O. Smithers (Managing Director).	J. W. Todd (Chairman), C. Darbyshire, P. Riddock, W. Morrison, Jason Rigby, Col. F. J. G. Murray, J. W. Theobald, C. P. Ogilvie .
<i>Local Committee:</i>			
G. White (Chairman), J. P. Clarke , Dr. N. R. Fresco, F. D. Guerrico.	Legal Representative in Buenos Aires. Santiago Brian.	Dr. Don E. Lamarca (Chairman), J. A. Goudge, R. S. Zavalia.	Dr. J. A. Frias (President), H. H. Loveday, S. H. Pearson, Carlos Maschwitz.
<i>Consulting Engineers</i>			
Livesey, Son, and Henderson.	Livesey, Son, and Henderson.		Sir Douglas Fox and Partners. Livesey, Son, and Henderson.
<i>General Manager</i>			
J. P. Clarke.	A. F. Lertora.	J. A. Goudge.	H. H. Loveday.
<i>Secretary</i>			
H. C. Allen.	E. Eustace Faithfull.	W. R. Cronan.	F. Fighiera.
<i>Offices</i>			
River Plate House, Finsbury Circus, E.C	River Plate House, Finsbury Circus, E.C.	Dashwood House. 9, New Broad Street, E.C.	3A, Coleman Street, E.C.

Table 3–2. Directory of main railway companies in 1908. Source: Table made with information taken from: W.A. Hirst, *Argentina* (London, 1910)..

Figures 3–5, 3–6, 3–7 and 3–8 show the location of railway stations where Scottish cast iron has been identified.

1.2.1 Railway Terminals in Argentina

The most important railway terminals in Argentina were located in Buenos Aires and all of them are still in use: Plaza Constitucion (FCS–Now Roca line), which is located in front of the square with the same name in Constitucion; Retiro (FCCA–Now Mitre line); and Central Cordoba (FCCC–Belgrano line). The latter two stations are located in Britannia Square in Retiro (**Figure 3–9**), a square that was named in honour of the British community in Argentina and that reflects British hegemony in the country.

3.2.1.1 Plaza Constitucion (FSC), Buenos Aires Terminal

Inaugurated in 1866, the FCS's first terminal was known as Plaza Constitucion I (**Figure 3–10**). It was a very simple and modest station. However, it was obsolete within twenty years of its completion because it was unable to handle the increasing number of passengers and cargo. In 1883 work began on a project to replace the old station. The Plaza Constitucion II project was put in the hands of the London architectural firm, Parr, Strong & Parr, who adopted the eclectic Victorian Neo-Renaissance style (**Figure 3–11**). The consulting engineer was a Glaswegian named James Livesey, who had begun his apprenticeship in the railway workshops of the Caledonian Railway in Glasgow before moving to London.⁸¹³ Livesey is credited with several inventions, including a cast-iron railway sleeper that was used experimentally in Britain and Argentina. However, he is best known for his world-renowned engineering consultancy firms, which went under the names James Livesey, James Livesey & Son, and Livesey, Son, and Henderson, before finally

⁸¹³ In Argentina, James Livesey was also commissioned to design a very large grain elevator and store with a capacity of 2,000 tons of grain. The silos were to be 40 feet high and 10 feet in diameter. Livesey himself described the project as 'an altogether interesting and instructive piece of work' that 'in practice gave great satisfaction'. He also worked in other South America countries, but the high spot of his career was the planning and construction of a railway running from Buenos Aires on the Atlantic coast to Valparaiso on the Pacific coast and which crossed the Andes via a tunnel built at an altitude of 10, 000 feet. It was a project that had defeated many companies before Livesey. See: <http://sussexhistoryforum.co.uk/index.php?topic=7060.0>.

settling on Livesey and Henderson.⁸¹⁴ Perhaps unsurprisingly, his engineering consultancy often commissioned supplies from Scottish foundries.

In the end, Plaza Constitucion II incorporated 37000 m² of land, but by 1899 new platforms had been added and more alterations were needed to keep pace with the increasing number of passengers. In 1901–1902 the station was extended to the east; in 1903 a fourth platform was added, with two more platforms being added in 1907 when passenger numbers reached almost 10 million. The façade was also modified (Plaza Constitucion III– **Figure 3–12**) under the direction of Paul Bell Chambers⁸¹⁵ and Louis Newberry Thomas, who had been the official architects to the Buenos Ayres Great Southern railway since 1905. Plaza Constitucion’s extensions continued without pause. In 1910 another platform was added, followed by two more in 1912.⁸¹⁶ However, the number of passengers continued to grow. In 1913 more than 20 million passengers passed through Plaza Constitucion, double the annual number of its competition, Retiro Station (Central Argentine railway). While Retiro Station was the terminal for passengers and commodities from the north, centre and coast, Plaza Constitucion was the strategic point for products from the south and the Pampas.⁸¹⁷

The Pampas was a very prominent agricultural area that benefited greatly from railway development, which allowed the introduction of wool and grains to the international market. This was possible because the FCS intended to extend their

⁸¹⁴ C. M. Lewis, ‘Livesey, James (1833–1925)’, Oxford Dictionary of National Biography, Oxford University Press, 2004 [<http://www.oxforddnb.com/view/article/49327>, accessed 15 Aug 2017]

⁸¹⁵ Paul Bell Chambers (1868–1930) was an English architect who performed much of his work in Argentina, especially for the Great Southern railway. He studied in the Isle of Wight and at the Westminster Architecture Museum, London. He graduated as an architect and built his first works in his native country, including schools, banks and institutes. He emigrated to Argentina, arriving in Buenos Aires in November 1896. Shortly afterwards, Law No. 4416 was passed, which validated the university diplomas of immigrants in the country and Chambers became an Argentinian professional. He met the American architect Louis Newberry Thomas, who had also settled in Argentina, and together they carried out Chambers’s greatest works in the country. These were large corporate buildings and large railway terminals for the Ferrocarril del Sud (FCS), many of which are National Historic Landmarks today.

⁸¹⁶ Tartarini, *Arquitectura Ferroviaria*, pp. 82–83, 94–95.

⁸¹⁷ *Ibid.*, p. 158. British involvement in the development of this area and its connection with the exploitation of railways was described in Section 1.

railway to connect Buenos Aires with the ports and productive areas of the south. However, the area was dominated by indigenous people and it was only after most of them were eliminated during the second ‘*campana del desierto*’ in the 1880s that the land was available for railway extension and European settlement. Immigration and access to productive land encouraged the construction of new railway stations.

As a station on a British-designed railway line, Plaza Constitucion (I, II and III) most likely used British ironwork for the train shed, building structure and decoration. However, due to a lack of documentation, it is difficult to discover anything about its ironwork suppliers and whether they came from Scotland. Nevertheless, old pictures reveal the use of cast-iron railings that were very fashionable at the time (**Figure 3–13**). Those used for Plaza Constitucion II and III look very similar to model number 169 made by Walter Macfarlane, as seen in the company’s casting catalogue and its Spanish language supplement (**Figures 3–14 and 3–15**).

By 1913, after undergoing many renovations and acquiring additional platforms, Plaza Constitucion had reached its capacity. It was proposed that a completely new structure be constructed to handle the ever-increasing volumes of trade and passengers. Preliminary plans were drawn up for a new station – Plaza Constitucion IV (**Figure 3–16**).

The ‘proposed Enlargement’ of Plaza Constitucion intended to replace the earlier building (Plaza Constitucion III) with a new monumental building, including an imposing façade of 148 metres.⁸¹⁸ Unfortunately, the project was delayed by the advent of World War I (1914–1918), which affected both funding and the supply of materials. During the 1920s the project had to be revised because of a massive increase in annual passenger traffic, which went from 30 million in 1922 to 38 million in 1924. By 1927 the figure would reach a staggering 43.5 million, with 120,000 passengers passing through every day.⁸¹⁹

⁸¹⁸ Ibid., p. 157.

⁸¹⁹ Ibid., p. 157.

In terms of style, the 1924 plans for the reconstruction of Plaza Constitucion IV set about to implement an:

Architectural style based on a liberal treatment of a classical revival adapted to modern construction, standing on a solid granite base on which large colonnades rest and interrupted in the middle by a great entrance framed by wide pylons. Side fronts facing General Hornos and Lima streets will be treated with more simplicity, constituting large entrance arches that give access from the streets to the great Hall of the station.⁸²⁰

The London-based consulting engineers, Livesey, Son & Henderson, oversaw the design of the train shed, which would house fourteen new platforms. The firm was also commissioned to provide new roads and bridges to facilitate access to the new station.⁸²¹ **Figure 3–17** shows a contemporary model that clearly indicates the join between the main building to the front, designed by architects, and the train shed at the rear, designed by engineers.

Interestingly, the Prince of Wales (later King Edward VIII) laid the foundation stone of Plaza Constitucion IV in 1925, during a visit in which he also visited other projects carried out by British companies.⁸²² Despite its glorious start, the project was hampered by the Great Depression of 1929. Work on the station suffered delays and further modifications and ultimately the old building (Plaza Consitucion III) was left standing and, in place of the proposed new building, it was decided a new section would be added to the existing structure (**Figure 3–18**).

The result was an interesting mix that clearly shows the influence of British architecture in Argentina, as it combines the Beaux Arts inspiration of Plaza Constitucion III with the Edwardian monumentalism of Plaza Constitucion IV.⁸²³

The most vivid expression of this monumentalism can be seen inside in the enormous

⁸²⁰ Ibid., p. 157 citation taken from W. Rögind (1937)..

⁸²¹ Example of that is the Ituzaingó Street bridge built in 1887 by Francis Morton & co. The manufactured was identified as the bridge has a visible nameplate in a front side of the bridge.

⁸²² 'No Title,' *La Nacion*, August 7, 1925.

⁸²³ Tartarini, *Arquitectura Ferroviaria*, p. 161.

central hall, which has a 25 metre high barrel-vaulted ceiling made of steel, filled with concrete slabs and finished with fibrous plaster coffering (**Figure 3–19**).⁸²⁴

This style is further represented on the outside of the building by a colossal cast-iron window (60 feet wide by 43 feet high or 18.3 x 13.10 metres) made in Scotland by Lion Foundry, in conjunction with Crittall Manufacturing, an English company specialising in metal windows.⁸²⁵ This window was an integral part of the new structure and (**Figures 3–20 and 3–21**) was, it seems, an important project for Lion Foundry, as it was advertised with pride in their *Illustrated Casting Catalogue of Examples of Ironwork executed by Lion Foundry* (**Figure 3–22**). A picture of the cast-iron window in production can be found in Lion Foundry records (**Figure 3–23**). From close up, it is possible to read the pictured board, which says:

Plaza Constitucion: 'Buenos Aires Great Southern railway' Requisition R 2692. N0 T.589 and 589A Windows in Calle Hornos and in concourse makers-the Crittall manufacturing Co. LTD engineers-Messrs Livesey, Son & Henderson.⁸²⁶

The façade's cast-iron panels represent another Scottish contribution and were influenced by Robert Adam's ornamental designs (**Figures 3–24 and 3–25**). As previously discussed, the Adam brothers contributed greatly to the Neo-classical style in Great Britain, and their unique style was imitated around the world.⁸²⁷ Their characteristic anthemion pattern – a decorative motif of radiating plant forms of honeysuckle or of Lotus Palmette taken from ancient Greece⁸²⁸ – was produced by Carron Company and became the most common decorative detail in the cast-iron balconies of the New Town in Edinburgh, along with many other Georgian and Victorian buildings. The pattern of this classic design was widely disseminated in the

⁸²⁴ Ibid., p. 158.

⁸²⁵ This company was established in England in 1883 and is still operating today. It became a global business, importing window frames and designs around the world. The official website of the company is: <https://www.crittall-windows.co.uk/>.

⁸²⁶ Unfortunately, within the Lion Archive, there are no folders or documents with that reference.

⁸²⁷ See Section 1 about Scots and their contribution to the empire.

⁸²⁸ Harold Osborne, *The Oxford Companion to Art*, (Oxford: Oxford University Press, 1971), p. 53.

cast iron industry through publications and casting catalogues.⁸²⁹ Scottish foundries other than Carron, such as Lion Foundry and Walter Macfarlane, also adopted this style.

The task of assembling and decorating the cast-iron details for the window fell to a local construction expert, Hume Hermanos – a man of Scottish origins – who was also in charge of erecting the ironwork for the train shed. As Hermanos explained in a letter to the chief engineer of the Buenos Ayres Great Southern Railway, Robert G. Garrow, the progress and efficiency of work at Plaza Constitucion depended on the timely shipment of more than 3,328 tons of ironwork from Great Britain.⁸³⁰ We should also note that Garrow had a Scottish connection, he was educated there and would later be involved in the construction of the Highland Railway and Caledonian Railway before going to Argentina.⁸³¹

The structure of the train shed was, as we have seen, designed by the engineering consultants Livesey, Son & Henderson, and they chose a Scottish foundry – Alexander Findlay and Company – to manufacture the steel, wrought, and cast iron for the building (**Figures 3–26, 3–27, 3–28 and 3–29**). Photographs from their archives provide a record of some of the manufacturing processes for the iron elements found at Plaza Constitucion. The ironwork was assembled in the workshop before being shipped to Argentina (**Figures 3–30 and 3–31**). This process guaranteed its successful erection at its final location, with each piece being individually numbered to ensure that not even the smallest element went missing. The ironwork made by Alexander Findlay & Co. for the train shed at Plaza Constitucion is still in use today and remains in excellent condition (**Figures 3–32 and 3–33**).

As noted in the introduction of this chapter, British railway stations provided the standard for railway stations built in countries beyond the formal empire. During the process of identifying British architectural influence in Argentina it became apparent that many Argentinian railway stations shared very similar design traits with

⁸²⁹ Gay, *Cast Iron: Architecture and Ornament, Function and Fantasy*.

⁸³⁰ See: Plaza Constitucion (Boxes 81 A 84 / MFA) and Hume Hermanos records.

⁸³¹ ‘Overseas engineers’, <http://www.steamindex.com/people/overseas.htm> (accessed May 25, 2017).

established British stations. One such example is Plaza Constitucion I (1865), which adopted a similar classical style to the old Victoria Station in Norwich, England (**Figure 3–34**). Plaza Constitucion II and III are very similar to Thorpe Station also in Norwich (**Figure 3–35**). Curiously, the first FCS stations (From Plaza Constitucion to Chascomús) and Victoria and Thorpe stations were built by the same railway constructors: Peto and Betts.⁸³²

Given Plaza Constitucion's British heritage, in terms of design and construction, it is no surprise that it shares many similarities with London's King's Cross Station (**Figure 3–36**). This is most obvious when comparing the monumental windows found in both structures, although King's Cross has two windows. Indeed, the classical style seen in these stations was replicated throughout England and can also be found in other European capitals, such as Paris. It was also exported to other British colonies and can be found in major structures such as Union Station in Winnipeg (**Figure 3–37**), Canada, which was constructed between 1908 and 1911 as a joint venture between the Canadian Northern Railway, National Transcontinental, Grand Trunk Pacific Railway and the Dominion government.⁸³³

Although I found no correlation between the engineers that carried out the works at Plaza Constitucion IV and Winnipeg stations, the Grand Trunk of Canada and the Great Southern were both clients of Peto and Betts in the early 1860s and had constructed similar stations in Great Britain and abroad. They worked in partnership with Brassey, who is usually attributed with building many of the world's railways in the nineteenth century, including a big contract for the Caledonian Railway in

⁸³² During the early 1850s, a period of railway company consolidation in England, Peto and Betts turned their efforts overseas, undertaking the Danish railway system, the Grand Trunk of Canada, and other projects in Argentina, Russia, Algiers and the USA. The majority of which were done with Thomas Brassey. See: D. Brooke, 'Brassey, Thomas (1805–1870)', <http://www.oxforddnb.com.ezproxy.is.ed.ac.uk/view/article/3289?docPos=1> (accessed May 5, 2016).

⁸³³ The first train entered the station on 7 August 1911 and the station officially opened on 24 June 1912. See: 'Union Station', <http://www.historicplaces.ca/en/rep-reg/place-lieu.aspx?id=4514> (accessed July 1, 2017).

Scotland. Thomas Brassey also built part of the Central Argentina line in which Scottish engineers, such as Alexander Ogilvie also participated.⁸³⁴

While the exterior appearance of Plaza Constitucion IV resembles stations in London and Winnipeg, the train shed looks similar to the one in Glasgow Central Station (**Figure 3–38**). Again, although I found no correlation between the professionals involved in the construction of Glasgow Central and Plaza Constitucion IV stations, the similarity between both train sheds is astonishing. Most likely, Glasgow Central Station commissioned the ironwork to local foundries, namely Alex Findlay and Co from Motherwell, and a similar structure was shipped to Argentina for Plaza Constitucion.

3.2.1.2 Retiro Station (FCCA), Buenos Aires Terminal

After a fire at Central Station in 1897, all the railway terminals – except Plaza Constitucion – moved from the centre of the city to Retiro, which was at the time an outer suburb of the city near Buenos Aires port. There the Argentine Central Railway (FCCA) made use of the old Northern Railroad station and, after merging with the Buenos Aires and Rosario railways in 1908, began planning for the construction of the paradigmatic Retiro terminal station to service both the Central Córdoba (1915) and Buenos Aires–Pacific (1912) rail routes. The stations for both routes were rebuilt on a larger scale to accommodate growing passenger traffic.

The Retiro terminal (FFCA), which is still standing, was designed in 1908 and constructed between 1909 and 1915 (**Figure 3–39**). The professionals involved included the architects Eustace Lauriston Conder, Roger Conder⁸³⁵, Frances Farmer, and Sidney G. Follet, who had studied at Edinburgh University before going to

⁸³⁴ M. Chrimes, 'British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century', *3rd International Congress on Construction History* (2009).

⁸³⁵ Eustace Lauriston Conder was born in 1863 and began practising in London in 1887 in partnership with Roger Thomas Conder. He immigrated to Buenos Aires in 1888 and the partnership continued until R. T. Conder died in 1906. He took Sydney George Follett into partnership in 1919.

Argentina.⁸³⁶ These architects were all members of RIBA and the construction of Retiro station was undertaken by firms with a British association.

The construction of the train shed was awarded to Francis Morton & Co. and Dorman-Long, both from England. As at Plaza Constitucion, Scott and Hume were the local contractors. All the ceramics, which were provided by Royal Doulton, came from Great Britain, as did the ironwork – although it is difficult to know who the supplier was.⁸³⁷ While the majority of the ironwork at Retiro was brought from England, some Scottish cast-iron elements can be found; the beautiful cast-iron lamps decorated with the FFCA's initials still located at the rear of the station made by Walter Macfarlane, for example (**Figures 3–40 to 3–43**).

Other Scottish foundries, like Glenfield and Kennedy, who specialised in hydraulic and sanitary engineering, were chosen to provide wall fountains and water pumps for the locomotives (**Figures 3–44 and 3–45**).

The crest of the designer/supplier of the cast iron used on the roof of the station has not been identified, but it employs the anthemion figure that was extensively used in Scottish cast iron since Robert Adam introduced classical models into the Carron Company's cast-iron designs in the late-eighteenth century (see also **Figure 3–45**).

⁸³⁶ Sydney George Follett was born on 28 October 1883 and was articled to Hippolyte Jean Blanc from 1899 to 1904, remaining with him for a further two years after completing his apprenticeship. During this period he studied at Edinburgh School of Art and won a number of prizes, including the Queen's Prize for freehand drawing in 1900, the King's Prize for architectural design in 1904, and a travelling scholarship in 1906, which enabled him to spend four months touring northern Italy. On his return, he joined Robert Rowan Anderson, then in partnership with Arthur Forman Balfour Paul, as a draughtsman. He won the Pugin Studentship in 1908 and in the same year moved to London to work as a draughtsman to Edwin Landseer Lutyens. He immigrated to Argentina in 1910, obtaining a post in the office of Eustace Lauriston Conder in Buenos Aires. Conder took him into partnership in 1919. The precise name of the firm from that time is unclear; it is possible that Follett's name was not included in the practice's name. Their practice focused on commercial, bank, institutional, hospital and ecclesiastical architecture. He was elected FRIBA in early 1931, his proposers being Conder, James Smith of Buenos Aires, and James Westbrook Farmer, who he had met in Lutyens' office and with whom he appears to have formed a partnership. At that time Follett's office was at 666 Cangallo, Buenos Aires. See RIBA nomination papers in RIBA archives. Also available online on: http://www.scottisharchitects.org.uk/architect_full.php?id=203477.

⁸³⁷ Tartarini, *Arquitectura Ferroviaria*, p. 153.

3.2.1.3 La Plata Station (FCS), La Plata Terminal

In 1906 Paul Bell Chambers and Newbery Thomas – the architects of Plaza Constitucion II – designed La Plata Station to replace the station built at the end of the nineteenth century (**Figures 3–46**).

Although the building uses cast-iron canopies in its façades, these have yet to be identified. However, the train shed (**Figures 3–47 and 3–48**) may be considered ‘Scottish’ to the extent that, although based in Derby, England, the ironworks that supplied it – Andrew Handyside & Co. – was established by a Scotsman. Thus, what might otherwise be considered simply an ‘English’ company turns out to have a significant Scottish connection, further revealing the substantial if sometimes invisible role that Scotsmen played in manufacturing and supplying ‘British-made’ iron products.

3.2.1.4 Mitre Station (FCCA), Tucuman Terminal

Due to its strategic location Tucuman was an important place for the sugarcane industry in Argentina. The first line to arrive there was the Cordoba Central Railway. However, by the beginning of twentieth century there were four terminal stations at Tucuman, plus two further stations solely for cargo. Originally the four stations catering for passengers were: Tucuman Central Córdoba; the North Central (known as ‘Del Bajo’); the Provincial (line Northwest Argentine), which was located in Avenida Roca; and, perhaps most importantly, Mitre Station.

Tucuman Central Córdoba was the first station in the province, built in 1876. It was located on the corner of San Martín and Marco Avellaneda streets. Its construction employed the talents of two important figures, the Italian engineer Jose Telfener, and the French architect Clodomiro Hilere, who would later develop strong ties with the sugarcane industry. Encouraged by the growth of the sugarcane industry, other railway terminals were constructed in Tucuman.

Mitre Station, also known as ‘Sunchales’ Station, was inaugurated in 1891 (**Figure 3–49**). It was part of the Central Argentine railway that linked Tucuman, Rosario and Buenos Aires. It served as an essential point for the storage, distribution, and trans-

shipment of merchandise, and its passenger service was one of the most important in northern Argentina.⁸³⁸ Scottish influence on the design of Mitre Station is best illustrated by the building's ironwork. As with La Plata Station, all the ironwork was supplied by the Andrew Handyside Company, whose nameplates can still be found on the structure (**Figures 3–50 to 3–53**).

The building employed an Italianate classical style that was in vogue at the time. We can also see the direct influence of British architectural design, as the station shares some similarities with one of the first terminal stations built in Scotland (in 1842) – Haymarket Station in Edinburgh, part of the Edinburgh & Glasgow railway, designed by architect David Bell and engineer John Miller (**Figure 3–54**).⁸³⁹ This could be a mere coincidence, however, it demonstrates how British stations constantly served as examples for those constructed in Argentina.

3.2.2 Intermediate Stations

3.2.2.1 Lomas de Zamora, Temperley, Banfield, Tandil, Rauch, Necochea, Bahia Blanca and Fulton stations (FCS)

The growth of suburban stations in Buenos Aires can be attributed to the need to accommodate the city's growing British population. Indeed, the first intermediate stations, such as Lomas de Zamora (1865), Temperley (1871) and Banfield (1873), were built specifically to cater to the suburbs inhabited by the British. Each of these stations was built by the FCS and reflects the influence that the British presence had on the city and its infrastructure.

Other intermediate stations constructed by the FCS include Tandil, Rauch, Necochea, Bahia Blanca and Fulton. These stations, along with those referenced above, all share a similar typology, especially in terms of their ironwork structures. The iron

⁸³⁸ A.H. Elsinger, 'La primera estación', <http://www.lagaceta.com.ar/nota/491418/sociedad/primera-estacion.html>.

⁸³⁹ 'Haymarket Station', http://www.scottisharchitects.org.uk/building_full.php?id=204076 (accessed September 2, 2017).

components, including cast-iron brackets and columns, have yet to be identified as Scottish; however this typology was used repetitively in Scotland (see Strathpeffer Station **Figure 3–55**) and promoted by Scottish foundries such as Walter Macfarlane.

Figure 3–56 shows an example of ironwork on railway platforms designed by Walter Macfarlane. Among these elements are columns (A), brackets (B), roof spandril (C), drip fret (D), gutter (E), antefixae (F), terminal (G), pendant lamp (H), lamp bracket (I), bench (J), urinal (K), and window (L). They also recommend the right height between floor and roof to be suitable for their products (**Figure 3–57**)

The typology suggested by Walter Macfarlane was reproduced over and over again, including in Latin American countries such as Brazil and Argentina. **Figure 3–58** shows Bras intermediate station in Sao Paulo alongside an illustration of a Macfarlane's casting catalogue demonstrating the 'Application of Ironwork to Railway Platform Roofing'.⁸⁴⁰

As noted above, many FCS intermediate stations adopted this typology, using the same cast-iron brackets and columns. The manufacturer of cast-iron brackets and columns used at Lomas de Zamora (1865), Tandil (1883), Rauch (1891), Fulton (1891) and Necochea (1894) has not been identified, but the buildings there were constructed using the scheme proposed by Walter Macfarlane. These stations are still standing, although not always in their original form (**Figures 3–59 to 3–62**).

One of the most common cast-iron elements found at these intermediate stations are small wall fountains that are similar to those produced by Walter Macfarlane **Figure 3–63**) and Lion Foundry (**Figure 3–64**). Although the exact model has not been identified the shared characteristics with the Scottish design are apparent. These small wall fountains were found in the majority of the stations built at the end of the nineteenth century. One of the examples that still survives can be identified in Tandil Station, where other Scottish elements have also been found (**Figure 3–65**). The station's ornamental rainwater heads, pipes, and ears have been identified as Scottish using onsite photographs and illustrated casting catalogues.

⁸⁴⁰ Gomes da Silva, *Arquitetura Do Ferro No Brasil*, p. 121.

According to the Macfarlane casting catalogue, ‘the important position that these [the ornamental heads] occupy, and enhanced character and the style they impart to a building, give considerable scope for variety of design, as illustrated by the following patterns which can be supplied for any pattern of pipe. Crest, monograms, dates, etc., can be cast on ‘to order’.’⁸⁴¹ The ornamental heads and ears found at Tandil (**Figures 3–66 and 3–67**) were in the 6th edition of Walter Macfarlane’s catalogue (1882), model no. 31 for the ornamental head, and model no. 30 for the ears. However, the same model was also published, in more detail, in the supplement for rainwater pipes and connections, ears, and heads in the 7th edition. (**Figures 3–68, 3–69 and 3–70**). But the design was not only available from Macfarlane; it can also be found in almost every Lion Foundry casting catalogue, including even early editions from when the company was called Jackson, Brown and Hudson (**Figure 3–71**).

The cast-iron water tanks and towers⁸⁴² used at these intermediate stations were less decorative but essential for the operation of locomotives. Like many other cast-iron elements, water towers were designed and manufactured on a huge scale and distributed all over the globe. In Scotland, Glenfield and Kennedy, Dalzell (recently re-opened), Braithwaite and Brandon Bridge Building⁸⁴³ were among the main producers. The drawings shown in **Figures 3–72 and 3–73** were done by the New South Wales Railway in Australia, but were typical for most railways at the end of the nineteenth and beginning of the twentieth centuries. Some examples can still be found in Rauch (**Figure 3–74**) and Fulton (**Figure 3–75**) stations in Buenos Aires, both from FCS lines. Similar towers can be found at Cañuelas, Pilar, Palermo, Aldo Bonzi, and Saldias, among others. However, no nameplates have been found to help determine who supplied these towers. The base of this type of tower could be made with either iron or brick, as was the case at Coronel Vidal (**Figure 3–76**) Cast-iron

⁸⁴¹ *Catalogue of Macfarlane’s Castings, 6th Edition* (1882)., Vol 1., p. 12.

⁸⁴² An interesting water tower can be seen on the blog of the British Society Dedicated to Water Tower Culture and History: British Water Tower Appreciation Society, ‘No Title’, <http://bwttas.blogspot.co.uk/> (accessed March 17, 2017). Thanks to Mark Watson for providing the information.

⁸⁴³ ““Last” Scottish steelworks at Dalzell plant in Motherwell formally reopens’, <http://www.bbc.co.uk/news/uk-scotland-scotland-business-37486003> (accessed September 10, 2017).

water cranes can also be seen at railway stations around Argentina. For instance, a crane built by Brandon Bridge Building in 1907 for Ferrocarril Buenos Aires & Rosario still stands at Escobar Station (**Figures 3–77** and **3–78**).

3.2.2.2 Monte Grande Station (FCS)

Monte Grande Station bears the name, and shares the location, of the Monte Grande colony (see Section 1), the site of the first Scottish colony in Argentina, established in 1825. The land on which the station was built was the property of some of the descendants of those first Scottish migrants, and was bought by a group of five investors: Pedro J. Coni, Simon Gaston Sansinena, Robert Oliver, Santiago and Juan B. Lumsden Ferrarotti.⁸⁴⁴ The most well known among these investors was the Frenchman Simon Gaston Sansinena, who had been running a successful meat exporting business since 1877. He was also connected with the Scottish community as he was married to Juana Gibson, daughter of John Gibson, an old resident of the Monte Grande colony who became one of the most prominent Scots in Buenos Aires. The investors formed a company called Coni, Sansinena y Cia with the purpose of founding a town, colony and manufacturing centre (related to the meat industry) in the district of Lomas de Zamora. A railway station was essential to the success of the project. Consequently, both town and railway station were founded in 1889, with the station opening its doors to the public on 3 April that year.

The station was an important meeting point and focus for local festivities. Interestingly, some Argentinian flags traditionally used for festivities can be seen in a photograph (**Figure 3–79**) flying next to the British Blue Ensign. The latter flag was used by certain organisations associated with the British empire and its colonies.⁸⁴⁵

⁸⁴⁴ ‘Los Orígenes de Monte Grande’, <http://www.revistametro.com.ar/EstebanEcheverria/contenidos/3/files/publication.pdf> (accessed January 1, 2017).

⁸⁴⁵ It is not clear why these flags were there or for what occasion they were used. However, it is interesting to see how the railways represented in some way the link between Argentina and the British Empire and its colonies. New Zealand vessels had to fly the British Blue Ensign (a blue flag with the Union Jack in the upper left quarter) with the addition of a badge or seal representing the colony on the flag's right-hand side from 1865. Because New Zealand had neither badge nor seal, ships flew the Blue Ensign unmarked until they were rebuked by visiting British naval captains in

Both town and station are attributed to the engineer Pedro Coni. The railway station was at the edge of Sansinena's own property and was also used as the administrative offices for his cattle business. However, the Baring banking crisis in the 1890s affected the financing of the whole Monte Grande town project. The Buenos Ayres Great Southern bought the station in 1890, making it part of Temperley–Cañuelas branch. Monte Grande Station was very small but very pretty and was even used in advertisements for the railway company (**Figure 3–80**).

Monte Grande Station was certainly designed to use cast-iron brackets on the platforms and in its railings. The Scottish origins of Monte Grande perhaps made Walter Macfarlane's Saracen Foundry the obvious choice of supplier for the cast-iron elements, on sentimental if not economic grounds. In addition, drawings of the Monte Grande project (**Figure 3–81**) illustrate how many architects and engineers designed their projects, which basic indication of ironwork to be chosen by their client. This type of method was suggested in Walter Macfarlane's catalogues, as can be seen in following images (**Figures 3–82 and 3–83**).

Although many stations in the area – Avellaneda, Lanus, Banfield, Lomas de Zamora, Temperley, Monte Grande, Ezeiza, Glew, Quilmes, Lafererre, Villa del Parque, Palermo y la Plaza⁸⁴⁶ – were renovated in 1999, Monte Grande Station still retains its original cast-iron structure and it is possible to identify some Walter Macfarlane elements – including brackets (model no. 58) and columns (model no. 123) – from the Macfarlane casting catalogue (**Figures 3–84 to 3–87**). Interestingly, the design used for these brackets was very similar to the design created by the architect and engineer, Charles Henry Driver (1832–1900) for Dorking station in 1867(**Figures 3–88 and 3–89**).⁸⁴⁷

1866. The first badge was a simple 'NZ', which was replaced by four red stars with white borders in 1869. See: Frederick Brockett, and New Zealand Ministry For Culture Heritage Te Manatu Taonga. However, this design was not only attributed to Walter Macfarlane & Co. It can be also found in almost every Lion Foundry casting catalogue. *Version of New Zealand Blue Ensign*.

⁸⁴⁶ Tartarini, *Arquitectura Ferroviaria*, p. 174.

⁸⁴⁷ G. Biddle and O.S. Nock, *The Railway Heritage of Britain: 150 Years of Railway Architecture and Engineering* (London, 1983), p. 202.

In some ways Driver represented the ideal of the connection between engineering and architecture; he specialised in the design of iron structures but was skilled in harmonising utilitarian construction with architectural ideas in tune with contemporary aesthetic norms. He was considered to be an expert in iron casting and manufacture, and even acted as a consultant to Joseph Paxton on the Crystal Palace project for the Great Exhibition of 1851, for which he designed the Orangery and the Aquarium. He also pioneered the use of ornamental tile work in industrial interiors.⁸⁴⁸

Some fine examples of Driver's work can also be found in other Argentinian railway stations, for example, Hipolito Yrigoyen.

3.2.2.3 Hipolito Yrigoyen Station (FCS)

Like other stations built at the end of the nineteenth century, Barracas Norte was demolished at the beginning of the twentieth. In 1908 it was pulled down to make way for Hipolito Yrigoyen, an anti-academic style station designed by the architectural firm formed by Paul Bell Chambers and Louis Newbery Thomas (**Figure 3–90**).

Although just one Scottish cast-iron element – a Walter Macfarlane lamp (model no. 14) designed by Driver – has been identified at the station (see **Figures 3–91** and **3–92**), its design value makes it very significant as it illustrates the exquisite design skills and knowledge about cast iron and its manufacture that, made Driver a great contributor to the cast iron industry.

During the Victorian era, Driver was recognised for both his architectural design and engineering knowledge. His reputation and expertise allowed him to challenge John Ruskin's negative views on mechanical reproduction and consequently the use of cast iron in architecture. While discussing 'the good that engineering has done for art', Driver argued that the reproduction of art by machines did not change the

⁸⁴⁸ P. Dobraszczyk, 'Historicizing iron: Charles Driver and the Abbey Mills Pumping Station (1865–68)', *Architectural History*, vol. 49 (2006).

prestige of a work of art; rather it distributes its beauty to the many rather than the few. According to Paul Dobraszczyk, by using basic principles derived from Ruskin's work, Driver developed a serious solution to the perceived lack of historical meaning in cast iron.⁸⁴⁹

Indeed, during his lifetime Driver was extremely well renowned within his field and was even elected president of the Institute of Civil Engineers. In England, he worked on numerous railway stations, bridges and other public buildings, such as the pumping stations at Abbey Mills and Crossness. However, two of his most important projects were based in South America: Luz Station in Sao Paulo, Brazil and Santiago Market in Chile.⁸⁵⁰ Both projects were developed in Scotland, the first by Walter Macfarlane and the second by R. Laidlaw & Sons, both from Glasgow. As previously illustrated, Driver also designed lamps for Walter Macfarlane.⁸⁵¹ As can be seen in the lamp design by Driver it is possible to see lamp design number 14 as integral part of the design of lamp and ventilation shaft (**Figure 3–93**).

Driver also participated in bigger projects in Argentina, although these have not been sufficiently studied. His obituary reveals that between 1868 and 1870, he assisted Mr. Edward Woods in preparing designs not only for Santiago Market but also for railway stations on the Boca and Ensenada Railway in Buenos Aires.⁸⁵² This could possibly suggest that Woods and Driver played a part in the design of the Central Station (terminal) of Buenos Aires and Ensenada Port Railway. There are also similarities in the design of Chile's Santiago Market and Buenos Aires' Central Station, again possibly indicating that Driver influenced its design or designed it himself.⁸⁵³ This station was the most important prefabricated terminal in Latin

⁸⁴⁹ P. Dobraszczyk, 'Historicizing iron: Charles Driver and the Abbey Mills Pumping Station (1865–68)', *Architectural History*, vol. 49 (2006).

⁸⁵⁰ Ibid.

⁸⁵¹ P. Guedes, 'El Mercado Central de Santiago antes de su Embarque a Chile / Santiago Market before it sailed to Chile', *ARQ*, no. 64 (2006)

⁸⁵² Ibid. and 'Charles Henry Driver', https://www.gracesguide.co.uk/Charles_Henry_Driver (accessed August 3, 2017)..

⁸⁵³ Unfortunately, there is not much information about Central Station. The relationship between Driver and this station, is just my own suggestion as there is not yet any study that can confirm this assumption.

America because of its scale (**Figure 3–94**).⁸⁵⁴ Unfortunately, a fire destroyed the station in 1897 and there are no surviving records, which makes the process of determining Driver's influence very difficult.

3.2.2.4 Lobos Junction–25 de Mayo Extension (FCS)

In 1890 the FCS acquired the Merlo–Lobos branch line from the FCO. A junction station was then needed to join the new branch with the line from Cañuelas. A temporary station, called Empalme Lobos (Lobos Junction) was built in 1892, but in 1898 the building was replaced with the one that, although abandoned, still stands at the junction today (**Figure 3–95**). This station would connect the line with 25 de Mayo Station.

According to drawings made for Lobos Junction in 1898 (**Figure 3–96**), the station was meant to use Macfarlane's cast-iron columns and brackets model no. 78 (**Figure 3–97**). However, no Macfarlane columns and brackets were used in Lobos Junction station in the end. Instead, probably to reduce costs, the company decided to have the structural elements cast, possibly locally, with less ornamentation and in inferior quality (**Figures 3–98 and 3–99**).

A cast-iron wall fountain, similar to those used at Tandil Station, can also be found at Lobos Junction (**Figure 3–100**).

3.2.2.5 Iraola, Coronel Vidal and Tornquist stations (FCS). The use of cast-iron urinals

While public urinals can only be found in railway stations built from the 1880s onwards in Argentina, across Britain they started to be installed by municipal authorities from the 1820s to placate a growing intolerance for public urination. Nevertheless, for some in Britain, the presence of a public urinal was itself deemed 'an offence on public decency'.⁸⁵⁵ The use of cast iron in the construction of urinals

⁸⁵⁴ Tartarini, *Arquitectura Ferroviaria*, p. 78.

⁸⁵⁵ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, pp. 89–90.

played a significant role in both their aesthetic evolution and in the tense debate about their perceived ‘obscenity’. Cast-iron urinals probably originated in Glasgow, and from the late 1840s onwards Glasgow city erected a large number of prefabricated urinals made entirely of cast iron, both because they were easier to clean than other materials and were ornamental. The combination of ornament and function was the guiding principle of cast-iron at the time.⁸⁵⁶

Walter Macfarlane provided one of the most commonly used designs for urinals found in Glasgow, which employed geometric patterns of Islamic ornament (probably inspired by Owen Jones and his study of the Alhambra).⁸⁵⁷ Macfarlane adapted these ornaments to functional requirements, for instance, making small perforations in the screen of the urinals to maintain the privacy of the interior while allowing ventilation.⁸⁵⁸ The urinal ranges were designed to be modular in form so they could be easily, and considerably, extended.⁸⁵⁹

The use of cast-iron urinals in public spaces became common throughout Great Britain. They were mainly produced by Scottish foundries, such as Macfarlane (**Figure 3–101**), McDowall Steven & Co,⁸⁶⁰ George Smith, James Allan Senr & Son,

⁸⁵⁶ Ibid., pp. 89–90.

⁸⁵⁷ Owen Jones was a versatile architect and designer, and one of the most influential design theorists of the nineteenth century. Through his work at the 1851 Great Exhibition, Two hundred years after his birth, Jones's theories on flat patterning and ornament continue to resonate. In his search for a modern style, uniquely in the nineteenth century, he looked to the Islamic world for inspiration. The courageous new principles that provided the teaching framework for most schools of design. Jones's theories on the use of colour, geometry and abstraction formed the basis for his seminal publication, *The Grammar of Ornament*, a design sourcebook that is still in print 150 years later. See: ‘A higher ambition: Owen Jones (1809–74)’, <http://www.vam.ac.uk/content/articles/a/a-higher-ambition-owen-jones/> (accessed September 11, 2017).

⁸⁵⁸ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, pp. 89–90.

⁸⁵⁹ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 486.

⁸⁶⁰ It is still possible to find one in Start Yard in Covent Garden, London. See. Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 97.

and Lion Foundry (**Figure 3–102**).⁸⁶¹ An early illustrated casting catalogue from Macfarlane shows some of the most common models used for cast-iron urinals.

In Scotland, the use of cast-iron urinals was common in railway stations, and the flexibility of the material was demonstrated by the relocation in 1977 of one cast-iron urinal from Melrose station in Scotland to Bewdley Station in England (**Figure 3–103**).⁸⁶² However, cast-iron urinals became less and less common as they started to suffer vandalism and started to deteriorate. From the beginning of the twentieth century, some foundries simply stopped advertising them. For instance, urinals and water closets disappeared from the 6th edition of Lion's casting catalogue (1945).⁸⁶³

By then, however, Scottish cast-iron urinals had been exported around the world, especially to railway stations. In South America, examples of cast-iron urinals can be found in Bragança Sao Paulo, Brazil (**Figure 3–104**). Macfarlane cast-iron urinals can also be found, albeit in a poor condition, in three intermediate stations built by the FCS at the end of the nineteenth century:⁸⁶⁴ **Figures 3–105** and **3–106** show current urinals at Tornquist (1883), **Figures 3–107** and **3–108** show urinals at Iraola (1885), and **Figures 3–109** to **3–113** show urinals at Coronel Vidal (1886)⁸⁶⁵ – all these stations were part of the FCS line in the province of Buenos Aires.

Macfarlane elements with less ornamental value can also be found in railway stations across Argentina. They are neither confined to the province of Buenos Aires nor exclusive to the FCS line, as the examples found at Alta Cordoba Station, an intermediate FCCC station, demonstrate.

⁸⁶¹ In 2006, a heritage group decided to carry out research to discover whether any examples of the cast-iron street urinals and public conveniences favoured and used by the Victorians and Edwardians still existed in the twenty-first century. See: 'Victorian and Edwardian Street Furniture', http://www.hevac-heritage.org/items_of_interest/public_health/street_urinals/street_urinals.htm (accessed August 23, 2017).

⁸⁶² 'Temple of Convenience - Bewdley Station', <http://www.geograph.org.uk/photo/4602568> (accessed September 14, 2017).

⁸⁶³ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 267.

⁸⁶⁴ Tartarini, *Ferrocarriles Provincia Buenos Aires*, p. 32.

⁸⁶⁵ L. Juarez, 'Documenting Scottish Architectural Cast Iron in Argentina', *ABE Journal. European Architecture beyond Europe*. <http://dev.abejournal.eu/>, no. 5 (2014).

3.2.2.6 Alta Cordoba Station (FCCC)

Alta Cordoba Station dates from 1875 when the FC Central Cordoba expanded and installed a new branch in Recreo (**Figure 3–114**).

After many alterations, Scottish cast-iron elements were added to the station. It is not clear exactly when the Walter Macfarlane columns, railings, and terminals were added to the original building, but most likely it was around the 1910s, when the architect Conder (before he formed *Conder, Follet and Farmer*) was working with the Scottish constructors Hume Hermanos on alterations at the station. The majority of the Macfarlane elements have been identified by existing nameplates and by comparison with catalogues. See **Figures 3–115 to 3–118**.⁸⁶⁶

The restoration of the station carried out from 2009 to 2013 allowed the roof railings to be identified as Macfarlane's, as they appear in its casting catalogue (**Figures 3–119 and 3–120**).⁸⁶⁷

3.2.2.7 3 de Febrero Station (FCBAyR–FCCA)

Hipodromo Station was built around 1886 near the Hippodrome (located in the 3 de Febrero park) and was part of the British-owned Buenos Ayres and Rosario Railway (FCCAyR), founded in 1874.

The first Hipodromo station (**Figure 3–121**) was clearly a cast-iron prefabricated building, complete with a cast-iron footbridge and cast-iron lamps. The lamp posts are similar to those found in the Macfarlane casting catalogue (**Figure 3–122**).

In 1908, the FCCAyR was acquired by the FCCA. In 1929 the station was renamed 3 de Febrero and a new building replaced the old one. The new station was constructed using Scottish cast and wrought iron, and the work was commissioned to Alexander

⁸⁶⁶ M. Ferrari, 'Los Catalogos de Fabricacion en Hierro', in R. Gutiérrez (ed.) *Estudio de arquitectura Follett, 1891-2008 Conder, Follett, Farmer* (Buenos Aires, 2008). I would also like to thank to Monica Ferrari for providing pictures. See also Hume Hermanos Records at the MFA (Box 2363).

⁸⁶⁷ 'La estación de trenes de Alta Córdoba volvió a mostrar su mejor imagen', <http://archivo.lavoz.com.ar/09/06/19/estacion-trenes-Alta-Cordoba-volvio-mostrar-mejor-imagen.html>. (accessed January 1, 2016).

Findlay Co. **Figures 3–123 to 3–125** show cast-iron columns in the company's workshop before being sent to Argentina. **Figure 3–126** shows the same columns in their current location in the station.

3.2.3 Footbridges

Footbridges were elevated pedestrian bridges, made mainly of cast iron, designed to connect one or several platforms with the station's passenger hall, and sometimes to provide access to the station from the public highway. This type of footbridge began to appear in Argentina between 1880 and 1916 and became a common feature of intermediate stations. The earliest examples found in Argentina were at First Retiro Station (**Figure 3–127**) and Lomas de Zamora (**Figure 3–128**).

British railway companies acquired these bridges mainly from Scottish foundries. Nameplates from Arrol Brothers of Glasgow (**Figure 3–129**) appear most commonly, but Walter Macfarlane and other foundries also made the same type of bridge (**Figure 3–130**).

Like most cast-iron railway elements, these footbridges were used in Great Britain before being used in Argentina, and a few examples can still be found in England, at Cromford Station in Derbyshire (**Figure 3–131**) and Cark Station in Cumbria (**Figure 3–132**), for example.⁸⁶⁸

In Argentinian stations cast-iron bridges were a very common feature. Indeed, many are still in use today, especially in Buenos Aires, where the following stations have retained their original footbridges: Colegiales (FCCC) (**Figures 3–133 and 3–134**), Martinez (FCCA) (**Figure 3–135**), Núñez (FCCA) (**Figure 3–136**) and Florida (FCCC) (**Figure 3–137**). Others, such as those at Casilda (FCCA) (**Figures 3–138 and 3–139**)⁸⁶⁹ and Pergamino (FCO–FCCA) have been abandoned (**Figures 3–140**

⁸⁶⁸ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 534.

⁸⁶⁹ The Ferrocarril Oeste Santafesino (FCOS) was an Argentinian company that built and operated a line of wide-gauge railroads. In 1890 the company opened a section between Rosario and Casilda, this development continued the line to San José de la Esquina, which was previously opened on 7

and 3–141), but the structures remain intact. Pergamino is also the location of a larger footbridge, situated away from the station and constructed as a track crossing for pedestrians. This structure has a different typology than the station bridge and was manufactured by Andrew Handyside's company (**Figures 3–142 to 3–144**).

In 1926 the FCS commissioned Alexander Findlay Co. to build a footbridge for Tolosa station (1/1/1926, job 712). **Figures 3–145 and 3–146** show the bridge being assembled at Findlay's workshops. The size and scale of the bridge is similar to the structure found at Pergamino and, like other footbridges, it was composed of component parts made with different types of irons, but cast-iron columns were an essential part of the structure. **Figure 3–147** shows the Tolosa bridge in Buenos Aires during a recent restoration.

3.2.4 Railway bridges

One of the best examples of cast-iron railway bridges in Argentina can be found in Palermo, Buenos Aires (**Figure 3–148**). Its scale and massive columns of cast iron made the bridge very singular (**Figure 3–149**). Andrew Handyside manufactured it, as it can be seen from its nameplate (**Figure 3–150**), in 1914 for the British railway company, Buenos Aires and Pacific Railway (FCBP/FCP). Large cast-iron Doric columns support a wrought-iron girder bridge in an attempt to combine compressive strength with embellishment. This type of railway bridge was very common in Great Britain but already considered old-fashioned by the time it was used in Argentina.⁸⁷⁰ The Palermo bridge shares many stylistic traits with its English counterparts, particularly the bridge found at Queens Road, Hastings, which was constructed in 1898 for the South Eastern Railway Company (**Figure 3–151**).⁸⁷¹

November 1887. However, in 1900 the company was absorbed by the Central Argentine Railroad (FCCA), which meant that the line now expanded to Cordoba.

⁸⁷⁰ Biddle and Nock, *The Railway Heritage of Britain: 150 Years of Railway Architecture and Engineering*, p. 196.

⁸⁷¹ *Ibid.*, p.196.

Andrew Handyside was not the only engineering firm to receive commissions for the construction of railway bridges in Argentina. According to records held in the archives of the Alexander Findlay Company, the company were commissioned to design the bridge located on Cervino Street in Buenos Aires for the British-owned Central Argentine Railway (**Figures 3–152 to 3–154**).⁸⁷²

Scottish iron bridges were not exclusively commissioned by British-owned railways in Argentina. For instance, at the end of the nineteenth century, the national line – the Central Northern Railway (FCCN) – commissioned Sir William Arrol (who had engineered the construction of the Fourth Bridge in Scotland) to provide railway bridges between Tucuman and Salta. Other bridges on the route were built by McClintic Marshall Products Co. of New York,⁸⁷³ although these structures have yet to be identified. The following 1920 survey map (**Figure 3–155**) shows all railway bridges on the line from Tucuman to Güemes (Salta province). Most needed renovation and, unsurprisingly, Scottish foundries like as Alex Findlay & Co. were chosen to undertake the repair and replacement work. Job books and photographs from Alexander Findlay show some of the work done (**Figure 3–156**).

⁸⁷² Information taken from Alexander Findlay Records on North Lanarkshire Archives.

⁸⁷³ Boletín De Servicio De Los Ferrocarriles del Estado, p. 84. (MFA, Boxes 4142 al 4150).

3.2.5 Scottish Cast Iron for Sanitation Work

To stem the outbreak of epidemics, Argentina readily adopted British methods of sanitation that required the import of British engineers, British materials and British capital. Moreover, these sanitation methods not only brought an influx of British technology but were also accompanied by a different view on the habits and customs of hygiene, as one culture transposed its ideas to another. The introduction of this new technology had a massive impact on the landscape, as thousands of kilometres of British, especially Scottish, cast-iron pipes were installed beneath Argentinian soil, along with additional cast-iron products used in the supporting infrastructure. This process greatly helped expand British influence and serves as an excellent example of informal empire in action. In Britain, sanitation works were a means of advancing public health and reformers viewed them as essential mechanisms for improving the quality of life in their cities in terms of morality and modernity.⁸⁷⁴ Environmental sanitation was first proposed in Britain by the English social reformer Edwin Chadwick (1800–1890) and it progressively spread to the most urbanised countries in the world, including Argentina.⁸⁷⁵

Some historians and political theorists argue that reforming the conditions of urban life was an important unwritten strategy imposed by the ‘improvers’ of liberal Victorian Britain and its empire. Confident that they were spreading enlightenment and civilisation, colonial officials and engineers imposed their technological systems on foreign landscapes. Water supply and sewerage systems influenced behaviour and introduced new standards of normalcy in everyday life.⁸⁷⁶ This corresponds with concepts of ‘governmentality’ and can be understood as organised practices – mentalities, rationalities, and techniques – through which subjects are governed. French philosopher Michel Foucault developed the concept of governmentality. He

⁸⁷⁴ J. Broich, *Water and the modern British city: The case of London, 1835–1903* (PhD thesis, 2005), abstract.

⁸⁷⁵ A. Kohl, *Higienismo Argentino: Historia de una Utopía : La Salud en el Imaginario Colectivo de una Epoca* (2006), pp. 11–33.

⁸⁷⁶ J. Broich, ‘Engineering the empire: British Water Supply Systems and Colonial Societies, 1850–1900’, *Journal of British Studies*, vol. 46, no. 2 (2007), p. 347.

thought that in Europe there was a tripartite balance between governmentality, sovereignty, and discipline. In this sense, concepts of hygiene connected with governance to become ideal concepts of ‘individual, community, nation, and empire’.⁸⁷⁷ Thereby the concept of hygiene created a direct link between the individual, their surroundings, the system of governance they lived under and, finally, the broader sense of empire. Although not coercive, arbitrary or direct, the application of ideas and practices around hygiene could also be considered another conduit of imperial influence.⁸⁷⁸ Moreover, as Great Britain was an innovator in terms of systems of hygiene, such as water distribution, it offered an example to follow. Sanitation became a symbol of civilisation, modernity and of progress, which Argentina wanted to follow.⁸⁷⁹

In addition, the financing of sanitation works also depended on British capital. As previously noted, there was a strong connection specifically between the British firm Baring Brothers and sanitation and hydraulic works in Argentina. This dependency was so strong that it contributed to the 1890s ‘Baring Crisis’ (described in detail in Section 1).

During the first half of the nineteenth century, Britain was afflicted by a series of public health crises, which were a consequence of rapid industrialisation and a growing population, which had led to high pollution rates and unsanitary living conditions.⁸⁸⁰ In the 1830s and 1840s there were three massive outbreaks of contagious disease: the first, from 1831 to 1833, included two influenza epidemics and the initial appearance of cholera; the second, from 1836 to 1842, encompassed major epidemics of influenza, typhus, typhoid, and cholera. A further pandemic came

⁸⁷⁷ D. Heath, ‘Sanitizing Modernity: Imperial Hygiene, Obscenity and Moral Regulation in Colonial India’, in S. Dube (ed.) *Enchantments of Modernity: Empire, Nation, Globalization* (New York, 2009).

⁸⁷⁸ Broich, ‘Engineering the Empire: British Water Supply Systems and Colonial Societies, 1850–1900,’.

⁸⁷⁹ J. Tartarini, ‘El Palacio de las Aguas Corrientes’, <http://arqa.com/arquitectura/el-palacio-de-las-aguas-corrientes.html> (accessed September 1, 2017).

⁸⁸⁰ Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, p. 17.

from cholera in 1848–1849. The crisis came to a peak with the 'Great Stink' of London in 1858. Glasgow was also among the worst cities in Europe with regards to sanitary and housing conditions.⁸⁸¹

However, the direct link between poor living conditions, disease and life expectancy was not clear until Edwin Chadwick used quantitative methods to show this connection. He was convinced that active measures such as cleaning, drainage and ventilation would make a real difference. His ideas were published in *The Sanitary Conditions of the Labouring Population* in 1842. This investigation inspired the Public Health Act of 1848 and resulted in the establishment of the general Board of Health, of which he was the first director.⁸⁸²

Chadwick's concept of health was based on the assertion that the wellbeing of the population should be considered of public interest. This coincided with Adam Smith's metaphor of the 'invisible hand' that explained how, in a free-market economy, self-interested individuals operate through a system of mutual interdependence to promote the general benefit of society at large, and how unintended social benefits of individual action can guide men in their economic and social activities. As disease was associated with the working class, it compromised the labour force and thus the labour market. Thus, by establishing common hygiene habits, sanitation would contribute to financial and political order.⁸⁸³ Consequently, in Britain from the 1840s onwards, the local governments of nearly every provincial city took on the responsibility of supplying their communities with water. The systems that they constructed had broad implications for the growing activity and power of public authorities.⁸⁸⁴

⁸⁸¹ L. Douglas, 'Health and Hygiene in the Nineteenth Century', <http://www.victorianweb.org/science/health/health10.html> (accessed September 4, 2017).

⁸⁸² 'Edwin Chadwick (1800-90)', <http://www.sciencemuseum.org.uk/broughttolife/people/edwinchadwick> (accessed August 25, 2017).

⁸⁸³ Kohl, *Higienismo Argentino: Historia de Una Utopía : La Salud En El Imaginario Colectivo de Una Epoca*, pp. 11–33.

⁸⁸⁴ J. Broich, *Water and the modern British city: The case of London, 1835–1903* (PhD thesis, 2005), abstract.

Figure 3–157 shows the location of sanitation sites and buildings where Scottish cast iron has been identified.

3.2.6 British Sanitation Works

Glasgow's water was drawn from wells and streams until 1807, when Thomas Telford (1757–1834) and James Watt (1736–1819) pioneered a new supply works near the River Clyde. However, rivers were becoming increasingly unsuitable as a source of potable water. Loch Katrine, located 55km north of Glasgow, seemed to offer a better and abundant supply of clean water and, in 1846, Lewis Dunbar Brodie Gordon floated the idea of bringing water into the city by gravity, using aqueducts and pipes.⁸⁸⁵

In 1852 leading water engineer John Frederick la Trobe Bateman (1810–89) – famous for designing Manchester's water supply system – went to Scotland to review the various possibilities for improving Glasgow's water supply. In 1853, he reported that raising the level of Loch Katrine just 1.2m could supply 227.3 million litres of water per day to the city. To achieve this more than twenty-five substantial iron and masonry aqueduct bridges, up to 24m in height and 27.4m in span, were constructed. The water was carried through cast-iron pipes (**Figure 3–158**).⁸⁸⁶ Most likely these pipes were provided by Scottish iron foundries.

By the 1850s cast-iron pipes were a common feature of water supply projects; however, Bateman's background had provided him with a solid knowledge of how to best utilise these materials. During the 1830s he had worked with the Scot Sir William Fairbairn (1789–1874) designing and constructing reservoirs for the mill on the River Bann in Ireland.⁸⁸⁷ Indeed, Fairbairn, who later became Bateman's father-in-law, would claim to have been the first to design a complete iron building: a three-

⁸⁸⁵ 'Loch Katrine and aqueducts', <http://www.engineering-timelines.com/scripts/engineeringItem.asp?id=1244>. (accessed September 1, 2017).

⁸⁸⁶ Ibid.

⁸⁸⁷ P. Russell, 'Bateman, John Frederic La Trobe (1810–1889)', <http://www.oxforddnb.com/view/article/1668> (accessed August 14, 2017).

storey flourmill that was shipped to Turkey in 1839.⁸⁸⁸ Bateman, perhaps influenced by his father-in-law, also came to apply his talent and skill to projects other than water schemes. In 1869, he even proposed building a cast-iron tube for carrying a railway across the English Channel.⁸⁸⁹

Bateman oversaw an extensive number of water supply projects in the UK. The success of the Manchester and Glasgow water gravity projects led to the system being widely adopted across Britain in approximately 100 water supply projects across the country. The system was also exported to many colonial cities, including Bombay, Colombo, Hong Kong, and Singapore.⁸⁹⁰

In addition, Bateman served as a consultant on the Barnsley, Edinburgh, and Liverpool water supply schemes. In 1869, as a result of their work on the Glasgow water supply project, Bateman and J. W. Bazalgette⁸⁹¹ – who designed and implemented the sewage plans for London city – were once again hired to develop a gravitational system that would help dispose of Glasgow's sewage.⁸⁹²

John Frederick la Trobe Bateman was also in charge of implementing sanitation works using a gravitational system in Argentina. His working relationship with the government lasted twenty years, from 1871 to 1891. He became the most influential engineer related to sanitation works in Argentina.⁸⁹³

⁸⁸⁸ Despite Fairbairn's claims this was not a fully cast iron construction, as the structure had wrought iron plates for walls. See: Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 84.

⁸⁸⁹ John Frederic La Trobe Bateman, Obituary. http://www.gracesguide.co.uk/John_Frederick_La_Trobe_Bateman

⁸⁹⁰ Broich, 'Engineering the Empire: British Water Supply Systems and Colonial Societies, 1850–1900,' .

⁸⁹¹ Bazalgette held the post of engineer until the Sanitary Board was replaced by the London County Council (LCC) in 1889 and his greatest works were undertaken during this period. See: D. Smith, 'Bazalgette, Sir Joseph William (1819–1891)', <http://www.oxforddnb.com/view/article/1787> (accessed August 14, 2017).

⁸⁹² Russell, *Bateman, John Frederic La Trobe (1810–1889)*

⁸⁹³ Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, p. 60. Mr. Bateman participated on water systems at Aberdâr, Accrington, Ashton, Belfast, Birkenhead, Blackburn, Bolton, Cheltenham, Chester, Chorley, Colne and Marsden, Colne valley, Darwen, Dewsbury, Dublin, Forfar, Gloucester, Halifax, Kendal, Macclesfield,

3.2.7 Scottish Cast Iron for Water and Drainage Supply in Argentina

The British had the greatest expertise and most advanced technologies when it came to sanitation projects. And, as with the railways, the Argentinian government relied heavily on this expertise, recruiting British companies and engineers to oversee major sanitation projects in Argentina. The majority of these projects were carried out at the end of the nineteenth century. However, there had been attempts to improve sanitary conditions at the beginning of the century.

In 1824 the Argentinian President Rivadavia, who we have already identified as an early collaborator with the British empire, requested and received a Baring Brothers loan to finance a sanitation project in Buenos Aires. At that time, the city's major waterway, the River Plate, was beginning to show signs of contamination. Rivadavia commissioned the English engineer James Bevens to solve the problem. Bevan made proposals for Buenos Aires harbour that aimed to increase transit while minimising contamination. As mentioned in Section 1, these proposals were never adopted because of internal conflicts and Argentina's costly war with Brazil in 1826, which was also partly financed by the Baring Brothers loan.⁸⁹⁴ This incident marks the beginning of Argentinian debt and dependence on British capital.

By 1856 the first cases of cholera had been reported in Buenos Aires and in 1858 yellow fever emerged as a serious threat. These diseases posed a real danger to a city already plagued by outbreaks of smallpox, scarlet fever, measles, dysentery, plague and diphtheria. The need to provide the city with clean drinking water was growing ever more immediate but political infighting between Unitarians and Federals ensured that measures to tackle the problem were delayed.

Newcastle upon Tyne, Oldham, Perth, Stockport, St Helens, Warrington, and Wolverhampton. See: Russell, *Bateman, John Frederic La Trobe (1810–1889)*

⁸⁹⁴ 'La Ingenieria Sanitaria en la Argentina', http://www.aysa.com.ar/Media/archivos/579/Lazos_de_Agua_Ediciones_AySA_1_La_Ingenieria_Sanitaria_en_la_Argentina_eBook_2014.pdf (accessed September 14, 2017).

In 1866 the government created the first Commission of Works of Health. This body was in charge of the installation of sanitation projects, including providing clean running water for Buenos Aires. The technical director was the Irishman John Coghlan (1824–1890), who was commissioned by the Buenos Aires government following a recommendation from the Baring Brothers bank.⁸⁹⁵ Coghlan designed the city's first waterworks and laid the foundation for the city's drainage system.⁸⁹⁶ He also played a prominent role in the development of the city's harbour facilities and would go on to play an important part in the growth of Argentina's railway system.⁸⁹⁷

In 1862, just after the passing of a law approving the commencement of work on the city's first major sanitation project, Coghlan sent an engineer to Britain to acquire all the machinery and equipment to lay the first twelve miles of pipes.⁸⁹⁸ The work was delayed because of political and economic complications in the country but, in April 1869, the public of Buenos Aires received the first service of running water. This was the first filtered-water system on the whole continent of America, including the United States.⁸⁹⁹

The new water system started in Bajo de la Recoleta. Two cast-iron pipes reached 600m into the River Plate, capturing and transporting the water to three decantation reservoirs. The water, once purified, was sent by pumping machines to the city's supply network. The engine house held two of James Watt's steam engines (**Figure 3–159**).⁹⁰⁰ Each steam engine had a different function. One of them carried the water from the river to the reservoirs. The other drew from the well of filtered water and

⁸⁹⁵ Ibid.

⁸⁹⁶ Chrimes, 'British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century,' .

⁸⁹⁷ Coghlan returned to London in 1887 after an 'honoured, fruitful and laborious career in the Argentine Republic' according to a testimonial from the President of Argentina. In London he was elected a Director of the Buenos Aires Great Southern Railway. See: Ibid.

⁸⁹⁸ Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, p. 42.

⁸⁹⁹ Ibid., p. 42.

⁹⁰⁰ Ibid., p. 24.

supplied the distribution network and the elevated tank that was located in Plaza Lorea. This elevated tank, built in Britain entirely from iron, was 43 metres high and had a capacity of 2700 cubic metres (**Figure 3–160**). This tank acted as regulator and reservoir.⁹⁰¹ The cast-iron pipes distributed purified water to a network that covered about 177 blocks, providing water to the public dispensers installed along the route's squares and markets. However, it was a primitive system and only served 8 per cent of the city's population. Even though it represented a significant improvement, it was not enough, especially as the population continued to grow. Moreover, people wanted potable water to be supplied to their homes and not just to public spaces.⁹⁰²

It is worth mentioning that while working on Buenos Aires' sanitation network, Coghlan maintained contact with Joseph Bazalgette (1819–1891), who was, at that time, Britain's greatest innovator in the field of sanitation projects. Coghlan would also have been very aware of the work undertaken by John Frederick Bateman (1810–1889). Indeed, Bateman later travelled to Argentina after being recruited by the Buenos Aires provincial government to enlarge and improve the work done by Coghlan.⁹⁰³

3.2.8 Scottish Cast Iron in the Sanitation Network in Buenos Aires

In 1867 Buenos Aires was struck by a mass epidemic of cholera followed by two outbreaks of yellow fever in 1868 and 1871. These mass epidemics resulted in the deaths of at least 8 per cent of the city's population and forced the government to concede that the sanitation works carried out by Coghlan were insufficient. Thus, the government decided to undertake and implement a more ambitious project, one that extended the waterworks to Recoleta and called for a complete overhaul of the sewage system. To oversee this project, the government hired J. F. Bateman, who from 1872 onwards was in charge of implementing new sanitation strategies. His

⁹⁰¹ Ibid., pp. 43–44.

⁹⁰² Ibid., pp. 43–44.

⁹⁰³ Ibid., p. 42.

duties included carrying out health studies, preparing new projects, as well as personally directing the work and carrying out inspections of the necessary materials.⁹⁰⁴ Work started in 1874 but a lack of financial backing and political discord ensured that it was more than two decades before it was completed.

For the main drainage system, the city was divided into twenty-nine districts (**Figure 3–161**). Each district was drained independently, with sewers draining to the lowest part, where the sewage was then admitted via regular chambers into the intercepting sewers. Most of the districts' individual systems were designed for combined sewage and storm water. The sewers were made of Portland concrete or cast iron, which was imported from Great Britain (**Figures 3–162 and 3–163**).⁹⁰⁵

The scale of the project was massive and took decades to complete and Bateman did not live to see the final results of his work. In the years before his death, Bateman could not reside in Buenos Aires due to other sanitary commitments in Naples, Constantinople, Colombo, Spain and Canada. So, instead he undertook several visits and relied on professionals representing his company and who resided in the city to keep him informed on progress. These professionals included the English engineer Alfred Moore (who had acted as resident engineer on the Loch Katrine Works for the water supply of Glasgow between 1856 and 1870),⁹⁰⁶ George Higgin, who focused on sewage and water distribution, and the Swedish engineer Karl Nyströme, who was involved in the architectural design of the Palace of Running Water.⁹⁰⁷

Bateman's sanitation project included the construction of a treatment plant for sewage effluent, which was built in Quilmes in Puente Chico (throughout the province of Buenos Aires the plant was also known as 'Wilde'). The most important

⁹⁰⁴ J. Tartarini, 'El Patrimonio del Agua en Buenos Aires: edificios, conjuntos y paisajes culturales', *Labour & Engenho*, vol. 5, no. 2 (2011).

⁹⁰⁵ Chrimes, 'British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century,'.

⁹⁰⁶ 'Alfred Moore (1826–1904), Obituary', https://www.gracesguide.co.uk/1905_Institution_of_Civil_Engineers:_Obituaries (accessed August 14, 2017).

⁹⁰⁷ Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, pp. 43–44.

feature of this construction were the engine houses that held the James Watt steam engines (**Figure 3–164** and **3–165**).⁹⁰⁸

Scottish cast iron can be found on the exterior of the Puente Chico engine house. From the nameplate it is possible to read the name ‘Steven Bros and Co London’ (**Figures 3–166** and **3–167**), which was actually the brand name of the London branch of McDowall, Steven & Co. – a prestigious Glaswegian company. All the company’s products were made in Glasgow in the Milton Iron Works.⁹⁰⁹

In 2013, the plant at Puente Chico was declared a National Historical Monument and it is now recognised as the first of its type in Argentina and one of the earliest constructions of its kind in South America.

With regards to water distribution, the Recoleta plant’s existing water treatment system, designed by Coghlan, was extended over an area of 24 hectares and a new, larger pumping station – powered by James Watt’s engines – was installed. **Figure 3–168** shows the water treatment plant under construction with thousands of cast-iron pipes lying around the site, ready to be laid for water distribution.

The water treated in the Recoleta plant in Buenos Aires was used to supply a larger water tank, which was located on high ground and served as a reservoir for the distribution of clean water. This reservoir was known as El Gran Deposito Distribuidor or the Palace of Running Waters. **Figure 3–169** illustrates the scale of the project.

Sanitation works, like other large-scale infrastructure projects, are very costly and must be completed, or be very close to completion, before they can be used. Therefore, they are unable to generate revenue during the building process and this poses a significant issue when attempting to raise capital for further expansion.⁹¹⁰

⁹⁰⁸ Detailed information about the sewage system is described in: *Censo general de la población, edificación, comercio e industrias de la ciudad de Buenos Aires: levantado en los días 17 de agosto, 15 y 30 de septiembre de 1887 (1887)*.

⁹⁰⁹ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 113.

⁹¹⁰ H.S. Ferns, ‘The Baring Crisis Revisited’, *Journal of Latin American Studies*, vol. 24, no. 2 (1992).

As previously mentioned, Baring Brothers was the bank that supplied the capital for S.B. Hale & Co. (1873) was a British commercial house that acted as the bank's representative during the construction of Bateman's sanitation projects and until the lease was passed to the British-owned Buenos Aires Water and Drainage Supply Co. in 1888,⁹¹¹ when the Buenos Aires government decided to privatise the funding of sanitation projects because of a lack of official funds. Samuel B. Hale and Co. appointed Juan B. Medici as concessionaire of its rights and obligations, which included building the Palace of Running Water within three years. According to an 1888 Baring Brothers report, the Buenos Aires Water and Drainage Supply Company Limited was obliged to:

Take over the concession, obtained by Messrs, Samuel B. Hale & Co. of Buenos Aires from the National Government of Argentina Republic, for the acquisition, completion, enlargement and improvement of the works for the Water Supply and Drainage of the City of Buenos Ayres. Messrs. Samuel B. Hale & Co. have entered into Contract hereinafter referred to for the construction of the works. According to the Concession, the works within the prescribed area to be complete within three years, and they will be carried out and finished under direction of Messrs. Bateman, Parsons & Bateman⁹¹² (Engineers of the National Government of the Argentina Republic). As population increases further capital may be issued for the necessary works.

In return, Baring underwrote a loan of 10 million pounds sterling for the Buenos Aires Water Supply and Drainage Co. Ltd. to fund the extension of the city's water supply and drainage system.⁹¹³ However, just a year later the Baring crisis took place (described in more detail in Section 1) as a direct result of this funding. Some argue that the government simply borrowed too much money that it could not return. Others, like Ferns, believe that the Barings crisis was not 'because they underwrote a

⁹¹¹ The advantage for Baring of working through local commercial houses was that they could provide Baring with more information about the state of affairs in Argentina. J. Huitzi Flores (2007)..

⁹¹² In 1887 Bateman went into partnership with his son Lee La Trobe Bateman and Irish engineer Richard Clere Parsons, forming the company Bateman, Parsons & Bateman The London-based firm carried out foreign consultancy and engineering work, including the complete water and drainage scheme for Buenos Aires. Russell, *Bateman, John Frederic La Trobe (1810–1889)*

⁹¹³ Baring Asset Management, *Argentina and Baring. A Historical Record from the Baring Archive*

large loan to the Argentine government for the purpose of expanding the water supply and sewage system of Buenos Aires' but because 'they promoted a private enterprise that took over the water and sewage system of Buenos Aires, and this failed'.⁹¹⁴ However, it is prudent to add that Baring Brothers was a British firm, run by British financial experts and professionals, and by underwriting loans, not only in Argentina but also in Uruguay, they exposed themselves financially and therefore must take the appropriate amount of blame for the crisis.

In 1890, in the wake of the Baring crisis, the Buenos Aires Water Supply and Drainage Company's contract of concession was rescinded and responsibility for investments and services for sanitation projects once again fell to the government of Buenos Aires.

By 1905, the majority of Bateman's sanitation projects were near completion. These included the treatment plant in Recoleta, the Palace of Running Water, and the supply of drinking water to most of the city's districts. For the sewage system, external sewers were also distributed across most districts and included a cast-iron sewer siphon located under the Riachuelo and some larger drainage pipes.

It seems likely that the cast-iron pipes for the Recoleta plant were supplied by the Glaswegian companies, D.Y. Stewart & Co. and Thomas Edington & Sons. In 1873, both these companies were supplying cast-iron pipes for Buenos Aires water projects and both were connected with Baring Brothers.⁹¹⁵ Those pipes were, therefore, a reflection of the relationship between British investment and Argentinian public works. **Figure 3–170** shows cast-iron pipes for the sanitation system in Buenos Aires.

D.Y Stewart & Co. and Thomas Edington & Sons were not the only Scottish firms supplying cast-iron pipes for Argentinian water projects. According to the handbook of *Local Industries of Glasgow and the West of Scotland*, Macfarlane and Strang &

⁹¹⁴ Ferns, 'The Baring Crisis Revisited,'

⁹¹⁵ The Baring Archive, *Series Hc4 Spanish And Portugese Latin America*.

Co. also provided piping to Argentina. In one instance in 1900 they delivered about 10,000 tons of 36-inch and 48-inch pipes for sanitation works in Buenos Aires.⁹¹⁶

In addition, when Mr S. Fraser from Carron Company went to Argentina to assess the market for sanitary ware such as rainwater and soil pipes, he came to the conclusion that their ‘chief competitors at home’ were Walter Macfarlane, Lion Foundry, David King, Forth & Clyde and Shaw & McInnes.⁹¹⁷ Thus, he affirmed that all these foundries provided cast-iron pipes to Argentina.

Documentation outlining trademark specifications can also be found in the Carron records. A 1936 trademark agreement shows that the Buenos Aires government imported cast-iron pipes from the Carron Company and that their contracts were to be renewed every ten years. From the document it can also be seen that Horacio Hale was the sales representative in Buenos Aires of the ‘Carron Company from Scotland, England’, a telling reminder of the confusion with which Argentians approached British geography (**Figure 3–171**).⁹¹⁸

From this agreement, we can establish that Scottish cast iron was certainly provided for sanitation systems in Argentina, although it is difficult to provide exact figures for the quantity of imports of cast iron. Given that Glasgow was a major centre for the production of cast iron and that renowned engineers, such as Bateman and Moore, had practised their trade there, it is possible to surmise that Scottish foundries were the source of the majority of cast-iron pipes used in Argentinian water supply projects. Indeed, Bateman and Moore would have developed strong business connections in Glasgow that made the city an obvious choice when it came to providing cast iron for their Argentinian projects. Documents such as the above-referenced Carron trademark agreement illustrate the Buenos Aires government’s reliance on Scottish foundries and draws a direct link between the expansion of the city’s sanitation works and the production of Scottish cast iron.

⁹¹⁶ Anonymous, *Local Industries of Glasgow and the West of Scotland*.

⁹¹⁷ Carron Company Records, *Sales Visits. July 1928. Report on Journey by S. Fraser*

⁹¹⁸ Carron Company Records, *Trade mark certificates. Ref: GD58/13/1*.

The Buenos Aires' water supply system provided a model that was adopted by other provinces. For instance, 4-inch cast-iron pipes of the 'same type that was provided for Buenos Aires water supply system' were required by law for Mendoza's water supply system.⁹¹⁹ It is worth mentioning that Bateman's representative engineer, Karl Nyströme, was also involved with the development of sanitation projects carried out in other provinces, including Mendoza, Cordoba, Santa Fe and Salta.

3.2.8.1 Scottish Cast Iron in the Palace of Running Waters

The Great Reservoir, usually known in Argentina as the Palace of Running Waters, was one of the main components of Bateman's water supply system. Design work on the project started in 1871 and, after many alterations, a final draft was approved in 1886. Construction began in 1887 and the project was finally completed in 1894.

The building is one of the most unique architectural structures in Buenos Aires and it is considered a paradigmatic example of eclectic architecture in Argentina. In 1987 the building was declared a National Monument and it now houses the Museum of Water and Sanitary History, which is an important source of information regarding the development of sanitation works in Argentina.

In the main, buildings that housed sanitation works required large, undivided interior spaces. These spaces could only be constructed through the structural use of iron, which was much stronger in compression performance than any other traditional building material. The use of iron for the main internal structural support allowed a more conventional stylistic treatment to be applied to the exterior of these buildings. Thus, the exterior could be constructed using traditional building materials that often gave no visual indication of the building's function.⁹²⁰ Bateman's design for the Palace of Running Waters serves as an excellent example of this architectural style.

⁹¹⁹ Contract signed between the Minister of Finance, Dr. Don Jose Olguin, for the supply of materials for Las Aguas Corrientes. Mendoza, 15 November 1875. Documentation courtesy of Patricia Favre.

⁹²⁰ P. Dobraszczyk, 'Architecture, Ornament and Excrement: The Crossness and Abbey Mills pumping stations', *Journal of Architecture*, vol. 12, no. 4 (2007).

The interior of the Palace of Running Waters, which serves as the main water reservoir, is mainly constructed of iron. It consists of three floors supported by 180 columns. Each floor houses four tanks, making a total of twelve tanks capable of containing 72,300,000 litres of water (Figure 3–172). The total weight of the iron used in the structure was 16,800 tons. It is considered to be one of the continent's largest cast-iron structures of its type.⁹²¹

The tender for the ironwork contract for the reservoir's interior structure was presented in London in 1886. Twenty-one companies participated from Great Britain, France and Belgium and among the six shortlisted firms were two Scottish firms: James Goodwin and Arrol Brothers. However, the Belgian company Marcinelle et Couillet (associated with the joint-stock company Sclessin de Liège and Augusto Lecoq of Hal), won the tender as it was the only firm to include manufacture, shipping and assembly in their offer.⁹²²

Table 3–3 presents the companies shortlisted by Bateman, along with his comments for each one; it demonstrates how Bateman, much like any other British leader on important projects, enjoyed a great deal of influence as a decision maker.

⁹²¹ Tartarini, *El Palacio de Las Aguas Corrientes*.

⁹²² Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, pp. 95–98.

Cuadro 1					
Firma casa proponente	Valor de la propuesta	Valor c/flete s/Bateman ²⁶	Valor c/flete s/Comisión	Puerto de entrega	Calificación de Bateman
James Goodwin	127.652 £	142.652 £	147.126 £	Glasgow	Trabajo ordinario. Precio muy bajo
La Metallurgique	138.078 £	153.078 £	157.552 £	No legible	Con cláusula
A. F. Snco	149.523 £	164.523 £	168.997 £	Liverpool	Casa desconocida
Arroll Brothers	154.885 £	169.885 £	174.359 £	Glasgow	Casa de 1° orden
Thames Irons Works	159.919 £	174.919 £	179.393 £	Londres	Casa de 1° orden
Soc. Marcinelle ²⁷	170.102 £	-.-	-.-	Bs. As.	Casa de 1° orden. Recomendadísima
Presupuesto Bateman	176.278 £	191.278 £	195.752 £	-.-	-.-

Table 3–3. Shortlisted iron foundries. Tender for reservoir ironwork. Source: J. Tartarini, *El Palacio de las Aguas Corrientes*, p. 96

The price offered by the Scottish firm James Goodwin was the lowest, but it did not include shipping to Argentina (**Figures 3–173**). Its work was also classified by Bateman as ‘ordinary’. Arrol Brothers from Glasgow, which had supplied many iron elements for railways including the majority of footbridges, was among the better classified firms, along with the English Thames Iron Works and the winners of the tender, Marcinelle from Belgium. **Figure 3–174** shows the water reservoir under construction.

Although the iron structure was provided by Marcinelle et Couillet, the Scottish firm Glenfield & Kennedy provided the pipes, all types of valves and the distribution system.⁹²³ These elements were also made of cast iron, as can be seen in **Figures 3–175** and **3–176**.

As the construction of the Palace of Running Waters illustrates, Argentina was an important market for products relating to water sanitation. The trade catalogues of Glenfield & Kennedy – written in Spanish – were commonly used among Argentinian engineers as a source of information for the purchase of these products

⁹²³ Ibid., p. 146.

(See Section 2). Indeed, the fact that firm supplied cast-iron products for projects as large as the Palace of Running Waters and that their catalogues are still on display in the Museum of Water and Sanitary History highlights the Argentina's reliance on Scottish firms for the cast-iron products needed for its sanitation works. Furthermore, these facts also serve as an example of the trade connections between the two countries, which were largely facilitated by the influence Great Britain exerted over her informal colonies.

It is worth mentioning that the interior ironwork provided by the Belgian company did not include decoration, but was constructed for practical purposes only. In contrast to the construction of sanitation buildings in London, decoration was left for the exterior. This was a reflection of the fact that these sanitation projects cost huge sums of money, much of which was spent on work underground or in places unseen by most people.

Almost 50 per cent of the total budget for the sanitation network in Buenos Aires was earmarked for the Palace of Running Waters. Given the massive budget it was considered essential to create a visual element to the building, one that reflected the huge sums of money spent and helped allay any public feeling that the money had somehow been wasted, while giving some sense of the significance of the project. The government wanted the Palace of Running Waters to be a 'monument to public hygiene', embellishing one of the prettiest zones in Buenos Aires. It was given a façade so opulent that today many pause to admire it without ever knowing the real purpose of the 'palace'.⁹²⁴

Undoubtedly, the Palace of Running Waters, like Abbey Mill and Crossness pumping stations, was built to impress.⁹²⁵ It was designed by the Norwegian architect Olaf Boye, who employed an exuberant eclecticism. He joined Bateman's Buenos Aires office in 1887 and worked under the direction of the Swedish engineer Karl

⁹²⁴ Leaflet provided by AySA (Agua y Saneamientos Argentinos S.A.) which is the concessionaire of the public services of potable water and sewage network for the City of Buenos Aires and metropolitan area.

⁹²⁵ Dobraszczyk, *Historicizing Iron: Charles Driver and the Abbey Mills Pumping Station (1865–68)*.

Nyströme (**Figure 3–177**).⁹²⁶ Although the Buenos Aires' government wanted the building to use as much local material as possible, suggesting for example that local marble and granite in the façade, Bateman recommended the use of British terracotta, which was used extensively throughout Great Britain. It was his opinion that this material was durable and responded better to smog and other contaminants.⁹²⁷ In 1887, the government approved a proposal for the façade in which marble was to be added to the first level of the building and English terracotta incorporated into the remainder. However, once the British-owned Water and Drainage Supply Co. took over the lease (1888), they supported Bateman's proposal and the whole façade was eventually completed using only English terracotta supplied by Royal Doulton & Co. and Burmantofts Co. It was a controversial decision but it shows, once more, how British engineers favoured companies from home over local suppliers.

For the façade, more than 300,000 enamelled and unglazed ceramic pieces were imported from England. Royal Doulton & Co. supplied the plain terracotta and Burmantofts Co. supplied the enamelled parts. Ornamental pieces were added as decoration and are located all over the façade. These are composed of panels with vegetal motifs of vivid colours, cords, and garlands. There are also ninety terracotta shields representing Argentina, the provinces, and the cities of Buenos Aires and Rosario (**Figure 3–178**).⁹²⁸

The cast iron used for the exterior of the building, including the decorative elements and surrounding gates, was supplied by Walter Macfarlane.⁹²⁹ This included five cast-iron blind arcades for the top of the towers, and the terminals and hundreds of metres of railing for the roofs. These were chosen from Macfarlane's catalogues and these include railings of design numbers 132 and 148 and terminals of design number 462 (**Figures 3–179 to 3–185**). Another type of railing (design number 28) was used for the 300 metres that surround the whole perimeter of the building (**Figures 3–186**

⁹²⁶ Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, p. 106.

⁹²⁷ *Ibid.*, pp. 100–102.

⁹²⁸ *Ibid.*

⁹²⁹ *Ibid.*

and 3–187). The same railing number was used for the twelve cast-iron gates located around the building, including one at each corner and two on every street (Riobamba, Viamonte, Cordoba and Ayacucho). See **Figures 3–188 to 3–190**. In addition, although not identified by catalogues, there were twenty-four small cast-iron windows (**Figures 3–191 and 3–192**). Probably the most important cast-iron elements on the buildings are the four pairs of caryatides located at every entrance. These were specially designed for the building (**Figure 3–193 to 3–196**). The current conservation team have also identified the lamps shown in **Figures 3–197 and 3–198** as Macfarlane's.⁹³⁰ The building has fourteen of these lamps. However, there may be some doubt over the origins of these lamps as they do not have nameplate and look to be of inferior quality.

As noted above, the construction of the Palace of Running Waters did not use any locally sourced materials but relied on imported materials from Europe. After the building was inaugurated in 1896, Richard Clere Parsons, Bateman Junior's associate, justified the decision to use only English terracotta in the façade by claiming it made more sense both economically and logistically to import the materials from Britain. This explanation seems a little disingenuous given that the marble for the façade originally requested by the Argentine government could have been locally sourced from the Azul quarry in Buenos Aires Province.⁹³¹ As noted by Jorge Tartarini, Parsons' explanation is certainly open to debate. Since 1876, the Azul quarry had been accessible via rail, making the supply of marble reasonably achievable, especially when compared to the cost of importing terracotta from Great Britain. Tartarini argues that the decision to use British materials stemmed more from the relationship between Bateman's firm and his British supply connections, the British-run leasing company and collaborative members within the Argentinian government.⁹³² It also highlights the extent of Bateman's influence and the implications this had for the development of Argentinian industry. Indeed, this one

⁹³⁰ AySA Museo del Agua y de la Historia Sanitaria (2012).

⁹³¹ Tartarini, *El Palacio de Las Aguas Corrientes*

⁹³² Tartarini, *El Palacio de Las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Historico Nacional*, p. 103.

incident serves as a prime example of the network theory suggested earlier in this thesis (Section 1).

Unfortunately, despite its magnitude, the Palace of Running Waters was not large enough to cope with Buenos Aires' rapidly population growth. Buenos Aires had 180,000 inhabitants when Bateman designed the works, but by 1905 this number had already doubled, and in 1908 reached 1,025,650.⁹³³ Thus, in 1908 the Dirección General de Obras de Salubridad de la Nación – the predecessor of Obras Sanitarias de la Nación – made new plans for providing potable water to 6 million people. This required the construction of new reservoirs built on higher ground so that the gravitational system would be able to provide water for the ever-expanding city. In addition, a new treatment plant was built in Palermo to replace the one built by Bateman in Recoleta.⁹³⁴

The new water reservoirs were the Great Reservoir of Caballito (1915) and the Reservoir of Villa Devoto (1917), both of which could house twelve large water tanks holding 6,000 cubic metres each and were located at least 10m higher than the Palace of Running Waters. Like the Palace, they were constructed with a metal interior and a palace-like exterior. However, they lacked the lavish decoration of the Palace of Running Waters. Their interiors were also not Belgian, but English. The whole iron structure was supplied by Cleveland Bridge Co. Ltd., after a tender process in which firms from Germany, France, and Belgium participated (**Figures 3–199 and 3–200**).⁹³⁵ Walter Macfarlane was chosen, as at the Palace of Running Waters, for the decorative cast iron **Figure 3–201**.

With the passing of time and the evolution of technology, the use of gravitational systems to provide water became obsolete. This meant that reservoirs like those at the Palace of Running Waters were no longer necessary. Thus, currently none of the reservoirs in the Palace of Running Waters, Devoto or Caballito are used for their

⁹³³ *La Ingeniería Sanitaria En La Argentina*

⁹³⁴ J. Tartarini and M.A. Alvarez Areces, *Testimonios de la memoria del trabajo y la producción* (2008)., pp. 15–18.

⁹³⁵ Ibid.

original used. The three buildings are currently owned by the public company AySA (Water and Sanitation of Argentina) and they have been restored for use as cultural hub such as museums, archives and administrative offices.

As with the railway stations, it is possible to see some similarities between buildings built for sanitation projects in Great Britain and those in Argentina. For instance, the design of the façade of the Palace of Running Waters certainly recalls the work in Driver and Bazalgette's iconic Crossness (1865) and Abbey Mills (1868) pumping stations. As Jorge Tartatini notes, it is easy to associate the colourful interior of Crossness pumping station with the vibrant exterior of the Palace of Running Waters.⁹³⁶

Crossness and Abbey Mills were the largest and most important pumping stations in London. Both had important engineering functions within London's main sewerage, which was in fact the first city network constructed in the world. The design of both pumping stations was a result of a partnership between engineer Joseph Bazalgette and architect Charles Henry Driver (1832–1900), who focused on the functional and decorative aspects respectively (**Figures 3–202 to 3–205**). Both buildings were key symbolic sites for public awareness of sanitation systems. According to Paul Dobraszczyk, they became a focus for sustained reflection on the relationship between architecture and dirt: dirt is purified by technological development and the architecture offers a redemptive vision of filth in the city in the extravagance of the buildings. Both are stylistically eclectic buildings and clearly designed to impress.⁹³⁷ The influence of these buildings on Bateman's design for the Palace's façade not only reinforces the notion of opulence defeating filth but also carries an added weight when put in a colonial context. His grand design for the Palace of Running Water's symbolises the transference of British ideals regarding cleanliness and imposes them upon another culture.

⁹³⁶ Comment made by Jorge Tartatini in a personal email dated October 2015.

⁹³⁷ Dobraszczyk, 'Architecture, Ornament and Excrement: The Crossness and Abbey Mills pumping stations,' .

In addition, Olaf Boye, who designed the vibrant exterior, seems to have had an affection for polycromy, as he published a *Brief Colour Theory for Craftsmen* in 1906.⁹³⁸ I personally believe that Olaf Boye may have also been influenced by Owen Jones (1809–1874) as interest in his work and theory of colours exploded after he decorated the interior of the 1851 Great Exhibition building using only the primary colours.⁹³⁹ These colours are also present in London’s pumping stations and in the Palace of Running Waters.

⁹³⁸ Held in the National Library of Norway. See: ‘Boye, Olaf’, <http://www.nb.no/nbsok/nb/16597db507d1b9d159b3f751f91a38af?lang=no> (accessed September 14, 2017).

⁹³⁹ L. Hoskins, ‘Jones, Owen (1809–1874)’, <http://www.oxforddnb.com.ezproxy.is.ed.ac.uk/view/article/15066> (accessed August 14, 2017).

3.2.9 Scottish Cast Iron in Parks and Public Spaces

Improvements in sanitation in the nineteenth century encompassed more than simply installing running water and sewers or changing personal hygiene. It also entailed spending time in the fresh air, the use of entrainments, improvements to street lighting, and other things that could help improve health in the overcrowded conditions of the rapidly growing industrial towns.⁹⁴⁰ Within this sanitation system, parks were important not only for social reasons but for economic as well: recreation and exercise in the open air would improve fitness and thus increase productivity and prolong the economically active life of city workers.⁹⁴¹

As part of urban development, parks originated in Britain. In fact, the Derby Arboretum, which opened in 1840, was the first specially designed, municipally owned public park in Britain (although there was a fee to pay a few days a week). Its great innovation was to combine an arboretum designed for public edification with a recreational park. It was designed by Scottish botanist John Claudius Loudon (1783–1843), who by that time was already the foremost landscape gardener and horticulturist in Britain.⁹⁴² Loudon experimented with iron and glass architecture, designed a prototype semi-detached house, and came up with the concept of green belts or zones around London to help re-invigorate the urban environment.⁹⁴³

Loudon's work, in conjunction with that of Joseph Paxton (1801–1865), initiated the great age of Victorian park development that would influence the whole world. At the Derby Arboretum, fountains, benches and cast-iron gates cast by Messrs.

⁹⁴⁰ P.A. Elliott, 'The Derby Arboretum (1840): the First Specially Designed Municipal Public Park In Britain', *Midland History*, vol. 26, no. 1 (2001).

⁹⁴¹ P. Rabbitts, *Bandstands* (Oxford, 2011), p. 7.

⁹⁴² Mentioned in Section 1 for his contribution to the empire.

⁹⁴³ Elliott, 'The Derby Arboretum (1840): the First Specially Designed Municipal Public Park In Britain,'.

Marshall, Barber and Co⁹⁴⁴ – whose foundry at Britannia Ironwork was later taken over by the Scottish company Andrew Handyside – were already in use.⁹⁴⁵

Most towns in Great Britain and many European cities had been provided with one or more parks or recreation grounds by the 1880s. Parks were seen as being as necessary as a drainage system. They were the ‘lungs’ of the town or city. By the end of the Victorian era public open spaces were widely valued also as symbols of civic pride, providing inhabitants and visitors with attractive surroundings in which to enjoy their leisure time.⁹⁴⁶

Argentina also wanted to emulate this idea. The Census of 1887 said:

Open spaces, formed by squares, parks and gardens, have an important role in the life of citizens. These spaces are favourable not only to the well-being and recreation of the populations, but essential for good urban hygiene. For that reason, from Babylonia, whose suspended gardens still flatters many imaginations, to Paris, London and New York, all modern dedicate a big extension of land for vegetation and pleasure.⁹⁴⁷

Although plazas or squares had existed as an important component of towns and cities in Argentina since Spanish colonial times, in the middle of the nineteenth century they started to change their physiognomy and incorporate new functional and decorative elements, such as fountains, bandstands, benches, sculptures and lamps. Newly designed urban parks became fashionable from the 1880s, and they too incorporated cast-iron elements. Thus, once again, iron played its part in helping to spread across Argentina the imperial ideas around health and hygiene, recreation and aspiration that were in vogue in Europe.

⁹⁴⁴ Ibid.

⁹⁴⁵ The use of Britannia Ironwork by this firm is described in the London Gazette, 28 February 1840. Accessible online: <https://play.google.com/books/reader?id=CxIKQAAMAAJ&printsec=frontcover&output=reader&hl=es&pg=GBS.PP1>.

⁹⁴⁶ H. Jordan, ‘Public Parks, 1885–1914’, *Garden History*, vol. 22, no. 1 (2014).

⁹⁴⁷ *Censo General de La Población, Edificación, Comercio E Industrias de La Ciudad de Buenos Aires: Levantado En Los Días 17 de Agosto, 15 Y 30 de Septiembre de 1887*, p. 116.

European professionals were usually commissioned to re-design many of Argentina's squares and design its big new urban parks. The designer who had the most profound impact in Argentina was the French botanist and landscape designer Jules Charles Thays (1849–1934), who arrived in Argentina in 1889. Calling himself Carlos Thays, he began to oversee huge projects constructing new parks to refurbish the cities' plazas across the whole country. Thays and the architect, and director of Paris's Service d'Architecture, Joseph Bouvard provided an unmistakably Parisian model of beautification that included more trees and parks, wider boulevards and diagonal avenues that offered a spectacle of important monuments. The participation of these French professionals, undoubtedly give to Argentina's cities, especially Buenos Aires, an air distinctly reminiscent of Haussmann.⁹⁴⁸

Thays was named the city's Director of Parks & Walkways in 1891 and designed most of the parks in the whole country. Among these were Buenos Aires' Centenario, Lezama, Patricios, and the 3 de Febrero parks and some of its squares, such as Barrancas de Belgrano, Constitución, Congreso and Mayo. In the other provinces Thays designed the 20 de Febrero (Salta), 9 de Julio (Tucumán), and San Martín (Mendoza) y Urquiza (Paraná) parks. An additional seventy or so squares are attributed to him.⁹⁴⁹

Joseph Bouvard was commissioned by Buenos Aires Council to create a new urban plan for Buenos Aires. His 'Improvement Plan' (1907–1909) consisted of an ambitious scheme of diagonal avenues joining various points throughout the city. However, this project was never completed and only Diagonal Sur and Diagonal Norte avenues were opened over the years.

Just as British professionals in charge of public projects – for instance the water supply system – tended to buy British-made products, French professionals working in public spaces bought French. Consequently, French professionals tended to hire

⁹⁴⁸ J.P. Daughton, 'When Argentina Was French: Rethinking Cultural Politics and European Imperialism in Bellepoque Buenos Aires', *The Journal of Modern History*, vol. 80, no. 4 (2008).

⁹⁴⁹ T. Bausili, 'Thays, el apellido detrás de los grandes parques y estancias', <http://www.lanacion.com.ar/1518458-thays-el-apellido-detras-de-los-grandes-parques-y-estancias> (accessed August 20, 2017).

French sculptors and/or commission work to French iron foundries to provide the street furniture and decorative elements for their squares, parks and gardens.⁹⁵⁰ Many of Buenos Aires' bronze statues and fountains were cast at the Du Val d'Osne or Durenne foundry in France.⁹⁵¹ Recent work has revealed a great amount of French cast-iron art elements, such as sculptures, vases, lamps and fountain.⁹⁵² A fact that clearly reflects how networks functioned. Even so, although Thays was French, he placed Scottish-made bandstands, fountains and gates in many of his parks. He could not ignore the significance of Scottish cast iron in enhancing the landscape and the fact that the Scottish foundries were able to provide beautiful, good quality, competitive products.⁹⁵³

Cast-iron lamps, fountains and bandstands were among the essential cast-iron elements placed in Argentina's squares and parks.

Cast-Iron Lamps

It is worth mentioning that gas illumination in Argentina was closely related to Britain from the very beginning. In 1824, during Rivadavia's presidency, the British engineer Bevans was the first to use gas to illuminate the most important public spaces at the time.

In 1856 the proper first gas generation plant in Argentina was installed in Retiro (on what is now Britannia Square). Proximity to the River Plate was essential, as coal

⁹⁵⁰ A great amount of French cast iron and cast bronze, mainly from Val d' Osne and Durenne, have been identified. See *French Metallurgical Art* a cultural guide published by the Buenos Aires Government showing aspects of French influence in urban spaces in Buenos Aires.

⁹⁵¹ Daughton, 'When Argentina Was French: Rethinking Cultural Politics and European Imperialism in Bellepoque Buenos Aires,'

⁹⁵² M. de las N. Arias Incollá, *Arte Metalúrgico Francés* (Buenos Aires, 2006)..

⁹⁵³ Before arriving in Argentina, Charles Thays gained much of his experience working with Édouard André, who had begun an important international career with the design of Sefton Park in Liverpool, England in 1867. He designed the park in conjunction with the architect Lewis Hornblower, based in Liverpool. Although located later, one of the notable features of that park is the cast-iron palm house supplied by the Scottish firm Mackenzie and Moncur in 1896. The palm house was located where André and Hornblower had originally intended to place a bandstand. See: 'Sefton Park', *Archaeological Journal*, vol. 169 (2012).

imported from Great Britain was vital to the plant's function. The plant was financed by British capital and run by a company called La Compañía Primitiva de Gas de Buenos Aires. E. T. Bellhouse & Co of Eagle Foundry Manchester constructed the first building. The firm's representative in Argentina was William Bragge, who had already been involved in the construction of the first railway in Buenos Aires. The construction of the Buenos Aires gasworks was an enormous operation. At least two thousand tons of material were sent to Argentina from England in ten ships, and over 6,000 lineal yards of street mains were laid. The contract was for the entire operation, including the gas-making plant, retort house, coal stores, purifying house, gasholder tanks and furnaces (**Figure 3–206**).⁹⁵⁴

In Great Britain cast-iron lamps were an essential element in public spaces, squares, parks and streets. Following the advent of gas lighting in Pall Mall in 1807, thousands of cast-iron lamp posts were erected in London and other cities in Britain. Mass-reproduced ornaments such as lamps helped not only to accelerate the lighting of cities but also to democratise art and symbolise modernity.⁹⁵⁵ Thus, gaslight lamps were the first elements that public parks like 3 de Febrero Park and San Martin Park wanted to have functioning on their inauguration days.⁹⁵⁶

By 1890 there were four companies in Buenos Aires dedicated to manufactured gas lighting. These companies were: Compañía Primitiva de Gas de Buenos Aires, The Gas Company of Buenos Aires, La Argentina de Gas, and Gas Company of Belgrano. The last two later merged as Compañía del Gas del Rio de la Plata Ltda. In 1910 this then merged with the two other companies – which were functioning with British capital – to create the Buenos Aires Primitive Gas Company. This company

⁹⁵⁴ Bellhouse, *David Bellhouse and Sons, Manchester*.

⁹⁵⁵ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 9 and p. 77.

⁹⁵⁶ Many of the gas lamps were adapted to electricity and many other were just replaced. Not many examples survive from the nineteenth century. Although not many Scottish gas light lamps have been identified, it is important to remember the great contribution made by Scotland to gas lighting (See Section 1).

had the monopoly over lighting in Buenos Aires City⁹⁵⁷ until Peron nationalised the service in 1945.

Cast-Iron Fountains

Cast-iron fountains were an essential element in parks and squares. They were perceived as signs of purity, abundance and temperance, and as moral agents that could promote better behaviour.⁹⁵⁸ In fact, the municipality of Buenos Aires had a department of ‘Security, Hygiene and Morality’ that combined police work, sanitation and street lighting.⁹⁵⁹ Unsurprisingly, a cast-iron fountain was featured in the invitation to the inauguration of the Buenos Aires sanitation project, as can be seen in **Figure 3–207**.

Fountains as a source of drinking water were definitely not a new idea in the nineteenth century. Nor was the idea that they could be both functional and decorative either, as we can see from fountains such as the one built in stone in the 6th century BC in the main square (Agora) of Athens. But it seems industrialisation (which helped to improve iron manufacture), sanitation, the connection of health with pure water and the new, albeit controversial, desire to provide art in public spaces all came altogether in the nineteenth century. A cast-iron fountain could be as decorative as one made in stone, but the production processes involved were less time-consuming, and the costs were definitely lower. Cast iron created a faster and more convenient way to provide fountains for the new and rapidly growing cities in places such as Argentina.

Fountains were also shown to be important elements through international and national exhibitions that served, like catalogues and other visual displays, as

⁹⁵⁷ F. Risuleo, ‘Infraestructura de Gas Natural en La Ciudad de Buenos Aires’, *Camara Argentina de la Construcción* (2010).

⁹⁵⁸ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 109.

⁹⁵⁹ Lloyd, *Impresiones de La República Argentina En El Siglo Veinte: Su Historia, Gente, Comercio, Industria Y Riqueza*, p. 416.

magnificent marketing tools.⁹⁶⁰ At the Crystal Palace, for example, fountains were an essential element, put on display both inside and outside the building (**Figures 3–208** and **3–209**).

Gazebos and Bandstands

Gazebos and bandstands became an essential feature of public parks.⁹⁶¹ They were modelled on similar wooden structures that stood in eighteenth-century private gardens.⁹⁶² **Figure 3–210** shows a gazebo at the Great Exhibition at Crystal Palace, rebuilt at Sydenham in 1852–1854. Although we cannot be certain what material was used in its construction, it certainly helped to promote this type of structure.

The first cast-iron bandstand in Great Britain was installed in the Royal Horticultural Gardens, South Kensington, where the 1862 London Exhibition was held. It was designed by Captain James Fowke and had a circular plan and a domed, orientalist pavilion supported on slender cast-iron columns. Similar ones were later sited in Clapham and Southwark (**Figure 3–211**).⁹⁶³

At the end of the nineteenth century, bandstands became very popular in parks, where they often functioned as a meeting point. *The Graphic* newspaper of 31 August 1895 wrote: ‘it is only necessary to see the faces of the large crowd which gathers round the bandstand to know how greatly the boon in bandstands is valued.’⁹⁶⁴

In Britain it was believed that music would elevate the moral health of the working class. Bandstands were placed not only in parks but also in seaside resorts and along

⁹⁶⁰ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 37.

⁹⁶¹ Jordan, *Public Parks, 1885–1914*, pp. 85–113.

⁹⁶² Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 158.

⁹⁶³ *Ibid.*, p. 158.

⁹⁶⁴ ‘Royal Parks’, <https://www.royalparks.org.uk/media-centre/factsheets-on-the-royal-parks/bandstands> (accessed August 14, 2017).

promenades in order to provide uplifting entertainment to visitors. The music often played on these bandstands was usually military or patriotic in character and old images often show bands dressed in military dress.⁹⁶⁵ Worldwide interest in marching music reached a peak in the 1900s. Military bands were celebrities. However, in the wake of the world wars, they came to be regarded as a symbol of militarism.⁹⁶⁶ Consequently, most of the bandstands were demolished after the Second World War. Unfortunately, today only 15 per cent of the bandstands located in Great Britain survive.⁹⁶⁷

Argentina emulated the British fashion for bandstands and for military bands. For example, in Tucuman the municipal band that played on the bandstand in Independence Square (see Independence Square case study) was composed of a director, sub director and fifty musicians who played almost every day at sunset.⁹⁶⁸ The country imported many cast-iron bandstands from Great Britain and, to a lesser extent, from France. They were important landmarks in every city. In the book *Impresiones de la Argentina* published in 1911, bandstands appear in almost every picture depicting each province. Bandstands can be also seen in old postcards (See **Figures 3–212 to 3–218**).

Most bandstands were removed from squares in Argentina in the 1950s. However, some, such as the one located in Barrancas de Belgrano (**Figure 3–219**), still survive and, in fact, remain very popular. Today, people congregate every day to dance the

⁹⁶⁵ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 159.

⁹⁶⁶ A. Bradley, *On and Off the Bandstand: A Collection of Essays Related to the Great Bands, the Story of Jazz, and the Years when There was Non-vocal Popular Music for Adults* (Lincoln, 2005), p. 11.

⁹⁶⁷ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 157.

⁹⁶⁸ Lloyd, *Impresiones de La República Argentina En El Siglo Veinte: Su Historia, Gente, Comercio, Industria Y Riqueza*, p. 761.

tango there. The bandstand has also become a tourist attraction and in summer around 300 people gather around it (**Figure 3–220**).⁹⁶⁹

The Barrancas de Belgrano Square was designed by Charles Thays. The bandstand has been identified as a Macfarlane bandstand by a French website that has collected information on more than 1,000 bandstands around the world.⁹⁷⁰ However, it is difficult to prove the bandstand's provenance, as it was changed after a fire and does not currently have any original features or bear a nameplate. It may well have been a Macfarlane product as the main producers of bandstands were in fact Walter Macfarlane, George Smith and Lion Foundry⁹⁷¹, and David Mitchel has asserted that, in bandstands in particular, it is possible to see the influence of Walter Macfarlane in the work of the other two foundries.⁹⁷² Moreover, neither Lion nor George Smith exported as many bandstands as Macfarlane (**Graph 3–2**). Only two Lion Company bandstands were exported outside the UK – one to Spain in 1911 and one to Trinidad in 1939 – and the bulk of their production fulfilled contracts in Britain and Ireland.⁹⁷³

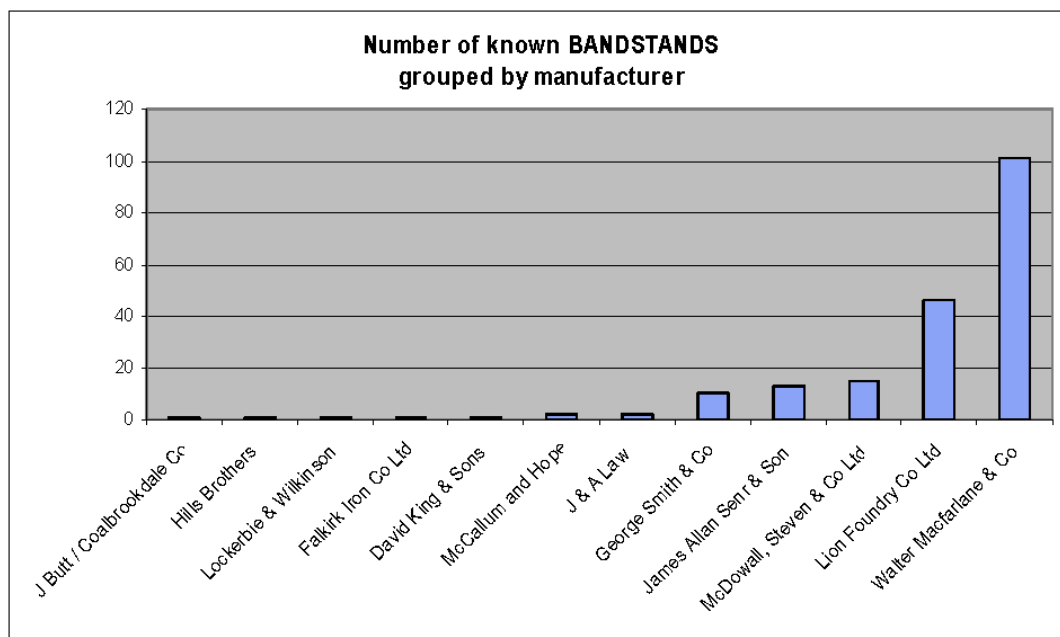
⁹⁶⁹ L. Lacroze, 'Milonga de La Glorieta: en Barrancas, otro ícono internacional del tango', <http://www.lanacion.com.ar/1980362-milonga-de-la-glorieta-en-barrancas-otro-icone-internacional-del-tango> (accessed May 4, 2017).

⁹⁷⁰ 'Kiosques du Monde', <http://www.kiosquesdumonde.net/wordpress/> (accessed September 4, 2015).

⁹⁷¹ Dobraszczyk, *Iron, Ornament and Architecture in Victorian Britain: Myth and Modernity, Excess and Enchantment*, p. 158.

⁹⁷² Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 550.

⁹⁷³ *Ibid.*, p. 272.



Graph 3–2. Diagram showing bandstands grouped by manufacturer. Based on cast-iron bandstands identified by the Scottish Ironwork foundation (Scottish cast iron found in UK and abroad). Source: Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*.

Exhibitions and Illustrated Catalogues Promoting Cast-Iron Elements in Public Spaces

Bandstands became so popular in Latin American countries that Walter Macfarlane and Carron Company published many design options in their Spanish catalogues to promote their ‘kioscos de musica’ (**Figures 3–221 and 3–222**).

As mentioned in Section 2, catalogues and exhibitions were the most common and effective way of promoting cast-iron products. In Argentina, both methods were adopted. The Carron, Macfarlane, and Lion foundries published catalogues, supplements and pamphlets in Spanish to support their trade with South American countries. Special publications were also distributed at local exhibitions. For instance, at the Buenos Aires exhibition in 1910, organisers expressed the ‘desirability of having their [exhibitors] trade catalogues and price lists in the Spanish language.’ Similarly, in a promotional piece on the British Exhibition of Arts and Industry in Buenos Aires in 1931, an Anglo-Spanish supplement of *The*

Engineer (1 March 1931) commented that all exhibitors had printed catalogues and pamphlets in English and Spanish.⁹⁷⁴

During his presidency, Sarmiento encouraged the creation of the first national exhibition in Argentina. Thus, while the Buenos Aires government was developing its sanitation plans with Bateman, the first exhibition (1871) in the country was being organised in Cordoba. The idea was to promote domestic products, but other countries were invited. One of the most important stalls was the one that promoted British products, including cast-iron items. Sanitation and public works were undoubtedly very important topics. The *Edinburgh Gazette* and the *London Gazette* both published a call for participation, requesting ‘samples of cast-iron articles for ornament use, models of architecture, of woodwork of every kind, of water-supply and drainage of lands, as well as everything relating to agriculture, mining, or public conveyance, and roads’. According to this publication, cast iron sent to Cordoba’s exhibition would be tax-free and could be transported on the brand new Central Argentine Railway (a British Company) line without paying any fees (**Figure 3–223**).⁹⁷⁵

This clearly demonstrates how cast iron could be introduced to Argentina through the imperial system. While Britain led the iron industry, it could make good use of its power to promote British products (though exhibition and catalogues) and its manufacturers could transport their goods in British ships to be distributed tax-free across Argentina by the British railways.

The Cordoba Exhibition looked to exhibitions abroad – where the new hygienist theory was being manifested – for inspiration. The need for free space and the provision of fountains were important topics, and it was clear that the symbolism of purity was used in Cordoba: cast-iron fountains were placed all over the exhibition premises as can be seen in **Figure 3–224**. Cordoba had no water supply system

⁹⁷⁴ Juarez, ‘Documenting Scottish Architectural Cast Iron in Argentina,’ .

⁹⁷⁵ ‘The Cordoba Exhibition of 1870. Instructions for Foreign Exhibitors,’ *The Edinburgh Gazette*, October 26, 1869.

before the exhibition took place, so the exhibition had to create a water system specifically to provide water to the fountains, at least those placed outside.⁹⁷⁶

Those fountains were not, however, made in Argentina, but in Britain. The fountains identified in Cordoba's exhibition were made by the Scot Andrew Handyside in his foundry in Derby. Andrew Handyside was an active participant in exhibitions, exhibiting products in 1851 in the Crystal Palace and in the 1862 London Exhibition, where his fountain design number 19 was among the most important products (**Figure 3–225**). The same fountain was exhibited in the grounds of the Cordoba exhibition (**Figure 3–226**).⁹⁷⁷ Inside, another Handyside fountain – design number 15 – was exhibited near Great Britain's stall. It is interesting to see that the British had the biggest area of display among the international exhibitors, as **Figure 3–227** shows.

When the exhibition finished, there was an auction to sell elements exhibited or used for the exhibition.⁹⁷⁸ The Tucuman government bought at least three of the Handyside fountains, installing two of them in Plaza Independencia and the other in Sarmiento School. Tucuman did not have a water supply system at that time either.

Figures 3–228 and **3–229** show the general location of Scottish cast iron that has been identified in parks, squares and public spaces.

3.2.9.1 Independencia Square, San Miguel de Tucuman

Independence Square – originally called Libertad – was, and still is, the social and civic center of Tucuman's capital. From its foundation in 1685 until the middle of the nineteenth century, it was little more than an open space. The most significant

⁹⁷⁶ The first water supply project was started in 1882 but it only covered a few blocks. An extension was made in 1890 and 1900 but this still covered a small proportion of the population. In 1901 a lawyer called García Montaña, representing Scottish engineer George Macfarlane, who had previous experience in Rosario, proposed a new water and drainage system but the proposal was rejected. The water supply system was finally started at the beginning of twentieth century. See: A.P. de S. Fe, 'Aguas y Saneamiento en Rosario y Santa Fe', *Patrimonio Histórico* (1999), pp. 71–81.

⁹⁷⁷ Andy Savage kindly helped me to identify fountain design models 15 and 18.

⁹⁷⁸ J.C. Grassi, *Una Historia del Progreso Argentina: Crónicas Ilustradas de las Exposiciones y Congresos siglos XIX-XX* (Buenos Aires, 2011), p. 62.

buildings – the Cabildo (housing the administrative council), the church, and residences of the most important citizens – were built around the square: (**Figure 3–230**). From the 1870s onwards, with the arrival of new ideas about sanitation, new trees, fountains, bandstands, lamps, benches began to be incorporated. Many of them were made of cast iron. On 27 August 1872 the municipality resolved that ‘the two biggest fountains that they had in their deposits should be placed in the centre of north and south of Plaza Independencia’. These were the Handyside number 19 fountains bought from the Cordoba Exhibition. Two bandstands were also positioned, one on the west side and the other one on the east, for use by the municipal band.⁹⁷⁹ There is not much information about the origin of these bandstands, but **Figure 3–231** does show Independence Square shortly after the installation of the fountains and bandstands.

The installation of the fountains and the provision of the water to supply them was commissioned to Emilio E. Edling in 1872. His contract, however, was not fully accomplished until around two decades later, when the governor, Lucas Cordoba, finally provided the city with a water supply and the fountains could finally fulfil their function.⁹⁸⁰

Figures 3–232 and **3–233** show the Handyside fountains located on the north and south sides of the Independencia Square. At some point, cast-iron lamps and bandstands were installed in the square, as can be seen from **Figure 3–234**.

Independencia Square underwent many subsequent modifications. In 1884 a bronze effigy of Manuel Belgrano was put in place; although a ‘Statue of Liberty’ by Lola Mora – a famous local sculptor – replaced it in 1904. From the same **Figure 3–234**, it is possible to see cast-iron lamps and one of the bandstands. In the square there was also a small cast-iron newspaper kiosk that was dismantled in 1928.⁹⁸¹ The cast-iron

⁹⁷⁹ C. Paez de la Torre, *La Plaza Independencia de Tucuman*

⁹⁸⁰ C. Paez de la Torre, ‘El inolvidable Lucas Córdoba’, <http://www.lagaceta.com.ar/nota/503035/sociedad/inolvidable-lucas-cordoba.html> (accessed August 3, 2017).

⁹⁸¹ C. Paez de la Torre, ‘Un quiosco en la plaza’, <http://www.lagaceta.com.ar/nota/717718/sociedad/quiosco-plaza.html> (accessed August 3, 2017).

fountain located on the north side was dismantled in the 1950s, probably along with the bandstands. However, the one located on the south side still stands (**Figures 3–235 to 3–238**).

Handyside's number 19 fountain design was exhibited for the first time at the 1862 London Exhibition in order to showcase the foundry's new and more 'artistic' work, which was concerned with 'promoting taste and beauty'.⁹⁸² At the same time, Handyside emphasised that, because they were made of cast iron, these models were 'readily accessible to persons of moderate resources'.⁹⁸³ The idea that ornamental cast iron allowed the extension of ornament and taste to different social classes was first seen in print in L. N. Cottingham's *The Ornamental Metal Workers' Director* (1823), in which he wrote that cast iron was so extensive that it could be applied to the decoration or furnishing of every class of building.⁹⁸⁴ Lacking the artistic talent and even local foundries to design and manufacture cast-iron products, Tucuman, like other places around the globe, chose to embellish its squares with Scottish cast iron.

Many cast-iron elements, including fountains, can be found in other South American countries that went through a similar development process to that seen in Argentina. Sergio Orozco, who is trying to identify Victorian cast-iron fountains in Costa Rica, has recently found many cast-iron fountains of Scottish origin. Handyside was among the main producers and the company also sent bridges and other structures to Costa Rica. It also sent one design number 19 cast-iron fountain – the same as in Independencia Square – some time around the 1870s. As in Argentina, these fountains were required to act as symbols of hygiene in the main squares. The Costa Rican number 19 fountain was set up in the main square in Cartago to commemorate the supply of water to the city. Its installation was planned for 1872, the same year

⁹⁸² *The Art Journal Illustrated Catalogue of the International Exhibition, 1862*. Andy Savage kindly did the design number identification of Handyside fountains number 15 and 18. Thanks to this website it was possible to find copies in other parts of the world. Marcelo Beccari also helped to find copies of the Handyside fountains in Tucuman in England.

⁹⁸³ *The Art Journal Illustrated Catalogue of the International Exhibition, 186*, (London; New York: J.S. Virtue, 1862), p. 20.

⁹⁸⁴ Gay, *Cast Iron: Architecture and Ornament, Function and Fantasy*, p.10.

that the same fountains were installed in Tucuman. Unfortunately, Cartago's fountain has not survived (**Figure 3–239**).⁹⁸⁵

The same fountain can be also found in the central square in Stavanger in Norway (**Figure 3–240**) and in the garden of Temple Newsam House in Leeds, England (**Figure 3–241**). There, the Handyside fountain was originally the centrepiece of an Italianate garden laid out by Emily Meynell Ingram.⁹⁸⁶

3.2.9.2 Sarmiento School, Tucuman

What is now Sarmiento School⁹⁸⁷ has a long history of changes to its use and name. There was originally a convent on the site, which was transformed in 1854 into San Miguel College and became the National College in 1865. Two years later, the building underwent a major refurbishment by Italian architects Agustin and Nicolas Cápena. The institutional changes continued and it became the Escuela Provincial (1903), the Escuela Superior (1908), the Escuela Pedagógica Sarmiento (1914), the Escuela Normal de la Universidad and then Escuela Sarmiento in 1918. In 1925 it became Escuela Vocacional Sarmiento and since 1932 it has been Escuela y Liceo Vocacional Sarmiento (shortened to Sarmiento School).⁹⁸⁸

Figure 3–242, taken at the beginning of the 1870s, shows the interior courtyard of Sarmiento School (back then National College). At the time, the school housed the

⁹⁸⁵ Orozco, *Delfines, Leones Y Tritones. Fuentes Victorianas de Hierro En Plazas Y Parques de Costa Rica (1868–1880)*.

⁹⁸⁶ 'Temple Newsam', <https://historicengland.org.uk/listing/the-list/list-entry/1001356> (accessed July 4, 2017).

⁹⁸⁷ President Sarmiento is remembered for his affection for education and public schools. He thought that the power, wealth, and strength of a nation depended on the industrial, moral, and intellectual capacity of its people. In 1865, while on a trip to England, Sarmiento heard about the work of the American educational reformer Horace Mann. He decided to go to America, where he struck up a friendship with Mann and his wife. Thus, when Sarmiento became president, he strongly supported public education and hoped to see schools established across the whole country. 'Historia: Domingo Faustino Sarmiento y la Creación de las Escuelas Normales', http://diarioelnorte.com.ar/nota29139_historia-domingo-faustino-sarmiento-y-la-creacion-de-las-escuelas-normales.html. (accessed September 3, 2017).

⁹⁸⁸ O. Paterlini de Koch and V. Rush, 'Escuela y Liceo Vocacional Sarmiento (ex Convento Mercedario)', in *Patrimonio Arquitectónico de la Universidad Nacional de Tucuman* (2009).

first attempt at a botanical garden in the province.⁹⁸⁹ From the picture it is possible to see the Handyside fountain, which – according to Andy Savage – is listed as design number 15 on page 30 of the 1879 publication *An Illustrated book of Designs for Fountains and Vases, costing from £1 to £1200 manufactured by Andrew Handyside*.⁹⁹⁰ The fountain remains today, although the pond has been modified (**Figures 3–243 and 3–244**). As in Plaza Independencia, it seems likely that the fountain had no water until the water supply was connected to the building. Even then, it never functioned as a spray fountain.⁹⁹¹

Like the cast-iron fountain located in Independence Square, Sarmiento School's fountain was also exhibited in the National Exhibition in Cordoba in 1872, where it occupied an important place in the central area of the British stand, as can be seen from the following picture (**Figures 3–245 to 3–247**).

Cast-iron examples of Handyside fountain number 15 can also be found at Prince Alfred College in the city of Adelaide (Australia) (**Figure 3–248**) and also in St George's Pearson Park Conservatory in South Africa (**Figure 3–249**). All of them feature three intertwined baroque 'dolphins' and two cherubs, figures that Handyside used repetitively in their designs during the Victorian era.⁹⁹² Both were recently restored.

3.2.9.3 Memorial Drinking Fountain, Paraná, Entre Rios Province

Paraná is the capital of Enter Rios province, next to the River Paraná, one of the most important rivers in South America. Just in front of the most important railway station

⁹⁸⁹ Ibid.

⁹⁹⁰ 'Fountain in Pearson Conservatory', <http://friargatebridge.blogspot.co.uk/2012/01/fountain-in-pearson-conservatory-st.html> (accessed August 3, 2017).

⁹⁹¹ I was a student of Sarmiento School from 1983 to 1995 and I have never seen the fountain working, not when I was there nor in any pictures. However, there is some rust around the dolphins.

⁹⁹² I would like to thanks Marcelo Becari for sharing information and the passion to write about Handyside fountains in Tucuman. See: L. Juarez and M. Beccari, 'La historia de las fuentes tucumanas que tienen mellizas dispersas por el mundo', <http://www.lagaceta.com.ar/nota/453493/Tucumanos/historia-fuentes-tucumanas-tienen-mellizas-dispersas-mundo.html>. (accessed September 20, 2016).

– the FCER – a Walter Macfarlane’s water trough (design number 27) has been found (**Figures 3–250 to 3–252**).⁹⁹³ Described in Macfarlane’s catalogue as:

Circular Horse Trough 6'6" Diameter with Lamp pillar, Bib Valve Drinking fountain, and Dog Trough. With or without self-acting supply apparatus. Shield with any inscription or device to order. Lantern priced separately. This design is well suited for Street Crossings, Squares, Market Places, Horse Bazaars, etc., as it affords drinking accommodation for a large number of horses and drivers, and effectively lights a wide space, with the least possible obstruction to the other traffic.⁹⁹⁴

The design was usually topped by a hexagonal lamp – design number 223 – but this has been replaced. The shield, which still remains, says: ‘The British residents of Entre Ríos to the Municipality of Paraná, in commemoration of the government of S.M. the Queen Victoria, and as proof of gratitude for the sentiment shown by the Argentine people, Paraná, January 22, 1901(**Figure 3–253**).’ Queen Victoria died a few months later.

While it is not clear what is meant by the ‘gratitude shown’, its location suggests a connection with the railways. Railway workers apparently used to play football on land adjacent to the British railroad and introduced it to the Paraná area.⁹⁹⁵ Old images (**Figures 3–254 and 3–255**) show the FCER – which was a British railway – station with the water trough, illustrating the significance and connection between these two elements.⁹⁹⁶

⁹⁹³ Thanks to Pablo Marzilio who identified this water trough.

⁹⁹⁴ Walter Macfarlane & Co., *Illustrated Catalogue of Macfarlane’s Castings*, 6th Edition, p. 419.

⁹⁹⁵ J. Riani, ‘La estación y su barrio’, <http://www.eldiario.com.ar/edicion-impres/la-estacion-y-su-barrio.htm> (accessed September 4, 2017).

⁹⁹⁶ Some facts show that British community benefited from some of the consequences of the Baring Crisis. For instance, the provincial Railway Central Entrerriano (FCCE) had to be acquired by the British-owned Entre Rios Railway Company Limited. Once the Baring crisis was left behind after 1900, exports of frozen meat increased markedly and new British investments were made in the decades between 1900 and 1913; the value of Argentine exports tripled. As for foreign trade, between 1900 and 1914 – with the exception of 1911 – Britain supplied 33 per cent of total imports; Germany ranked second, with 15 per cent; the United States, up from the previous decades, 13.6 per cent; France and Italy, between 10 per cent and 8 per cent; and Belgium, around 5 per cent. Consumption of iron grew considerable during the period 1900–1913, exports to Argentina grew 290 per cent between

Although this type of water trough looks very unusual, it was very useful. It combined both decoration and function and allowed – as described in the catalogue – people, horses and dogs to drink from it. Macfarlane used this model of drinking fountain in many of its advertisements (**Figure 3–256**).

Interestingly, other water troughs of the same model were installed in June 1903 in Cradock, Eastern Cape, South Africa. Although on that occasion, they did not commemorate Queen Victoria but rather the coronation of King Edward VII (**Figure 3–257 to 3–259**).⁹⁹⁷ Another water trough number 27 still stands (**Figure 3–260**) in Australia, commemorating the life of Scottish entrepreneur Alexander Munro. He had been transported to the colony as a convict but, after his release in New South Wales, he became a well-respected man who created many businesses – including the Caledonia Hotel – and served five years as Singleton’s first mayor.⁹⁹⁸ He himself commissioned the drinking fountain in 1887. But the project was delayed and he passed away without seeing the fountain erected in 1890. The shield offered the inscription: ‘From Alexander Munro to the People of Singleton 1887’. The fountain was quite important to the people there as it facilitated the provision of water for cattle and horses and meant that they did not need to go to the river.⁹⁹⁹

1900–1904 and 1909–1913. All this definitely had a positive effect on British residents around the central area of Argentina in the pampa region.

⁹⁹⁷ W. Martinson, ‘Memorial Drinking Fountain Cradock, Eastern Cape’, <http://www.artefacts.co.za/main/Buildings/bldgframes.php?bldgid=13480&startnum=11> (accessed August 5, 2017).

⁹⁹⁸ Janilye, ‘Alexander Munro 1812-1889’, <http://www.familytreecircles.com/alexander-munro-1812-1889-nsw-34108.html> (accessed August 6, 2017).

⁹⁹⁹ HIS, ‘Alexander Munro Drinking Fountain’, <https://memorialdrinkingfountains.wordpress.com/tag/ardesier/> (accessed August 8, 2017).

3.2.9.4 3 de Febrero Park/ Palermo Park, Buenos Aires

The 3 de Febrero Park is to Buenos Ayres what Central Park is to New York, the Bois de Boulogne to Paris and Hyde Park to London: a picturesque and healthy place of recreation, distinction and hygiene.¹⁰⁰⁰

Parque 3 de Febrero is located on land once owned by Rosas. He owned more than 400 hectares, which many years after he was defeated on 3 February 1852 passed into the government's hands. Sarmiento, who was president from 1868 to 1874 and an opponent of Rosas, encouraged the construction of a public park on the land, which was named 3 de Febrero to commemorate Rosas's overthrow. In spite of the significance of its name, the park is more popularly known as Palermo Park or Palermo Woods.

Once Sarmiento was no longer president, he involved himself in the development of the park, hiring very prestigious European professionals – such as Jules Dormal (Belgian architect), Ernest Oldendorff (Prussian architect), Fernand Mauduir (French botanist), and Jordan Czelow Wysocky (Polish railwayman) – to work on the project.¹⁰⁰¹ These professionals were in constant contact with Europe for the provision of greenhouses, bridges and irrigation systems, among other things.¹⁰⁰² In fact, letters written by Oldendorff to Sir Joseph Dalton Hooker at London's Kew Gardens demonstrate that even seeds were imported from Britain.¹⁰⁰³

The first plan for 3 de Febrero Park showed that the intention was to provide a gazebo, small bridge and gate for the main entrance, all to be constructed in cast iron (**Figure 3–261**).¹⁰⁰⁴ Some of these elements can be seen in old pictures of the park. ,

¹⁰⁰⁰ *Censo General de La Población, Edificación, Comercio E Industrias de La Ciudad de Buenos Aires: Levantado En Los Días 17 de Agosto, 15 Y 30 de Septiembre de 1887*, p. 108.

¹⁰⁰¹ A. De Paula, 'El Arquitecto Carlos Thays', *Summa* 3 (1983).

¹⁰⁰² J. Ramos, 'El Parque 3 de Febrero. De Garay a Noel', in S. Berjman (ed.) *El Tiempo de los Parques* (1992).

¹⁰⁰³ 'Letter from Ernesto Oldendorff to Sir Joseph Dalton Hooker; from Departamento Nacional de Agricultura de la Republica Argentina, Buenos Aires [Buenos Ayres]; 13 Sep 1872; one page letter comprising one image; folio 184', <http://plants.jstor.org/stable/10.5555/al.ap.visual.kldc10432> (accessed August 9, 2017).

¹⁰⁰⁴ Ramos, *El Parque 3 de Febrero. De Garay a Noel*, pp. 33–39.

such as (**Figure 3–262**) shows a brick fence and cast-iron bridge. **Figure 3–263** – the oldest picture I have found – shows the small cast-iron gazebo. The gazebo still stands and is located in the area know as Plaza Sicilia. It was made by the Scot George Smith from Sun Foundry. Although the gazebo itself did not have a design number, some of its components have been identified: the lateral panes are panel number 1959 from the George Smith catalogue published in 1890 (**Figures 3–264 to 3–268**).¹⁰⁰⁵ As shown in the introduction, these kinds of structures were important and were even shown in postcards of Buenos Aires (**Figure 3–269**).

In 1875, 150 lamps were bought in Great Britain and installed in the park. Originally illuminated by gas, they were changed to electricity in 1889, by which time the park had its own power plant (**Figure 3–270**).¹⁰⁰⁶

The biggest change to the 3 de Febrero Park came, however, with the intervention of Charles Thays, who worked on re-designing the park between 1892 and 1913. Thays's style combined the geometric rationality of the French style with English picturesque, and was accompanied by the use of water in sculptures, fountains, ponds and lakes.¹⁰⁰⁷ As we have seen, parks and green spaces served not only as places of entertainment but also functioned as places to encourage the appreciation of health, education and art. Thus, it was common to find cast-iron ornamental fountains and sculptures along with lamps and benches located in the landscape of parks and public spaces, as the adaptability of cast iron allowed the application of styles that helped to emphasise the romantic and picturesque. The flexibility that iron provided in the creation of picturesque buildings could be seen in the Lakes Pavilion in 3 de Febrero Park (**Figure 3–271**), which was designed in an oriental style by the Italian architect

¹⁰⁰⁵ Members of the Scottish Ironwork Foundation helped to identify this gazebo. Also Lucrecia Araoz kindly went to the site to verify the name on the stamp. I wrongly assumed that this gazebo was installed by Charles Thays in L. Juarez, 'Scottish Cast Iron in Argentina: Its Role the British Informal System', in P. Dobraszczyk and P. Sealy (eds.) *Function and Fantasy: Iron Architecture in the Long Nineteenth Century* (Abingdon, 2016), but after further research I realised that the George Smith gazebo was in the park before Charles Thays's intervention.

¹⁰⁰⁶ S. Pedernera, *Sarmiento, espacio y política: el Parque 3 de Febrero* (Buenos Aires, 2010), p. 9.

¹⁰⁰⁷ M. Lafont, 'Buenos Aires Paseo por los Parques de la Ciudad. La clave verde porteña', <https://www.pagina12.com.ar/diario/suplementos/turismo/9-2660-2013-10-06.html> (accessed October 6, 2013).

Roland Le Vacher in 1901, built in iron in Europe, but sadly demolished in 1929 and replaced by the Spanish building known as the Patio Andaluz.¹⁰⁰⁸

Another cast-iron element that has been identified, but that is now sadly gone, was a Macfarlane drinking fountain design number 8. This was a very common design, identifiable in an old picture published in 1911 (**Figures 3–272** and **3–273**). Around the park there were other cast-iron elements, such as benches (**Figure 3–274**) and lamps (**Figure 3–275**), but these have not yet been identified.

Although the 3 de Febrero Park is associated with French style and customs, it was deeply connected with the British. The park housed many British-led clubs: the Hipodromo Argentino, the Jockey Club, Golf Links and the casino of the Argentine Golf Club, the Gun Club, the Cricket Club, and the Rural Society, among others.¹⁰⁰⁹

3.2.9.5 The Buenos Aires Zoo

The Buenos Aires Zoo is located next to the 3 de Febrero Park. In the 1874 law that allowed the creation of the park was a clause stating that the park should ‘contain in addition exotic plants and animals’. This ‘zoological section’ was very modest at the beginning. It was located near what was the Rosas residence and consisted of ‘two lions, two tigers and a few monkeys.’¹⁰¹⁰ However, in 1888 the administration of the Botanical Garden Zoo was separated from that of 3 de Febrero Park and Eduardo Ladislao Holmberg – a doctor and naturalist born in Argentina but descended from Austrians – was named as the zoo’s first director.

In 1889 a commission was created to redesign the zoo and move it to its current location. C. Berg, Ameghino, E. Lynch Arribalzaga and Holmberg composed the commission and construction of the zoo was initiated by the architect Ludwig and continued by his colleague Pierre Bouche. The artistic direction for the

¹⁰⁰⁸ Juarez, *Scottish Cast Iron in Argentina: Its Role the British Informal System*.

¹⁰⁰⁹ Lloyd, *Impresiones de La República Argentina En El Siglo Veinte: Su Historia, Gente, Comercio, Industria Y Riqueza*, pp. 406–408.

¹⁰¹⁰ D. Del Pino, *Historia del Jardín Zoológico Municipal* (Buenos Aires, 1979), pp. 24–29.

ornamentation of the buildings was put in the hands of Lucio Correa Morales.

Holmberg presented the plan to Buenos Aires government (**Figure 3–276**).¹⁰¹¹

Interest in the zoo started to grow, as did the number of animals. In 1894 it housed almost 500 mammals and 700 birds. New buildings were needed and soon began to appear: the camel and dromedaries pavilion (1900), the ‘Pajarera’ (aviary), the House of the Parrots (1901), Moorish-style houses for the elephants and kangaroos, the lions’ pavilion (**Figure 3–277**), along with lakes and administrative buildings.¹⁰¹²

Many of these buildings used iron in their construction. The zoo covered 18 hectares and was surrounded by around 1900 metres of iron railing with iron gates brought from Europe.¹⁰¹³ Next to the main door there was a cast-iron kiosk that sold confectionery.¹⁰¹⁴

The zoo’s second director, Clemente Onelli, who was in charge between 1904 and 1924, wrought other changes. He wanted the zoo to be a scientific and educational institution. He also wanted to increase the number of visitors, which he swiftly did: during his first year as director visitor numbers increased tenfold.¹⁰¹⁵

Besides the structures used to house the animals and the zoo’s administration, there was one dedicated to music and public entertainment: a bandstand. It is not clear when the bandstand was installed, but it appeared in the zoo’s inventory in 1911, where it was described as covering an area of 113 m².¹⁰¹⁶ In the 1930s a visitor described the bandstands as follows:

Not far from the entrance is the beautiful circular bandstand, which is one of the last representatives of those that once proliferated in Buenos Aires. There are still two or three of these nice structures that housed happy musicians that cheered us up with their music. One of these bandstand it is

¹⁰¹¹ M. Díaz and C. Fernandez, ‘*Jardin Zoologico de Buenos Aires*,’ *Patrimonio* (2012)..

¹⁰¹² Del Pino, *Historia Del Jardín Zoológico Municipal*, pp. 65–67.

¹⁰¹³ *Ibid.*, pp. 65–67.

¹⁰¹⁴ *Ibid.*

¹⁰¹⁵ *Ibid.*, p. 78.

¹⁰¹⁶ *Ibid.*, p. 119.

the placed in 'Barrancas de Belgrano', a nice village located in the middle of the city that is growing vertiginously. By 1927, the Band of First Infantry played every Sunday and Thursday and on Saturdays was the police band.¹⁰¹⁷

The bandstand is a Walter Macfarlane model identified as design number 249, which appears in the Spanish supplement the company produced for Latin American countries. This still stands and has recently been restored (**Figures 3–278 to 3–282**). As was the case with the gazebo in 3 de Febrero Park and many other bandstands in squares around Argentina, the zoo's bandstand appeared in old postcards (**Figure 3–283**). In Argentina, bandstands were as popular in zoological gardens as they were in public parks. **Figure 3–284**, for instance shows a bandstand in an old picture of Cordoba's zoo. Unfortunately, this no longer exists and it has not been possible to identify its manufacturer.

Macfarlane's bandstand model 249 was particularly popular and can still be found in many places around the globe. Many surviving examples can be found in England. In fact, the earliest known example of a bandstand was a model 249 erected by Walter Macfarlane in Priory Park, Great Malvern, in England (**Figure 3–285**).¹⁰¹⁸ In 1886 the same model was erected on the site of the Edinburgh Exhibition (**Figure 3–286**).¹⁰¹⁹ The Edinburgh exhibition definitely helped promote bandstands in general and model 249 in particular. One was later installed in Montpellier Gardens (**Figure 3–287**), Cheltenham in 1920 and one was sold to Bognor Regis Council in Sussex in 1948 and can still be seen on Bognor Regis sea front, having undergone extensive renovation (**Figure 3–288**).¹⁰²⁰ Another one can be found at East Park in Wolverhampton, England. This bandstand dates from 1896 and has recently been

¹⁰¹⁷ Ibid., p. 121.

¹⁰¹⁸ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 520.

¹⁰¹⁹ Ibid., p. 521.

¹⁰²⁰ M. Kippin, 'Cheltenham's Bandstands', *Gloucestershire History*, vol. 18 (2004).

restored (**Figure 3–289**).¹⁰²¹ The same model was placed in Bramley Park, Leeds, but this one has been demolished (**Figure 3–290**).

3.2.9.6 San Martin Park, Mendoza

In 1861 Mendoza experienced a major earthquake that created sanitation problems and made the reconstruction of the city inevitable. However, it was only after the National Census of 1895 and a report made a year later by the engineer Coni (who planned Monte Grande) that the terrible state of sanitation in Mendoza was taken seriously. Just after these reports, the provincial government issued a ‘General Directive of Health’ and a Forest Law (Law No. 19, 6 November 1896) – drafted by Emilio Civit (1856–1921) – that proposed to tackle the issue by creating a huge forest and park on the piedmont in the western area of the city.¹⁰²² The forest would serve as alluvial defence and help to temper the dryness of Mendoza’s weather, while the park would provide all the usual sanitary benefits of exercise and entertainment. The park was originally called the West Park but was later renamed the General San Martin Park.¹⁰²³ Civit became closely connected with the park’s construction, embellishment and operating, especially during the time he was governor of the province.¹⁰²⁴

Charles Thays, who had previously worked on 3 de Febrero Park in Buenos Aires and Sarmiento Park in Cordoba, was chosen to design the new park in Mendoza.

¹⁰²¹ <http://www.expressandstar.com/entertainment/2016/05/06/bandstands-return-after-800m-lotto-grant/>.

¹⁰²² S. Cirvini, ‘El Parque General San Martin’, in S. Berjman (ed.) *El Tiempo de los Parques* (1992), p. 28.

¹⁰²³ Favre, *Escenarios Del Poder. La Escultura En El Parque General San Martin*, p. 17.

¹⁰²⁴ Emilio Civit graduated in Law at Buenos Aires. In 1882 he was elected national deputy for Mendoza and, later, national senator. In 1895 he was a minister in the provincial government under Francisco J. Moyano when work on the park started. In 1898 he was elected governor of his province, but resigned shortly after in order to take up a position as Minister of Public Works under President Julio Argentino Roca. As Minister he carried out several big projects, including: dredging of the rivers, the culmination of the works at the port of Buenos Aires, increasing the private railway lines from 4,399 km to 19,500 km, doubling the national railway to 3,500 km to connect desolate areas in the whole country. He built works for the provision of drinking water, irrigation, schools and public buildings in the provinces and the capital, including the Palace of Tribunals and the National Congress building. See: ‘Emilio Civit’, <https://www.geni.com/people/Emilio-Civit/6000000017558595450> (accessed September 13, 2017).

Thays included in his design a botanic garden and a zoo, lakes, a bandstand (ref. number 6 in original plan), and sports amenities for croquet, tennis, football, amongst other things (**Figure 3–291**). These were to be accompanied by artistic works, including fountains, sculptures, lamps and vases.¹⁰²⁵ However, in its first ten years, the park could only afford the forestation and some improvements in the zoo area. The decorative features had to wait.

When Emilio Civit was elected governor in 1906, Mendoza's situation had been improved by the growth of the wine industry. By that time there were more than 1,400 wine cellars operating in Mendoza.¹⁰²⁶ The industry had been significantly boosted by the railways, which connected the region directly to Buenos Aires. With this, the province was better positioned to carry on with improvements to the park and to buy the planned ornamental furniture.

The engineer Juan Molina Civit was put in charge of buying the street furniture and he looked to Great Britain, especially Scotland, for his purchases.¹⁰²⁷ He bought Scottish cast-iron electric lamps, a bandstand and entrance gate from two different companies: J. & A. Law (Pinkston foundry) and Walter Macfarlane (Saracen foundry), both located near Glasgow.

The first cast-iron elements to be acquired were the electric lamps. This seems to have been a political decision, as the lights not only lit the park, allowing the public to entertain themselves later in the evening, but also symbolised modernity and technology. In 1907 Juan Molina Civit bought fifty electric lamps made by J. & A. Law. He did not purchase them directly from the foundry, but bought them from an import/export company in London called Torrorme & Son,¹⁰²⁸ which dealt in a

¹⁰²⁵ Favre, *Escenarios Del Poder. La Escultura En El Parque General San Martin*, p. 19.

¹⁰²⁶ *Ibid.*, p. 44.

¹⁰²⁷ *Ibid.*

¹⁰²⁸ *Ibid.*

diverse range of products, including cast-iron elements, machinery and even butter and dairy products.¹⁰²⁹

In **Figure 3–292**, the pictures on the top and to the left were taken shortly after the lamps were installed, while the one on the right shows one of the lamps that remain today.¹⁰³⁰ On their bases, the design number (302), the Argentinian shield and the words ‘Mendoza Government 1907’ are still visible.¹⁰³¹

J. & A. Law also supplied a cast-iron bandstand for the price of 5,120.18 pesos (**Figure 3–293**). The bandstand’s installation cost almost three times as much and the work was commissioned to Juan Armani Constructors, under the supervision of Enrique Taullis, a representative of the Directorate of Industry. Although these costs were significant, the government justified them on the grounds that the bandstand would ‘enhance the aesthetics of that walk, while offering greater comfort to the public’.¹⁰³² Once the bandstand was in place, other work was done around it. The area was paved using the Scottish macadam system and furniture, such as benches, lamps and sculptures, was installed (**Figure 3–294**). All these contributed to the popularity of the area around the bandstand. It soon became known as ‘the rotonda’ and was a favourite spot in the park where people often gathered, especially for celebrations, as can be seen in **Figures 3–295 to 3–297**. Getting together around the rotonda became a cultural habit, a burgeoning custom. In the 1920s a visitor described the character of the rotonda:

The Rotonda is in the park the site of greatest attraction for the social meetings of the park, with the participation of the families of our circles. Its construction and layout indicates good and the most refined taste, with admirable views to all the sides, with magnificent gardens and floral motifs and with an artistic bandstand for the music.¹⁰³³

¹⁰²⁹ 'Local & General,' *Star*, Local & General, July 23, 1892.

¹⁰³⁰ Favre, *Escenarios Del Poder. La Escultura En El Parque General San Martin*, p. 45.

¹⁰³¹ Information taken from picture sent by Patricia Favre through email on 16 November 2011.

¹⁰³² *Ibid.*, p. 56.

¹⁰³³ *Ibid.*

The J. & A. Law cast-iron elements made a very important contribution to the park. They symbolised modernity and a new type of bourgeois life and were felt to represent Mendoza's citizens, as can be seen in publications such as the 'Album de Mendoza' (**Figure 3–298**).

The bandstand was demolished in 1938, but a bandstand of the same model still stands in Ward Jackson Park, Hartlepool, England, where it was installed in 1901 (**Figure 3–299**).¹⁰³⁴ Comparisons between the Hartlepool bandstand and pictures of the Mendoza one helped in the identification of the latter.

The third element purchased for the San Martin Park by Juan Molina Civit was one of the most significant: its gate entrance, manufactured in 1908 by Walter Macfarlane in Glasgow (**Figure 3–300**). This gate is considered to be one of the most magnificent gates made by Walter Macfarlane Co.¹⁰³⁵ The gate still stands and was recently restored. It is considered an emblematic symbol of Mendoza province.¹⁰³⁶

The Mendoza government paid a high price for the gate: 27,520 pesos including shipment expenses from Glasgow, plus 5,291 pesos for installation using local labour. The gate was transported in the SS. *Belgrano* from Glasgow to Buenos Aires, and by train to Mendoza.¹⁰³⁷ The gate's journey from inception to installation demonstrates how the whole imperial system worked. Macfarlane could take an order by telegram, make the item in Scotland, ship the elements using British ships covered by British insurance and, once arrived at their destination, carry them to the final location on a British railway.

The Macfarlane gate was a very important addition to the park, and, as was the case with the bandstand, its installation was followed by more work around it. The whole entrance to the park was altered, electric light in the area was extended and a new

¹⁰³⁴ Ibid., p. 143.

¹⁰³⁵ Mitchell, *The Development of the Architectural Iron Founding Industry in Scotland*, p. 479.

¹⁰³⁶ Favre, *Escenarios Del Poder. La Escultura En El Parque General San Martin*, p. 46.

¹⁰³⁷ Ibid., p. 46.

extension to the park made.¹⁰³⁸ It was also a good project for Walter Macfarlane and they featured it in their Spanish supplement promoting their business in South America (**Figure 3–301**), in which an illustration of the gate was accompanied by the following text:

This door is of our design and recent construction. It is only one of the many similar doors whose execution has been entrusted to our house. The dimensions of the central door are: width: 6,617 meters, height 6,934 meters, external height 9,754 mts. The dimensions of the side doors are width: 4,188 metres. Height 4, 801 metres, external height 6.782. The railing is 3,108 metres high. And it rests on a wall of 1,118 metres high. These dimensions serve to give exact magnitude of the entrance that a small illustration cannot reflect. To our friends who need works of this kind we will be very pleased to submit designs and prices, on receipt of the details in each case.¹⁰³⁹

One of the things that made these gates so spectacular was the combination of different parts taken from Macfarlane's catalogues. For instance, a similar Macfarlane gate can be found in the residence of the governors in Belém, Pará in Brazil. It contains the same gate panel and railings but lacks other pieces added to the base and to the coronation that made Mendoza's gate taller and more impressive. Mendoza's gate was formed by assembling different designs (for instance combining gate and railing design number 900 with terminal design number 324). The catalogue also says that 'any crest, monogram, or device can be substituted for those shown'. To Mendoza's gate were added: number 210 lantern, number 11 lamp pillar, and some bespoke features, such as the figure of a condor (a symbol of the Andean region) and Mendoza's shield.¹⁰⁴⁰

Customers could choose from thousands of designs presented in catalogues. That degree of choice helped to preserve a sense of individuality. Macfarlane was an expert at exploiting the idea that prefabricated cast-iron elements could be combined

¹⁰³⁸ Ibid.

¹⁰³⁹ Walter Macfarlane & co. Spanish Supplement n/d., p. 9. Translation by author.

¹⁰⁴⁰ Juárez, *Scottish Cast Iron in Argentina: Its Role the British Informal System*, p. 152.

to create more basic or more sophisticated designs. In fact, many of the 7,000 individual products illustrated in the 6th edition of its catalogue were constructed from a combination of individual columns, brackets, panels and cresting shown in different parts of the catalogue.¹⁰⁴¹

However, the San Martin Park gate was not only imbued with a grandeur given by its scale and ornamentation, it was also charged with great symbolism: the main entrance gate was used *only* by the governor. It was a tradition begun by Governor Emilio Civit, who created the custom of making a ‘triumphal entrance’ every time he attended a public celebration in the park.¹⁰⁴²

This led to the entrance being extended and a couple of gates made by a local foundry being incorporated. Thus, while the central gate was only for the use of the governor, the side one was used by cars, and the new ones – of inferior quality – were given over to pedestrians. **Figure 3–302** shows, how the main gate was generally closed and only opened on special occasions, while pedestrian used the side – locally made – gate, evidencing that they were lower in the social hierarchy of the time.

Fortunately this custom changed at the end of the twentieth century. The local cast-iron gates were removed and Walter Macfarlane’s gates were opened to all visitors (**Figure 3–303**).

3.2.9.7 Pillar and Telephones Boxes

Throughout this thesis cast-iron elements have been considered as British imperial elements. Yet, identifying gates, fountains, bandstands and other elements can prove quite difficult. They can sometimes be confused with French cast-iron elements, as was the case with the gate at Sacred Heart College. However, elements such as pillar and telephone boxes are British icons. The red telephone kiosk in particular is singularly British: ‘wherever and whenever you see a red phone box, you instantly

¹⁰⁴¹ Ibid., p. 152.

¹⁰⁴² Favre, *Escenarios Del Poder. La Escultura En El Parque General San Martin*, p. 53.

think of Britain'.¹⁰⁴³ You can still see these elements in former colonies of the British empire but also in parts of the informal empire, like Argentina.

Both pillar boxes and telephone boxes represent – along with the telegraph – the significance of communication within the empire.¹⁰⁴⁴ In Argentina the telegraph, telephone and the first pillar boxes were all closely connected with Great Britain.

Pillar Boxes

The first freestanding post boxes in Great Britain were installed in the Channel Islands in 1852 and in mainland Britain in 1853. The first design was octagonal and made in cast iron by the John M Butt & Co. foundry in Gloucester. **Figure 3–304** shows one of these post boxes, installed in 1853 in West Dorset.¹⁰⁴⁵ Since those early days, pillar boxes and wall boxes have been made in different sizes and incorporated several improvements to the design. Each new reign brings boxes bearing the royal cipher of the current monarch.¹⁰⁴⁶ These pillar boxes were exported to the whole British empire, where they – along with the telephone box – represented order, authority, national cohesion and identity. There are still around 115,300 of them in the UK.¹⁰⁴⁷

Around 800 different types of post box have been identified: more than 400 different varieties of pillar box; around 160 types of wall box; 66 Ludlow boxes; and almost 80 versions of the lamp box.¹⁰⁴⁸ Some examples can be seen in the Postal Museum

¹⁰⁴³ N. Linge and A. Sutton, *The British Phonebox* (Stroud, 2017).

¹⁰⁴⁴ In Great Britain, the imperial cable system was set up as a private enterprise, but it had government assistance. According to Reggin, it was the military disaster in Zululand in South Africa in 1879 that convinced the government of the significance of telegraphs for imperial purposes. See: R. Cain, *Telegraph Cables in the British Empire, 1850–1900* (PhD thesis, 1971), p. iii.

¹⁰⁴⁵ Royal Mail and Historic England, *Royal Mail Post Boxes* (2015).

¹⁰⁴⁶ Although, in Scotland it is hard to find letter boxes with the current queen's cipher 'ER II' as the country was never ruled by the first Queen Elizabeth, so Scottish post boxes instead feature the Scottish crown. See: A. Marriot, 'Today's Post Boxes, Tomorrow's Postholes', <http://www.theposthole.org/read/article/36>

¹⁰⁴⁷ Ibid.

¹⁰⁴⁸ Ibid.

(previously the British Postal Museum & Archive), as shown in **Figure 3–305**.

Among the early models from the 1850s were the fluted letter boxes, one of which still stands in Warwick (**Figure 3–306**). Both, the first octagonal and the fluted pillar boxes had vertical apertures but this was replaced in later designs as rain water tended to leak into them. One very interesting design was the British VR (Victoria Regina) ornate pillar box. First used in London in 1857, the design only lasted two years, as it was very expensive to manufacture. Only fifty of these were ordered from Smith and Hawkes of Birmingham, and thirty-one of them were used in London.¹⁰⁴⁹

By 1859 an improved, cylindrical pillar box had been created for use nationwide. In this design the posting aperture was positioned beneath a cap to protect it from rainwater. However, this standardised design was soon followed by a variety of designs. One of the most notable is the elegant hexagonal box, first seen in 1866, which had a cap decorated with acanthus leaves designed by J.W. Penfold.¹⁰⁵⁰ By the end of the century there, were over 33,500 post boxes in Great Britain, with many more found throughout the British empire and beyond. The Penfold letter box – mainly manufactured by Cochrane of Dudley of England – was commonly used Uruguay, although none have been identified in Argentina. They continue to be used there, but they have now been painted yellow instead of red (**Figure 3–307**).

Although the Penfold was manufactured mainly in England, the majority of pillar boxes – including the Scottish firms Carron Company, McDowall Steven and Handyside (based in England) and English firm W.T. Allen and Cochrane¹⁰⁵¹ – have manufactured post boxes in Great Britain since 1852. The name Handyside is most commonly seen on post box nameplates (**Figure 3–308**) as the company had one of the bigger contracts in 1879. They continued to manufacture all varieties of post box into the early twentieth century.¹⁰⁵² All the while post boxes were made primarily

¹⁰⁴⁹ ‘*History of the British Postbox*,’

¹⁰⁵⁰ Royal Mail and Historic England, ‘Royal Mail Post Boxes,’

¹⁰⁵¹ Ibid.

¹⁰⁵² ‘The Handyside Postbox’,
<http://www.bbc.co.uk/ahistoryoftheworld/objects/tMpaKbhDQGqMu4aS6wNMDw> (accessed September 4, 2017).

from cast iron, Scottish foundries were among the favourite producers. Indeed, Machan Engineering in Stirling, Scotland, was the sole provider of Royal Mail post boxes from the 1980s to 2015 (**Figures 3–309 and 3–310**). However, now that post boxes are no longer made of cast iron, they are manufactured in England.¹⁰⁵³

In Argentina, the idea of creating of a Post Office came with Rivadavia and his liberal ideas. In 1826 Rivadavia – who had perhaps experienced the value of modern communication methods during his visits to London – created the first General Post Office, with Juan Manuel de Luca as its director. De Luca stayed in the post for thirty-two years. His successor, Gervasio Antonio de Posadas, decided to place the first post boxes in Buenos Aires, regulated postal delivery and reduced postal charges. The first letter boxes in Argentina were introduced in 1858 in Buenos Aires. They were made of wood and were located in important squares, such as Lorea, Del Parque (now Lavalle), Del Temple (now Suipacha), Miserere, an El Paseo de Julio (now Avenida Leandro N. Alem).¹⁰⁵⁴

The first pillar boxes made of cast iron appeared in Buenos Aires in 1865. These were more than three feet tall and ornamented on their exterior. On their front were the word ‘CARTAS’ (‘letters’) and the national shield.¹⁰⁵⁵ Interestingly, this design was a clear attempt to replicate the British VR (Victoria Regina) ornate pillar box, described before and installed in Britain between 1857 and 1859 (**Figures 3–311 and 3–312**). In Argentina, this is considered the antecedent of the red letter boxes that can still be found in the country. Buenos Aires’ ornate design was presumably cast and ordered from Britain. However, during fieldwork no British pillar boxes were found.

The Central Administration of the National Telegraphs was created in Argentina in 1871. Five years later the postal and telegraph services united to form the General office of Posts and Telegraphs. Eduardo Olivera – who had been provincial senator

¹⁰⁵³ ‘Stirling post box firm fears closure’, <http://www.scotsman.com/heritage/people-places/stirling-post-box-firm-fears-closure-1-3197124> (accessed September 14, 2017).

¹⁰⁵⁴ L. Contreras and M. Contreras, *Historia cronológica de la ciudad de Buenos Aires 1536–2014*: (Buenos Aires, 2014), p. 186.

¹⁰⁵⁵ M. Uldane, ‘Historia de los buzones en Argentina’, <http://buzonela.weebly.com/historia.html> (accessed September 15, 2017).

and the organiser of the National Exhibition in Cordoba in 1871– was named director. His involvement in the exhibition meant that he was up-to-date with technological improvements in Europe, and he personally sent his brother to Great Britain to buy cast-iron pillar boxes for the postal service.¹⁰⁵⁶

In 1892, more red pillar boxes were imported from Britain and installed in Cordoba. However, national models of cylindrical mailboxes began to be manufactured locally at the beginning of the twentieth century.¹⁰⁵⁷ By 1922 there were 960 red pillar boxes on the corners of Buenos Aires' streets.¹⁰⁵⁸ It is estimated that in the 1940s there were about 2,300 in the whole country.¹⁰⁵⁹

Unfortunately, there were no British red letter boxes found standing during this study, only copies made by local foundries like Vasena or TAME. The nameplate of Argentinian foundries can be found on the cap of the pillar box rather than on the base, as was usual for British-made pillar boxes (**Figures 3–313 to 3–316**). Even though these pillar boxes were made in Argentina, they represent an idea of empire, as a very similar model can still be found in other distant places. One of the remotest is in South Africa, where a Handyside post box is located next to the Table Mountain Cafe in Oranjezicht, Cape Town, Western Cape (**Figure 3–317**). Another Handyside post box is located outside the offices of the Parliamentary Secretary for Tourism, the Environment and Culture on Merchants Street in Valletta, Malta (**Figure 3–318**).

Red Telephone Box

The telephone and the telephone box are both closely connected with Scotland. Although Alexander Graham Bell (1847–1922) was living in America when he

¹⁰⁵⁶ H.C. Reggini, *Los Caminos de la Palabra. Las Telecomunicaciones de Morse a Internet* (Buenos Aires, 2002), p. 44.

¹⁰⁵⁷ G. Pandolfi, 'Resisten al tiempo los dos últimos buzones de correo', <http://www.lavoz.com.ar/ciudadanos/resisten-al-tiempo-los-dos-ultimos-buzones-de-correo> (accessed September 14, 2017).

¹⁰⁵⁸ Uldane, *Historia de Los Buzones En Argentina*.

¹⁰⁵⁹ Pandolfi, *Resisten Al Tiempo Los Dos Últimos Buzones de Correo*

received the patent for the telephone on 7 March 1876, he was born in Edinburgh and spent his formative years mainly in Edinburgh and London.¹⁰⁶⁰

The telephone made its first appearance in Britain in 1876, when Lord Kelvin displayed two non-working examples at a meeting of the British Association for the Advancement of Science in Glasgow. A year later, another two, this time working, examples were brought to Plymouth by the chief engineer of the Post Office, William Preece.¹⁰⁶¹ In 1878, after Bell had demonstrated the telephone to Queen Victoria, the Telephone Company Ltd (Bell's Patents) was formed in Great Britain. A year later the Edison Telephone Company of London Ltd was formed. Thus, in its early years the telephone service in Great Britain was owned and operated by private companies, which provided both phones and a connection to network.

However, in 1880 a court judgement was issued that stated that a telephone was a telegraph and a telephone conversation was a telegram. Thenceforth, since the General Post Office (GPO) held the monopoly in Britain on telegram services, all private telephone companies were required to obtain a license from the GPO and pay it 10 cent of their income. This prompted Bell and Edison's telephone companies to amalgamate, forming the United Telephone Company. The new license policy gave the Post Office a monopoly over the telephone, but it did not last long.

In 1882, the Postmaster General, Henry Fawcett, decided that any responsible person or company could be granted a license to operate a telephone system. This liberalisation of the telephone industry allowed public call offices to develop from 1884. Public call offices were set up in public places such as railway stations and general stores and would later evolve to become the iconic red telephone box.¹⁰⁶²

The first public call offices did not have a standardised design to begin with. However, when the consolidation of the UK's telephone service was almost

¹⁰⁶⁰ R. W. Burns, 'Bell, Alexander Graham (1847–1922)', <http://www.oxforddnb.com/view/article/30680> (accessed March 20, 2017).

¹⁰⁶¹ Linge and Sutton, *The British Phonebox*, pp. 5–6.

¹⁰⁶² M. Oliver, 'A History of the Telephone System in the UK: 1875-1914', <https://owlcation.com/humanities/history-of-the-telephone-system-uk> (accessed March 13, 2017).

complete in 1912, the call to standardise the design of public call offices became louder. It was agreed that the standardised design should ‘combine aesthetic quality with economy of design and should be produced at no increase in cost over the existing types’. By 1914 the GPO had produced two preliminary designs. However, the First World War put production plans on hold until 1920.¹⁰⁶³

In 1921 the Post Office introduced the first specially designed telephone kiosk. Intended for use in rural areas, the K1 was made from reinforced concrete, painted cream with a red door; the first versions were known as Mark 234 and Mark 235 and were distinguished by differences in the roof (**Figure 3–319**). But this kiosk design was not successful.¹⁰⁶⁴

A competition was launched in 1924 to create a new and better design for the K2. The architect Sir Giles Gilbert Scott, who had designed Liverpool Cathedral and the Battersea and Bankside power stations, won with a design inspired by the tomb Sir John Soane had designed for his wife in 1816 (**Figure 3–320**). The K2 was made from cast iron and painted in the now famous red colour, although Scott’s original colours design specified silver outside and greenish-blue inside. More than 1,700 K2 boxes were installed around the largest towns in the UK (**Figure 3–321**).¹⁰⁶⁵

Between the K2 and the K6 there were many designs. Looking to lowering cost, the K3 was designed, by Sir Giles Gilbert Scott, in 1929 and built in concrete instead of cast iron; 12,000 examples were installed by 1935. The design of the K3 was an evolution of the K2 design, featuring less classical architectural styling (**Figure 3–322**).¹⁰⁶⁶ The K4 kiosk was designed by the engineering department of the General Post Office in 1925 and was introduced five years later. It was made again in cast iron and based on the K2 kiosk, but the design was expanded to include a post box

¹⁰⁶³ Linge and Sutton, *The British Phonebox*, p. 13.

¹⁰⁶⁴ H. Bouckley, ‘The stamp-selling Vermilion Giant, Gilbert Scott’s classic K6 and more: The history of the red call box’, <http://home.bt.com/tech-gadgets/history-of-the-red-telephone-box-kiosk-11364141615834> (accessed March 15, 2017).

¹⁰⁶⁵ Ibid.

¹⁰⁶⁶ ‘The Telephone Box’, <http://www.the-telephone-box.co.uk/kiosks/k3/> (accessed January 1, 2017).

and stamp machine, converting it into a mini automated post office (**Figure 3–323**). The K4 kiosk was huge and expensive; only fifty were installed and production ceased within five years.¹⁰⁶⁷ By 1933 there were plans for another kiosk, the K5 (**Figure 3–324**). It was not intended for permanent installation but was a flat pack design composed of seven pieces, designed for use at events and exhibitions.¹⁰⁶⁸

The K6 was designed, again by Sir Giles Gilbert Scott, to commemorate the Silver Jubilee of the coronation of King George V in 1935 (**Figure 3–325**). This design was the most successful of all. It was so popular that it became a national icon. Some 60,000 examples were installed across Britain and over 11,000 still remain, some of which can be found outside the UK, including in Argentina.¹⁰⁶⁹

The K6 was produced by five manufacturers, four of them Scottish – the Carron Foundry, Walter Macfarlane, McDowall Steven, the Lion Foundry. Bratt Colbran was the only English firm to manufacture the K6 and it seems to have produced only a few and those they did make did not carry nameplates.¹⁰⁷⁰ Lion Foundry had the biggest contract (**Figure 3–326**).¹⁰⁷¹ Over 65,000 K6 kiosks were manufactured, making them Britain's most recognised red boxes. They have proved so representative of Britain that they are seen as tourist attractions, adorning thousands of postcards and other pieces of tourist merchandise.¹⁰⁷²

Argentina

As mentioned in Section 1. Communication was very important for the British empire. The telegraph was essential for administration, commerce and defence, its network of cables connecting London and Great Britain with their colonies and the

¹⁰⁶⁷ 'The Telephone Box', <http://www.the-telephone-box.co.uk/kiosks/k4/>. (accessed April 3, 2017).

¹⁰⁶⁸ Linge and Sutton, *The British Phonebox*, p. 26.

¹⁰⁶⁹ 'The Telephone Box', <http://www.the-telephone-box.co.uk/kiosks/k6/> (accessed April 3, 2017).

¹⁰⁷⁰ Linge and Sutton, *The British Phonebox*

¹⁰⁷¹ Juarez, 'Documenting Scottish Architectural Cast Iron in Argentina'.

¹⁰⁷² Linge and Sutton, *The British Phonebox*, p. 36.

rest of the world.¹⁰⁷³ Similarly, the telephone quickly became an important tool for business.

The first telephone communication in Argentina was made in Buenos Aires in 1878, just two years after Bell received his patent. Curiously, it was made during a public experiment carried out by two Argentinian engineers, Carlos Cayol and Fernando Newman, with devices manufactured by them and installed on the telegraph network connecting *La Prensa* newspaper with the Telegraph Administration. This was followed by new demonstrations and even services for the Federal Police. Finally they formed a company to market the product and asked the government for a concession that would give them exclusivity since they had developed the system locally. But they were not granted this and they would never provide any commercial services as they were soon faced with strong competition from foreign-funded companies.¹⁰⁷⁴

At the beginning of 1881 President Julio Argentino Roca signed three decrees granting official licenses to three foreign-based companies for the provision of telephone services: the Gower-Bell Telephone Company of British origin, the Société du Pantéléphone L. de Locht from Belgium, and the Telephone Company of Río de la Plata, a subsidiary of the Bell American company. These concessions were quite free, with no stipulations of any kind regarding the provision. Thus, from the outset there was no public intervention in the development or performance of the service and it was left entirely to the objectives of commercial firms.¹⁰⁷⁵

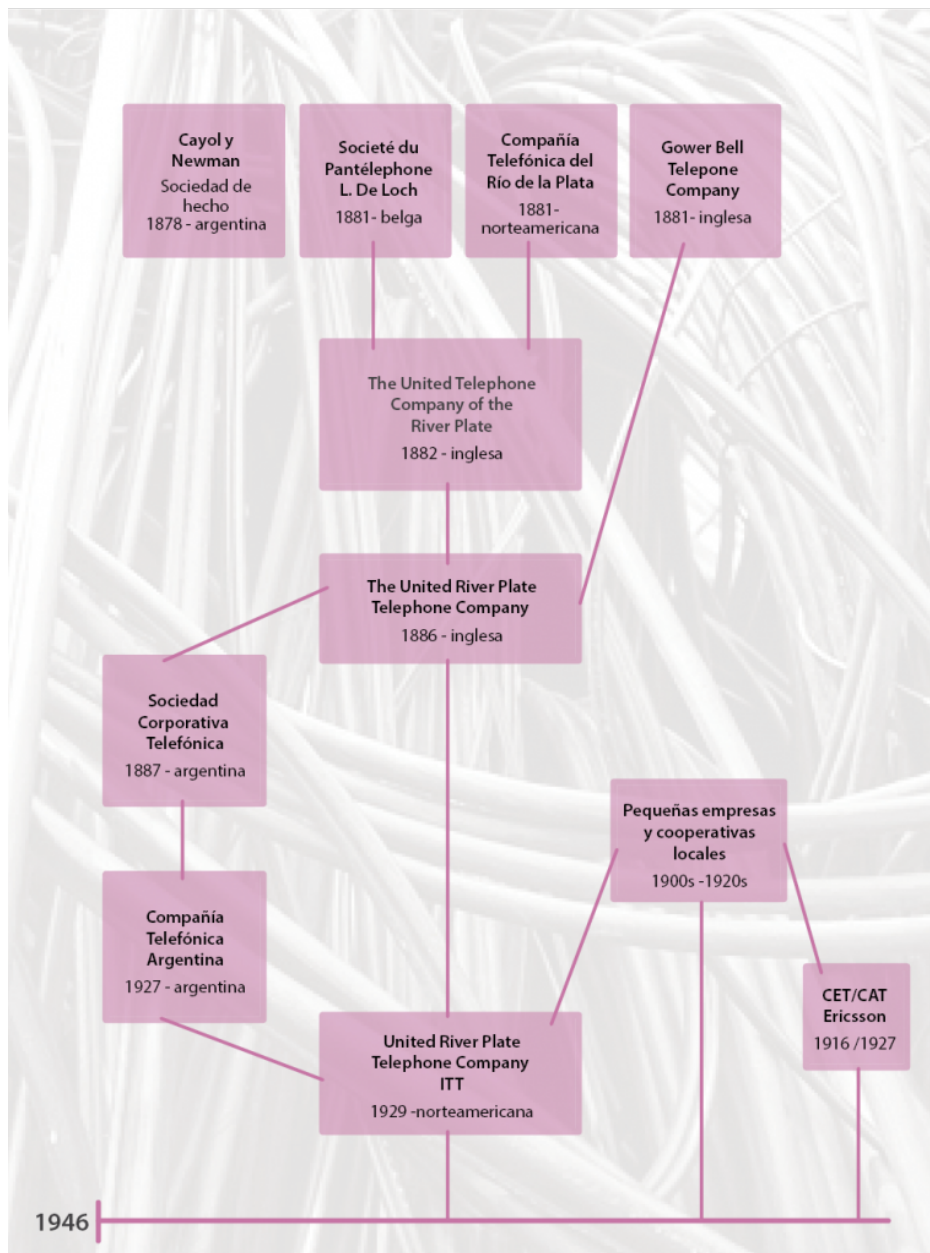
In 1883 the Société du Pantéléphone company amalgamated with the Gower-Bell. The new company was called Compañía Unión Telefónica and it operated until 1886, when it was taken over and reorganised by British investors. The reorganised company, called The United Telephone Company of the River Plate, became the largest telephone company in Argentina. At the beginning of 1920 it operated about

¹⁰⁷³ Cain, *Telegraph Cables in the British Empire*, 1850–1900.

¹⁰⁷⁴ G. Fontanals, 'Historia de las Telecomunicaciones en Argentina (Parte 1). Origen y Desarrollo de la Telefonía Como Negocio Privado (1878–1946)', *Fibra*, no. 7 (2015).

¹⁰⁷⁵ Ibid.

70 per cent of all the telephones in Argentina. The company was taken over by the American United River Plate Telephone Company in 1929.



Graph 3–3. Telephone companies diagram, showing mergers of private companies. Source: G. Fontanals, 'Historia de las Telecomunicaciones en Argentina'

Having little interest in telephones, between 1882 and 1912, the government granted concessions to seventy-one companies.¹⁰⁷⁶ One of the consequences of granting so many licenses was that there was a lack of interconnection between the networks in Argentina. Thus, in 1935 President Agustín Pedro Justo Rolón sanctioned a decree that made interchange between the various companies' networks obligatory. This was complemented by another decree in 1936 that established the 'complete regulation of the national public telephone service' and aimed to put 'an end to an anarchy of regimes of all inconvenient points ... to the detriment of the service itself, which must necessarily be done by unifying approach that allows it to be as effective as the public necessities demand it.' Although the networks were gradually interconnected, resistance to tariff regulation persisted.¹⁰⁷⁷

The American United River Plate Telephone Company was formed in 1882 with British capital and had its main office in London. In 1886, after acquiring its competitor Gower Bell, the company was renamed the United River Plate Telephone Company (Unión Telefónica, called UT in Argentina). It became the most important company dedicated to telecommunications not only in Argentina, but also in Latin America. In 1925 the Argentine Republic already owned 45 per cent of all lines available in Latin America.

In 1948 President Peron nationalised the United River Plate Telephone Company with the intention of ending the company's monopoly of the company. However, as the government could not buy out the whole company, a company – Empresa Mixta Telefónica Argentina (EMTA) – was formed with a mixture of state and private capital. The company was renamed Empresa Nacional de Telecomunicaciones (ENTel) in 1956.¹⁰⁷⁸

¹⁰⁷⁶ B. Victor Maximilian, *History of the Telephone and Telegraph in the Argentine Republic 1857–1921* (New York, 1921), p. 26.

¹⁰⁷⁷ Fontanals, *Historia de Las Telecomunicaciones En Argentina (Parte I). Origen Y Desarrollo de La Telefonía Como Negocio Privado (1878–1946)*.

¹⁰⁷⁸ Ibid.

Telecommunications in Argentina were essentially in British hands until 1948. However, it is not clear exactly when the K6 model was introduced to the country. Some may have been incorporated before the company was nationalised, but others were certainly imported much later, around 2012, when in British Telecom (BT) decided to sell off some of its K6s. In fact, *La Nación* reported that year that British K6s were on sale for about 3,100 USD.¹⁰⁷⁹ As the majority of the telephone boxes were made in Scotland, it is not surprising that all the examples found in Argentina are from Scottish foundries and even bear the Scottish crown. Although this can be seen as just decorative, it also symbolised the role of Scotland within the empire.

Some of the K6 telephone boxes in Argentina have been used as public art installations. This was the case for the one installed at the National Library (**Figures 3–327 and 3–328**) and the one converted into a small library in Emilio Mitre Square (**Figure 3–329**), both in Buenos Aires. Others continue to be used as public telephone kiosks in Buenos Aires and other parts of the country (**Figures 3–330 to 3–332**).

These elements are identified not only as British, but also as Scottish, at least by people who recognise the nameplates. For example, when two Scottish tourists saw a red telephone kiosk made by Lion Foundry in Buenos Aires in April 2014, it was reported that they felt it was ‘a reminder of home’.¹⁰⁸⁰ I believe this illustrates how important a part Scotland played within the empire, as it provided cast ironworks throughout the whole empire and beyond (**Figure 3–333**).

¹⁰⁷⁹ ‘Las tradicionales cabinas telefónicas rojas de Gran Bretaña, en venta’, <http://www.lanacion.com.ar/1468665-las-tradicionales-cabinas-telefonicas-rojas-de-gran-bretana-en-venta> (accessed April 15, 2017).

¹⁰⁸⁰ ‘A reminder of home in Argentinian capital’, <http://www.kirkintilloch-herald.co.uk/search?query=A+reminder+of+home+in+Argentinian+capital&p=headr> (accessed April 12, 2017).

3.3 Scottish Ironwork Used for Private Buildings

The Industrial Revolution went far beyond changes to manufacturing processes to have an important impact on society and culture. The increase in wealth and free time brought by the Revolution had a direct effect on leisure and shopping activities. It set the terms for a more advanced capitalist society. In this new world, leisure had both economic implications, as it connected production with consumption, and political implications.¹⁰⁸¹ These were manifest in the proliferation of public parks, where new technology, such as lighting, allowed local governments to show off the modernity of their towns and cities. But in this ‘new’ capitalist society, it wasn’t just public spaces that were transformed, so too were people’s homes and other private spaces.

At the end of the nineteenth century and beginning of the twentieth, cast-iron elements were part of everyday life. They were in people’s homes, not only in the buildings but also in baths and sanitary ware, cookers and other appliances. Iron was in their means of transport, in trains and their stations. It could be found in the shops, at the park and on every street. The connection between the industrial, functional and decorative fuelled the adoption of cast-iron elements, which also gave the impression of prosperity, civilisation and progress. These changes in daily life, which were accompanied by the increased production of cast iron, happened first in Great Britain. From there, thanks to imperial influence, they arrived in Argentina, transforming the lifestyle of the country’s inhabitants.

Figure 3–334 shows the location of the private buildings in which Scottish cast iron has been identified.

3.3.1 Private Residences

In Argentina between 1880 and 1914 there was a period of accelerated urbanisation associated with economic and social change. Immigration was growing, the railway

¹⁰⁸¹ H. Cunningham, *Leisure in the Industrial Revolution, c.1780–c.1880* (London, 1980), p. 12.

system was expanding and the agro-export model was consolidating as the basis of the national economy. This model, based on the export of raw materials and import of manufactured products, helped to enrich the country, but it also gave European countries, and especially the British empire, a huge sales opportunity. Just as the resident upper class was becoming richer, the proliferation of catalogues and new forms of advertisement contributed to turning Argentinian taste toward European, especially French and British, styles. This was reinforced by the influence of European immigration.

Wealthy people who used to live in the city centre began to move north after experiencing sanitation problems, particular after the yellow fever epidemic in 1871. They moved to Recoleta and Retiro where the sanitation network was first installed. Rich local families, wealthy immigrants, and families enriched by the flourishing business of the railways, agriculture and livestock, started to build luxurious mansions of unprecedented extravagance. Most of them commissioned European professionals to design them and European materials were used, especially for decorative elements, such as gates or roof terminals.

Most of the upper-class palaces were built in Alvear Avenue (called Bella Vista until 1885), which is still considered one of the more elegant streets in the city.¹⁰⁸² Although many palaces were demolished in the 1970s, a few have been refurbished and turned into luxury hotels or embassies. Among these palaces is one of the first to be built in the area, the Hume Palace (1890).

3.3.1.1 Hume Palace

The Hume family took root in Argentina with the arrival of Alexander Hume in 1868. Although he was born in England, his early working life was spent as an engineer in the dockyards of the Clyde, Scotland. After that, Alexander decided to try his luck in Argentina, where he began working for the technical office of the British Central Argentine Railway in Rosario. The following year (1869) he was

¹⁰⁸² ‘Avenida Alvear, Hotel Alvear’, <https://turismo.buenosaires.gob.ar/es/atractivo/avenida-alvear-hotel-alvear> (accessed May 3, 2017).

contracted by the national government to build the road bridge over the Carcaraña River (between Cordoba and Rosario). As he was also a naval engineer, the government of General Mitre also commissioned him to organise the operation of the fluvial boats that carried supplies for the army in the War of Paraguay (1864–1870).¹⁰⁸³

Alexander Hume's work on the railways was not limited to the Central Argentine Railway. Other jobs included the supervision of bridges and viaducts for the Central Northern Railway (originally a state company but sold in 1887 to the British Córdoba Central Railway), construction of the line from Cordoba to Tucuman and from Dolores to Ayacucho for the Southern Railway (a British company). In 1881 he joined his brother Washington to create Hume Brothers Co. Shortly afterwards they associated themselves with John Mieggs & Sons, a powerful finance company from London, with which they built more than 5,100 kilometres of railways, and undertook 425 kilometres of renovations in the Pampa and pre-mountain range, 'bringing everything from Great Britain'.¹⁰⁸⁴ In 1887 Hume Brothers bought the Central Railway from Tucuman to Cordoba with all its branches – a total of 884 kilometres of track. However, after three years it was transferred to the Central Cordoba Railway.¹⁰⁸⁵

In 1888 and 1889 Hume Brothers embarked on a colonisation enterprise. They planned to bring Scottish settlers to populate part of Chaco. The land that they planned to colonise was an area with little access, the concession for which had been given to them by President Juarez Celman. As the Hume Brothers already owned the Santa Fe railroad and had already constructed a branch in the Chaco town of Avila Terray, it was hoped that by adding just 130 kilometres of track on the Bermejo river they would open much of the territory.¹⁰⁸⁶ Unfortunately, the ship carrying the first settlers from Scotland was shipwrecked and the settlement plan did not work out. It

¹⁰⁸³ R. Cunningham Hume, *Historia de dos familias*. (Buenos Aires, 1976)., p. 52.

¹⁰⁸⁴ *Ibid.*, pp. 53–54.

¹⁰⁸⁵ *Ibid.*, p. 55.

¹⁰⁸⁶ *Ibid.*, p. 57.

shows, however, just how intertwined the railways, colonisation, migration and collaboration from local government were.

Affected by the Baring crisis, Washington Hume retired from the bankrupt Hume Brothers and moved to England. However, Alexander Hume formed a new company – Alexander Hume, Scott and Hume – that continued working for the railways.¹⁰⁸⁷ Renamed as Hume Brothers and led by the brothers Bertram and Albert Hume, between 1910 and 1930 the company achieved its highest growth. The firm was the main constructor for Plaza Constitution station and imported a great quantity of Scottish iron. It worked – alongside architectural firms such as Follett, Conder and Farmer – mainly for British clients on projects that included the construction of commercial buildings such as Harrods and Alpargatas (a Scottish firm).¹⁰⁸⁸

When Alexander Hume decided to build his own residence, he commissioned the British architect Charles Ryder, who had previously worked for another customer within the British community. Many of Ryder's early works were done in partnership with another British architect, Edwin Merry. They worked together on the First Methodist Church in Buenos Aires (built in 1872 and still standing) and on the Anglican Church. They are considered the fathers of the neo-Gothic revival in Argentina.¹⁰⁸⁹

Neo-Gothic, together with the neo-Tudor, picturesque and other British styles, defined the character of several Argentinian localities in which the British settled. The styles were seen on residential buildings built for the British, which became representative of British culture and evocative of Britain's own architectural landscape.¹⁰⁹⁰ For that reason, Alexander Hume decided to build his own palace in

¹⁰⁸⁷ Ibid., pp. 57–59.

¹⁰⁸⁸ The San Andrews University of Buenos Aires holds the Hume Brothers Co. Archives, which contain important information about works done by the company and some family records.

¹⁰⁸⁹ A. De Paula, 'El Neorrenacimiento y los "Revivals" (1852–1880)', in M. Waisman et al. (eds.) *Documentos para una historia de la arquitectura argentina* (Buenos Aires, 1978).

¹⁰⁹⁰ J.F. Buján, 'Neo-Gothic Style in Argentina: Shaping British National Identity in Exile', *Postmedieval: A Journal of Medieval Cultural Studies*, vol. 6, no. 3 (2015), abstract.

the late-Victorian style and to import all the material – including cast-iron gates and railings made by Walter Macfarlane – from Scotland.¹⁰⁹¹

The residence was inaugurated in 1893 with a great exhibition of paintings curated by Eduardo Schiaffino, who went on to found the National Museum of Fine Arts. In 1913 the landscaper Charles Thays, who had already done 3 de Febrero and San Martín Park, was commissioned to design the gardens of Alexander Hume's own residence (**Figure 3–335**).¹⁰⁹² **Figures 3–336 to 3–338** show the corner of the residence and the extent of the cast-iron balcony, railings and gates that surround the property. These were made by Walter Macfarlane, as evidenced by catalogues and nameplates (**Figures 3–339 and 3–341**).

In 1920 the palace was sold to two of the Duhau brothers, Alberto and María Candelaria. The building is sometimes known as the Duhau Palace. Given that the building next door – built for Luis Duhau, minister of agriculture for a short period in 1933 – is also called the Duhau Palace, there is often some confusion.¹⁰⁹³ Ownership of the former Hume Palace later passed to Luis Duhau and then Susana Duhau, who was married to John Walter Maguire. The Maguires had one daughter, also called Susana, who still lives in the house. The Hume Palace is now known as the Maguire Palace.

An article written on 2 February 1929 in a local magazine, *Caras y Caretas*, described the Hume Palace as follows: 'In the middle of porteño suburbs rises the magnificent mansion of Dona Candelaria Duhau, which has that particular stamp of the houses we would call classics, and whose existence is united to Buenos Aires of older times, in which it constituted one of the few palaces of that time. Whole generations keep engraved in its retina the image of the *sumptuous iron fence*, after which it stands out, half covered by the centenary magnolia, the building of sober and elegant lines, and there, half hidden by the foliage, occupies a large extension,

¹⁰⁹¹ Cunningham Hume, *Historia de dos familias*, p. 51.

¹⁰⁹² F. Gremientieri, 'Arqueología de la Belle Époque', <http://www.lanacion.com.ar/876765-arqueologia-de-la-belle-epoque> (accessed May 9, 2017).

¹⁰⁹³ The residence of Luis Duhau was later transformed into a luxury Park Hyatt hotel.

defended from the sun's rays by roof and arches of impeccable form, the most beautiful swimming pool that exists in our capital.'¹⁰⁹⁴

The Hume Palace is considered as one of the survivors of the 'belle époque' of Buenos Aires. As one of the first palaces to be built, it served as an example for many of the palaces built after it. The avenue became home to the upper-class families in Buenos Aires and 'the former Hume Palace is an invaluable testimony to the avatars of Alvear Avenue, the architecture of the city and the tastes and dreams of Argentinian high society'.¹⁰⁹⁵ So important is the building that it – along with other notable residences on Alvear Avenue, such as the Duhau and Fernández Anchorena Palaces – was declared a National Historic Monument in 2002.¹⁰⁹⁶

3.3.1.2 Álzaga Unzué Palace (Now the Four Seasons Hotel)

While the Hume Palace is the only one that still functions as a home, the former Álzaga Unzué Palace, like the Duhau Palace, has been converted into a luxury hotel (**Figure 3–342**).

The original owners of the building were Félix Saturnino de Alzaga Unzué and Elena Peña Unzué. The Scottish architect Robert Russell Prentice was commissioned to design the building. He was educated in Edinburgh and the Ecole des Beaux-Arts in Paris. He also practised in the London firm Mewes & Davis before moving to Argentina in 1910, where he joined the office of M L Fauré Dujarric. Dujarric took him into partnership the following year and together they designed a wide range of buildings, including the Central Cordoba Railways Terminal station in Retiro in 1914. After that, Prentice set up an independent practice.

Félix Saturnino de Alzaga Unzué had married Elena Peña Unzué in 1916. Both their families were wealthy owners of many estancias and well connected with the agro

¹⁰⁹⁴ R. Rudy, 'Palacio Maguire', <https://drparbst.blogspot.co.uk/2016/02/palacio-maguire.html> (accessed April 16, 2017)., emphases by author.

¹⁰⁹⁵ Gremientieri, *Arqueología de La Belle Époque*

¹⁰⁹⁶ P. Baliña, 'Grandes Casas de Buenos Aires', <http://puesta-en-valor.blogspot.co.uk/2015/03/grandes-casas-de-buenos-aires.html> (accessed June 3, 2017).

economy. Among the properties of Elena Peña Unzué's family, it is worth mentioning the Estancia Huetel, a vast estate of 67,821 hectares, 400 of which were covered by parks, fountains, statues, lake and 400,000 trees. It was considered the most important estancia in the country and was visited by the Prince of Wales in 1925.¹⁰⁹⁷ The Estancia Huetel was designed in 1905 by Jacques Dunant, a Swiss architect who had also studied at the Polytechnic School of Zurich and, like Prentice, at l'Ecole des Beaux-Arts in Paris.¹⁰⁹⁸ Although it has been repeatedly said that Prentice was inspired by castles in the Loire region of France, I personally believe that the Álzaga Unzué Palace was inspired by this estancia (**Figure 3–343**).

Prentice designed the Álzaga Unzué Palace in 1916 but the palace was only inaugurated in 1920, once the end of the First World War was over. In 2001, some twenty years after the owner of the palace passed away, the Four Seasons Hotel took over management of the property and undertook extensive restoration. Now the Álzaga Unzué Palace is one of the most luxurious hotels in Buenos Aires.¹⁰⁹⁹

The building still shows the eclecticism of the Argentinian 'Belle Époque', which mixed French, English and Italian styles. Cast and wrought iron have been used in gates and railings, as well as in roof terminals, as can be seen in **Figure 3–344**.

These elements could not be identified. However, the stair – which is a central piece in the composition of the building – seems to be a Macfarlane product (**Figure 3–345**). The cast-iron lamps also show a striking similarity to some shown in the Walter Macfarlane catalogue supplement written in Spanish (**Figure 3–346**). Although it is not clear when the catalogue was published, the Macfarlane influence is clear.

¹⁰⁹⁷ G. Oliveri, *La Mansión, Álzaga Unzué, Four Seasons Hotel Buenos Aires* (Buenos Aires, 2008), pp. 20–22.

¹⁰⁹⁸ M. García Falcó, 'Jacques Dunant: La Elegancia del Academicismo Francés', in R. Gutierrez (ed.) *Manifestaciones Francesas en la Argentina 1889–1960* (Buenos Aires, 2011).

¹⁰⁹⁹ Oliveri, *La Mansión, Álzaga Unzué, Four Seasons Hotel Buenos Aires*.

3.3.1.3 Sacred Heart College

The Sacred Heart College was inaugurated in 1898 but was moved to its current location on 25 de Mayo in 1920.¹¹⁰⁰ In front of the building there is a Walter Macfarlane gate, design number 461 (**Figures 3–347 to 3–351**).

However, the gate was not acquired by the college from Walter Macfarlane's foundry, it was donated by a sugar mill.¹¹⁰¹ The gate was originally part of a residence in Fisherton, a railway workers' town that was mainly designed by Follet and Conder, architects for the Central Argentine Railway. Construction on the town began in 1888 in the extreme northwest of the city of Rosario, Santa Fe.

Although we do not know exactly in which house the Walter Macfarlane gate was originally located, we know it was a house in Fisherton where a girl named Máxima García González lived when she was fifteen years old. Máxima got married in Rosario to Manuel N. Paz Isaza, who was a member of the board of directors of Ingenio Concepción, an important sugar mill in Tucuman. When the former home of Ms Máxima García González in Fisherton was about to be demolished, the Macfarlane gate was saved and given as a gift to the couple. They then gave it to their son José María Paz García González for his property in Villa Nougues in Tucumán, where he lived and work in the sugar refineries. His wife, Luz María Eugenia Nougues Echeopar, subsequently decided to give the gate to the Sacred Heart College, where it remains today.¹¹⁰²

The cast-iron gate looks like it was designed to be there. It shows perfectly the flexibility of the Macfarlane design system, whose puzzle-like pieces could be

¹¹⁰⁰ 'Historia del Colegio Sagrado', <http://usuarios.arnet.com.ar/sagrado/HistoriadelColegio.htm> (accessed June 24, 2017).

¹¹⁰¹ I went to see the gate for first time in 201. After checking the nameplate, I went to ask to administration of the school if they knew how the Scottish cast-iron gate had arrived there. They did not know it came all the way from Scotland, but they told me it was a donation from a sugar mill. My father, Fernando Juarez, kindly pursued the topic while I was away and helped to find the information provided.

¹¹⁰² This information is part of the oral and data story of the cable channel magazine CCC, no. 331 corresponding to the month of November 2014 written by the historian Carlos Paez de la Torre (h), with information taken from *Los García González*.

combined in so many different configurations to adapt to onsite necessities. It also shows how easy the pieces were to assemble, disassemble and re-adapt. But the gate also shows the on-going relationship between wealthy creoles, British professionals and business, whose power was enforced by an imperial system based on the export of raw materials and import of manufactured products, in which cast iron played such an important role.

3.3.2 Commercial buildings

The new Argentinian bourgeoisie contributed not only to the construction of new types of building, but also to a new type of commercialisation. Until the 1870s, groceries and small shops selling all kinds of product were located around the central streets, mainly on the corners. However, European immigrants remained fond of European goods and the imported products that they desired also represented the necessities of a new modern life.¹¹⁰³ This drove diversification in the goods available in Argentina and the establishment of shops that specialised in different products: dresses, shoes, accessories, perfume, toys, sports, home furnishings, sanitary ware, lighting and heating, furniture and decoration. In the last decades of the nineteenth century, several companies were established in Buenos Aires to sell furniture and decorative objects from the United Kingdom. Among the most important were the Thompson Company and a branch of the Maple Furniture Company. They contributed to strengthening British taste (or ‘English’ taste as it was popularly known in Argentina) with regards to furniture and interior design. Combining direct imports from the UK with their own products, both companies developed very active decorating businesses for private homes – especially those of British people – and for public places and official institutions.¹¹⁰⁴

¹¹⁰³ By 1895, when the second census was done in Buenos Aires, it was recorded that there were 350,000 foreigners in the city, who dominated 91 per cent of its industry and 87 per cent of its commerce, with 72 per cent of these foreigners employed across both sectors. A.M. Fernández-García, ‘“Little flat furnished by Maple . . .”. The ‘English Taste’ in Buenos Aires: The Thompson and Maple Companies (1887–1986)’, *Journal of Design History*, vol. 29, no. 2 (2016).

¹¹⁰⁴ Ibid.

Department stores were also a new type of commerce that had its roots in Europe. Although Bon Marché of Paris played an essential role in the development and the dissemination of department stores, the first department store was actually Harding, Howell & Co., which opened in London in 1796. This Georgian shop was divided into four departments, offering furs and fans, haberdashery, jewellery and clocks, and millinery. According to Jonathan Glancey, this was a place where prosperous middle-class women were free to browse and shop. Their good fortune and the department store itself – nurtured and shaped by the Industrial Revolution and the advent of free trade – helped transform life in London. Glancey also points out that the Crystal Palace served as an enormous showcase for consumer goods from around the world. Millions of people went there to window shop and, afterwards, every department store or shopping mall had something of Paxton's Crystal Palace about it.¹¹⁰⁵

These new department stores were filled with the cast iron and glass that characterised the Crystal Palace. These materials allowed the creation of large spaces to accommodate products as cast-iron columns have a smaller diameter than those made of other materials. Cast-iron frames enabled big windows and skylights to be installed that would create a bright interior space, perfect for showing products. Decorative cast-iron stairs lent grandeur and beauty to the spaces. All this meant that 'people were immersed in a new world of visual possibilities, comparing and choosing from many options, seeming to have everything desirable at their hands'.¹¹⁰⁶

Another new element that appeared in department stores was the lift or elevator. While the elevator as freight-lifting device had been in use for centuries, its popularity as a passenger conveyance dates from Elisha Otis's demonstration at the 1853 Exhibition of the Industry of All Nations in New York's Crystal Palace. In the 1830s many British textile factories had installed freight elevators, but Otis'

¹¹⁰⁵ J. Glancey, 'A history of the department store', <http://www.bbc.co.uk/culture/bspoke/story/20150326-a-history-of-the-department-store/index.html> (accessed June 28, 2017).

¹¹⁰⁶ C. Moreno, *Depositos, Almacenes y Tiendas* (Buenos Aires, 2005), p.27. Translation by author.

introduction of a safety device made them feasible for use by people. After the New York exhibition, Otis received many orders. He installed his first passenger elevator in the retail establishment of the New York porcelain and glass dealer Haughwout and Company. Interestingly, the façade of the building was made of cast iron.¹¹⁰⁷

Soon Otis's elevator was imported to Great Britain, more specifically, to the Gardner's Warehouse in Glasgow, a Venetian four-storey cast-iron building constructed in 1855 and still standing (**Figure 3–352**). In addition to housing the first secure passenger lift in Britain (**Figure 3–353**),¹¹⁰⁸ the building itself is considered to be the oldest completely cast-iron fronted commercial building in Britain.¹¹⁰⁹

Central cast-iron stairs were another essential feature in department store, other important shops and theatres, and in residences and other private buildings. The new bourgeoisie wanted to 'see and be seen', a concept promoted by Charles Garnier at the Paris Opera. Centrally placed decorative stairs were perfect for this purpose.¹¹¹⁰

Department stores and developments in commerce were a barometer of social change. They reflected many important innovations, not only in fashion but also in technology, design and marketing. Among the most luxurious stores in London were Harrods, Selfridges, and Liberty.¹¹¹¹ These shops appeared in a context of a rapidly growing, more accessible, urban world.¹¹¹² Here the railways certainly played a part as they allowed not only the distribution of goods but also helped people to travel longer distances. 'More people, more money, more means whereby to transport them, and everywhere as a consequence shops and stores multiplied.'¹¹¹³

¹¹⁰⁷ A. Bernard, *Lifted: A Cultural History of the Elevator* (New York, 2014), Introduction.

¹¹⁰⁸ 'Comercial Glasgow. Offices and Warehouses', <http://www.scotcities.com/warehouses.htm> (accessed July 1, 2017).

¹¹⁰⁹ In Section 1 I discussed how the Perth Waterworks building (1832) should be judged to have had the first cast-iron facade.

¹¹¹⁰ Moreno, *Depositos, Almacenes Y Tiendas*, p. 26.

¹¹¹¹ C. Masset, *Department Stores* (Oxford, 2010), p. 5.

¹¹¹² *Ibid.*, p. 7.

¹¹¹³ Words of Sir Roy Strong, cited in: *Ibid.*, p. 8.

British department stores such as Harrods (**Figure 3–354**)¹¹¹⁴ or Gath & Chaves, and specialist stores such as Maple, were icons in social and cultural life in Buenos Aires. The stores, along with the palaces built by British people, reflected not only the rapidly improving social position of Argentina but also the success of British business.¹¹¹⁵ Moreover, these palaces and commercial buildings, designed by British architects and built from imported British material, encouraged trade, British immigration and investment. They helped to consolidate British networks, making a huge contribution to the expansion of the empire.

3.3.2.1 Maple furniture store

The origins of the Maple company go back to 1841, when John Maple and James Cook became partners in Maple & Cook. The company changed names a few times and incorporated members of the founder's families until, in 1891, it was established as a limited company – Maple and Company. The company was most successful between 1880 and 1930.¹¹¹⁶ By 1893, the *Illustrated London News* said the Maple Company store in Tottenham Court Road in London, with its 20 acres of premises, could be considered the 'largest furnishing establishment in the world' (**Figure 3–355**).¹¹¹⁷

In 1899 Maple announced that they had had their most productive year in the whole history of the company. This was down to several important projects carried out not only in Great Britain but also in foreign countries. They mentioned for instance, work done for the Great Central Hotel in London and the Elysee Palace Hotel in

¹¹¹⁴ These companies also sold British items. From documentation found in Carron Company Records it can be seen that cast iron domestic items made by Carron such as grates were sold in Harrods and Maple Company. See Carron Company Records, *Sales Visits. July 1928. Report on Journey by S. Fraser*

¹¹¹⁵ Fernández-García, '“Little flat furnished by Maple . . .” The “English Taste” in Buenos Aires: The Thompson and Maple Companies (1887–1986),’ .

¹¹¹⁶ Victoria and Albert Museum, 'Allied Maples Group, furniture retailers and manufacturers: records, ca. 1635 - ca. 1990', http://www.vam.ac.uk/_data/assets/pdf_file/0017/252161/amg_aad_2000_03_20141020.pdf (accessed July 23, 2017).

¹¹¹⁷ 'Maple Company,' *The Illustrated London News*, June 17, 1893.

Paris.¹¹¹⁸ From 1905 Maple opened several branches in other capital cities such as Paris (1905), Buenos Aires (1906) and Montevideo, (1913). But even before they opened a shop in Buenos Aires, their products had been on sale in Argentina via other companies, operating as representatives and importing items from Great Britain.¹¹¹⁹

The decision to open a branch in Buenos Aires was prompted by the large number of orders the Tottenham Court Road store received from Buenos Aires. The managers of the Buenos Aires Maple store were Mr. H. Botting and Mr. P.W. Howard, both of whom had worked in the London Maples store.¹¹²⁰ In 1906 Maple provisionally opened a showroom at 326 Artes Street and a store at 326–28 Carlos Pellegrini Street, with a furniture warehouse in Tucumán Street. Business was so successful that a bigger space was soon needed. Consequently, they opened a new store at 658 Suipacha Street in 1914.

Locally, Maple employed the architects Conder, Follet and Farmer.¹¹²¹ However, metal work was commissioned to British companies. Harris & Sheldon Limited Company from Birmingham, England, agreed ‘to supply bronze, metals, steel, wood and marble in accordance with the drawings and plans provided by the architect’. This included the bronze shop front (**Figures 3–356 and 3–357**).¹¹²² The Scottish firm Carron Company provided the cast-iron railings, staircase, lift case and other decorative elements for the interior.

The majority of these elements have survived and can be identified thanks to catalogues and archive material found in Carron Company records. For instance, ornamental railing no. 215 used in balconies in Maple Store featured identified in

¹¹¹⁸ ‘Maple & Company’, *The Outlook*, vol. 5, no. 109 (1900).

¹¹¹⁹ Fernández-García, ‘“Little flat furnished by Maple . . .” The ‘English Taste’ in Buenos Aires: The Thompson and Maple Companies (1887–1986),’.

¹¹²⁰ Lloyd, *Impresiones de La República Argentina En El Siglo Veinte: Su Historia, Gente, Comercio, Industria Y Riqueza*, p. 469.

¹¹²¹ List of jobs, case files 75 and 96, done by Conder, Follett and Conder, supplied by Nick Follett.

¹¹²² Fernández-García, ‘“Little flat furnished by Maple . . .” The ‘English Taste’ in Buenos Aires: The Thompson and Maple Companies (1887–1986),’ . I would like to thanks Ana Maria Fernandez-Garcia for sending additional information by email in April 2017.

both Carron's *Structural Book* of 1924 and *Carron Gates and Railing* of 1938 (**Figures 3–358 and 3–359**). The Carron Company manufactured the railings and staircase in 1914 and it is possible to see a Greek fret pattern and anthemion in the staircase railings and lift **Figures 3–360 and 3–361**). Interestingly, similar designs for railings can be seen in a Carron Company *Drawing and Design Book* from the period 1820–1869 (See **Figures 3–362 and 3–363**).¹¹²³

Pictures of work done in Maple can be seen in a Carron Company photo album, *Structural Book*, from 1924 (**Figures 3–364 and 3–365**) and in a trade catalogue published in 1938.¹¹²⁴ Neoclassical-style resources similar to those used in Maple were used in another range of elements published in a Spanish-language catalogue written in 1913 for a South American business.¹¹²⁵

The example of Maple serves to demonstrate, once more how British client commissioned work to British architects, who in turn would, most likely, chose British materials to be used in their building.

This network extended even further given that Maple also supplied furniture to the most important residences in Argentina, some of them British. It supplied, for instance, the houses of Dr. de la Plaza and Dr. Zeballos (both Ministers of Foreign Affairs), the Bristol Hotel in Mar del Plata, the Inca Hotel in Puente del Inca in Mendoza, the Savoy Hotel in Rosario and the Argentina and Chester Hotels in Buenos Aires.¹¹²⁶ Maple was a very prestigious company and had a significant impact on the cultural life of Buenos Aires. This is illustrated by *A media luz*, a tango written by and sung by Carlos Gardel that namechecks Maple: 'Little flat furnished by Maple: piano, pedestal mat and a telephone answering an old vitrola tangos crying my flower and a porcelain cat to not mew to my love.'¹¹²⁷

¹¹²³ Carron Company Records, *Drawings and Design Book*. Ref: GD58/16/1, NRS.

¹¹²⁴ Juárez, 'Documenting Scottish Architectural Cast Iron in Argentina,' .

¹¹²⁵ Juárez, *Scottish Cast Iron in Argentina: Its Role in the British Informal System*.

¹¹²⁶ Lloyd, *Impresiones de La República Argentina En El Siglo Veinte: Su Historia, Gente, Comercio, Industria Y Riqueza*, p. 469.

¹¹²⁷ Juárez, *Scottish Cast Iron in Argentina: Its Role in the British Informal System*, p. 147.

The Maple project was also important to Carron Company, and they included it in their 1938 catalogue, as can be seen in **Figure 3–366**.

Maple's branch in Buenos Aires was an important one and business there was steady for decades. By the 1970s, however, the Maple Group had become so large that it was vulnerable to takeover bids and share fluctuations. Consequently, branches were shut and other companies within the group began to dominate. In 1990 the company was taken over by Saxon Hawk, but it was losing money. Allied Maples Group went bankrupt in 1997.¹¹²⁸ In Argentina, the Maple building is still in use, housing the administrative offices of the IRSA real estate agency.¹¹²⁹

¹¹²⁸ Victoria and Albert Museum, *Allied Maples Group, Furniture Retailers and Manufacturers: Records, Ca. 1635 - Ca. 1990*.

¹¹²⁹ In Argentina, for security reasons, it is very difficult to get into private buildings. I gained special permission to enter the Maple building, but was banned from taking photographs in certain parts of the building. I would like to thank Cristian C. Lemonnier for granting this permission and to Monica Ferrari for kindly undertaking the first visit while I was in Edinburgh. I would also like to thank to Zoe Ellis, Archives Assistant from Falkirk Community Trust, who was the first person that showed me Carron's work at Maple Store in Buenos Aires.

3.4 Conclusion

As has been shown in Section 3, Britain was intricately involved in projects related to public services in Argentina, especially in the construction of communication networks. The railways served to connect national and international markets, providing transport for people and goods, and, perhaps most importantly, facilitated the opening of new business connections. The railways were also the main consumer of cast iron, and it is along the railways where one can find a huge amount of Scottish cast iron in Argentina, as evidenced by the railway stations at Tornquist (1883), Iraola (1885), Coronel Vidal (1886) Tandil (1883), Monte Grande (1890), Tucuman Mitre Station (1891), Lobos Junction (1898), La Plata (1906), Hipolito Irigoyen (1908), Retiro (1909–1915) and Plaza Constitucion (alterations done between 1902–1907), and in some pedestrian bridges and railway bridges such as Palermo bridge (1914) and many others in northern Argentina.

While clean water supplies, proper drainage systems, and the proliferation of public parks played an important role in improving sanitary conditions, which had a knock-on effect on the overall health of the population, they also used a great amount of Scottish iron for piping and plant buildings, as was seen at Wilde Plant (1887) and the Palace of Running Waters (1887–1894). In addition, as part of new hygiene programmes, parks were built or extended using Scottish cast-iron elements. Parks such as 3 de Febrero Park (inaugurated in 1875 but with further alterations in 1888, and later between 1892 and 1912), the Buenos Aires Zoo, and San Martin Park (1907–1908) in Mendoza all featured Scottish cast-iron elements.

Private buildings that used Scottish cast iron were also connected with British business, as in the case for the Maple Furniture Store (1914), or with the British professionals, as with Alexander Hume's home (1893).

All these case studies have served as evidence for many theories regarding informal empire. In particular, they demonstrate how the networks of the British empire worked, showing how immigrants and professionals served as vehicles for disseminating Scottish iron and British styles of architecture and other cultural expressions. These professionals – who were frequently decision makers – and their

ideals and practices also affected patterns of economic behaviour. British architects and engineers not only spread new technologies and commercial practices across distant markets, they also set norms of desirable lifestyles. The Scottish cast iron trade catalogues facilitated these new norms for an eager audience around the world.

In addition, the case studies show that the Scottish people working in Argentina as directors, engineers or architects definitely had an influence on decisions to choose Scottish materials.

All the case studies demonstrate that Scottish iron foundries were significantly involved in the supply and maintenance of cast-iron products in Argentina, and that they made an important contribution to the country's development at the same time as they contributed to the expansion of British commercial and political power.

Conclusion

As explained in the Abstract and Preface to this dissertation, the research questions set out arose from a desire to find out more about the considerable amount of cast-iron elements bearing British, and especially Scottish, nameplates that I had seen in Argentina. I began to ponder several questions. The first of these was:

- a) *Why were the majority of the visible nameplates British? As a great amount were, in fact, Scottish, were there more Scottish nameplates than any other? If so, why and does it matter? How and in what context did these Scottish cast-iron elements arrive in Argentina?*

In order to answer these, I had to look first at the big picture: the relationship between the British empire and Argentina. I found that the connection between Argentina and Britain was based on an asymmetrical, ‘informal’ imperial relationship. This brought theories of ‘informal empire’ to the core of the thesis, the starting point for which was the 1953 article by Gallagher and Robinson, ‘The Imperialism of Free Trade’, which established that the main objective of imperialism was economic development.

Thus, at a glance, I realised I had three main topics to develop to be able to start answering my questions. These topics necessarily structured the thesis into three sections: 1) informal empire; 2) iron trade; and 3) Scottish cast iron in Argentina.

Although imperial interest in the River Plate area, where Argentina is located, goes back to the eighteenth century, the British expressed a clear intention to colonise the region when they invaded Buenos Aires in 1806. The failure of this attempt made them re-think their approach and they subsequently concentrated their efforts on trade. They were able to change from a formal to an informal imperial approach because the British empire was innately flexible; it was able to appeal to a multitude of partners, allies, and collaborators in different parts of the world, and offered alternatives to those who rebuffed formal empire. This new form of relationship was much more subtle and apparently liberal, but still hugely beneficial for Britain. In places like Argentina, informal empire could exist through the influence of

merchants, bankers, consuls and diplomats, even if British gunboats were occasionally close by.

This is why scholars such as Cain and Hopkins began to consider the social agents of the capitalist enterprise, exploring the so-called 'gentlemanly capitalism' run by a financial elite based in London that was able to influence policy decisions relating to British imperial expansion. The social factor demonstrated that there was an extended network of personal interests that promoted wider imperial interests. Scholars such as Magee and Thompson investigated these networks in more detail to demonstrate their significance.

It is now clear that private interests were complemented by a structure facilitated by the British government through diplomatic services and trade agreements. In addition, investments (mainly in railways and public works) served not only to create financial dependency, but also technological. British investments in Argentina were mainly used for infrastructure work, which was also commissioned mainly by and involved British professionals.

The British presence in Argentina had a cultural impact. They built their own institutions, hospitals, churches and schools, and published their own newspapers. They brought football and other sports to Argentina, and these were then strongly adopted by the country. The British certainly influenced economic behaviour and consumption tendencies by hiring British architects and engineers to develop their projects, whose completion, in turn, relied on British products rather than Argentinian.

Social networks, the massive scale of British trade, Britain's merchant shipping fleet, overseas investment, and all the resources Britain dominated, created an imperial world-system that was quite dynamic. In that system, Argentina had a role as a provider of meat and agricultural products, but also as a consumer of manufactured products, especially iron products. Scotland had a role in this as well, manufacturing and shipping mass quantities of ironwork to Argentina and other developing countries. This explains why Britain's prosperity rose in direct proportion to the

scale of its overseas trade, and why so many iron products in Argentina bear British *and* Scottish nameplates.

To answer the questions around the number and significance of the Scottish nameplates, it was essential to explore Scotland's position within the British empire. The so-called 'four nation approach', explored in detail by scholars such as John Mackenzie, was essential to understanding whether or not it mattered if items were made of Scottish iron. Every nation that formed Great Britain had a separate relationship with the empire, and each one made a different contribution, even though they all responded to a common sense of Britishness.

The Scots made a particularly distinguished contribution to the empire, and were even known as 'empire builders'. In this thesis I considered their contribution from the perspective of what may be considered a certain 'imperial mentality', as well as 'imperial infrastructure', as explained in Section 1. However, the thesis focused mainly on Scotland's contribution to the iron industry.

To understand how these cast iron elements arrived in Argentina, it was necessary to explore the iron trade and production in Britain, in Section 2. This section showed how the iron trade between Britain and Argentina was marked by a dependant relationship. It also showed how technical development in Scotland helped Scottish iron foundries to increase production and decrease costs, which in turn helped the British iron industry to gain and maintain its position as a global leader through to the end of the nineteenth century. It was also essential to understand the role of Scottish foundries within the British empire, as well as considering some Spanish trade catalogues that illustrate the significance of the Latin American and, in particular, the Argentinian market.

The exact amount of iron exported from Scotland to Argentina proved impossible to define, leaving the question of whether there was more Scottish ironwork than any other unanswerable. However, through the case studies in Section 3, it was possible to demonstrate that a great amount of ironwork, serving different purposes, went from Scotland to Argentina during the most dramatic period of development and urbanisation in the country's history. These studies help us understand the

contribution made by the Scottish cast iron industry to the British empire, while at the same time revealing how essential Scottish cast iron was in Argentina's development.

There were supplementary questions, such as:

b) Who commissioned and designed these structures?

c) Who commissioned and designed these structures?

To know who commissioned the work, further research was needed. Fieldwork, archival work, and an investigation of primary sources were essential for analysing architectural examples of cast-iron buildings and elements made in Scotland – or by Scottish people – these were used as case studies in Section 3.

Case studies reveal that the Scottish ironwork shipped to Argentina, was commissioned mainly by Scottish, or other British professionals in charge of Architectural or engineering projects, who often chose to buy British technology and materials to complete them. The investigation also reveal that the majority of the Scottish ironwork found in Argentina was related mainly with the railways and other infrastructure projects that were financed or managed by the British. Thus, the railways became a generator of informal imperialism, as it served to respond to imperial needs by reducing distance and connecting national and international markets, while transporting British goods. In addition, the railways in Argentina were also the main consumer of iron as demonstrated in Section 2. This explain how the development of the imperial relationship, sustained by a network that followed an imperial strategy, affected designs and material, and influenced the Argentinian environment

The diaspora of British engineers itself also had an important role in expanding and fortifying the British empire, as explained by Buchanan. This, in combination with the network of empire suggested by Magee and Thompson, serves to explain how the global system worked, and iron's place within it.

Case studies also reveal that the majority of the Scottish ironwork found corresponded with projects developed mainly between 1880 and 1914, the period of major urban development in Argentina, but also the period when Argentina's relationship with Great Britain was strongest. It was also when the most British iron was exported to Argentina as demonstrated previously in Section 2. This also indicates that Scottish iron, in fact, contributed significantly to the overall trade with Argentina and that it benefited the British iron industry with large commissions that allowed it to keep going. Thus, the case studies described in Section 3 help us understand who designed and commissioned the ironwork, how the imperial network worked, how it influenced trade and, how Scottish ironwork ended up in their various locations and how they helped shape the Argentina that exists today.

Another set of questions that arose were:

- d) Were the elements found in Argentina the same as those found in Great Britain and former British colonies like India, South Africa or Australia? If so, why?*

To answer this, having identified Scottish ironwork in Argentina, I searched for similar examples in Britain and other countries. Finding so many similarities was surprising and raised the question of why these elements were the same in formal and informal colonies. This thesis attempts to demonstrate that formal and informal colonies followed a similar pattern in terms of railway development, migration, investment and culture, as outlined in Section 1. This means that British migrants in Argentina behaved in a similar way – forming groups of settlers, constructing their churches, institutions, residences and business – as migrants to formal British colonies. They hired British professionals to undertake the work, tightening their social networks by doing so. British investment in infrastructure was present in both formal and informal colonies, and British material, including Scottish ironwork, was used in British-led projects, particularly in the railways and sanitation projects.

However, British people were not the only ones to appreciate British products. Argentina underwent rapid development, and iron offered great advantages for rapid construction. Prefabricated elements from Great Britain were imported on a massive

scale to the whole country, especially to Buenos Aires. A great amount of this had a Scottish origin; this was because Scottish iron products were of excellent quality, competitively priced and efficiently shipped. In addition, the Scottish foundries also had the finest designs, which were disseminated globally through impressive and detailed illustrated trade catalogues that allowed customers from around the world to choose the same elements. These elements were of course much needed, but they were also fashionable. In Argentina, cast-iron elements meant industrialisation and modernity. They symbolised progress. A progress that was possible thanks to British imperial influence over railways and investments in public services.

This brings us to the consideration:

e) Can we think of these elements as British imperial architecture in Argentina?

British architects and engineers made a huge contribution to Argentina. If one considers that one of the aims of imperialism was to shape or reshape colonies in the interests, and more or less in the image, of the ‘conquering’ nation, then British cast-iron architecture in Argentina can be considered as ‘imperial’.

In fact, as Gavin Stamp has noticed, the ubiquity of cast iron is not merely British, but essentially imperial: it is the one consistent element found in all colonies and dominions. In some way these cast-iron elements bound the British empire together; they made the British empire distinctive and recognisable.

Argentina is a very eclectic country and British (and Scottish) ironwork architecture is not visible in every type of construction. But it was significant in those projects that were connected more to the interests of the empire, as demonstrated in Section 3. Thus, I do believe it is possible to see cast-iron architecture in Argentina as the result of some kind of imperial influence. More work is needed to explore this topic in further detail. British work done on ports and tramways, for example, was not studied here because of a lack of information with regards to iron providers. But, considering how important British investment was in improving the whole trade and communication system in Argentina, it seems reasonable to presume that the material used for these projects came from Britain. Further investigation of this would help us

understand more about the extent of Britain's influence on Argentina's urban development.

But such an influx of iron products from abroad also prompted me to ask:

f) Did these elements act as models that were later copied or imitated by local manufacturers?

Scottish cast-iron elements certainly were imitated by iron foundries in Argentina. Pedro Vasena was one of them, as shown in Section 2. It was the most important 'local' foundry, but it was never totally independent of British involvement. Most likely, it used Scottish or other British raw iron and, at least after 1912, it functioned thanks to British investment. It also had a great proportion of British people among its directors. This situation actually extended to the whole Argentinian iron industry, as it had neither the quantity nor quality of local iron, nor the founding facilities to compete with the British iron industry. More importantly, local iron foundries were affected by the high railway tariffs set by the British railway companies that owned more than 70 per cent of Argentina's rail lines, at least until they were nationalized in 1948.

Considering the overall picture, one of the key questions underlying this dissertation was:

g) Did British iron products affect architecture and urban development in Argentina?

The findings of this dissertation show that British iron products, and especially Scottish ironwork, certainly affected architecture and urban development in Argentina. Cast-iron prefabricated elements brought from Great Britain had no precedent in the country. They were not produced there and had never been seen before. They were brought in British ships to Argentinian lands and assembled there with a distinctly British character. They were alienated at first –although needed and desired because they symbolise modernity. They marked the character of the industrial architecture in Argentina, which usually involves, railway, ports, industrial and commercial buildings built in Argentina during 1860s to 1930s.

But perhaps the most profound question the analysis of British cast iron in this dissertation had to grapple with was:

h) *If architecture reflects the view of a society, what do these elements reflect?*

Through this research, I have come to believe that British (and Scottish) ironwork in Argentina reflects British informal imperial influence over the country. While British cast iron made an essential contribution to the country's development and progress, that progress was marked by external imperial needs. In this context, Scottish ironwork represents a part of the country's contribution, as the 'workshop of the empire', to the expansion and success of the British world-system.

Scottish ironwork found in Argentina reflect Argentinian society's desire to imitate what was in fashion in developed European countries. At the same time they represent the transfer and adaptation of technological knowledge that is intimately connected with British industrial leadership in general, and Scotland's contribution to the empire in particular.

After answering all the questions above, new questions arise. What are the implications of this new knowledge, what else needs further investigation?

Even though informal empire and its definition is still a matter of scholarly debate, and I have not attempted a new definition, this dissertation has certainly demonstrated that formal *and* informal parts of British imperialism were both important to and formed part of the same British world-system. Through the analysis made in this thesis, especially the topics developed in Section 1, I hope to have contributed to a re-thinking of 'imperialism' in Argentina, one that offers a different, more cultural and more integral, perspective based around a detailed analysis of a single commercial product. In this respect, Section 2 contributed to the scarce literature on the development of British iron trade in Argentina, presenting an opportunity to define the role of Scottish iron foundries within the British empire and beyond. Following this, Section 3 presented a new *imperial* perspective on the history of architecture in Argentina, considering architectural elements not in an insolated context but within the complex situation that made them possible in the

first place. As the work of a native Argentinian, this thesis also adds a new perspective on the general literature on informal empire in Argentina, which has been written primarily by British researchers.

Although this thesis did not focus on heritage conservation, I also hope that Argentinian and Scottish institutions will start thinking about the significance of the iron elements found in Argentina, as a part of a heritage that needs to be deeply studied and better understood. I honestly believe this study will help secure the conservation of Scottish cast iron in Argentina.

Finally, I hope that this thesis might lead to further research into Scottish ironwork in other South American countries that share a history similar to Argentina's. In Section 2 it was demonstrated that the iron trade was very significant in South America as a whole, and it is known that Scottish ironwork can still be found in Brazil, Costa Rica, Chile and Uruguay, among other countries. Some Scottish ironwork has been identified and studied by Gomez Silva and Cacilda Texeira de Costa in Brazil, Sergio Orozco in Costa Rica, and Pedro Guedes in Chile, but it would be fascinating to extend this research and bring it together into an integrated account of iron, Scotland and empire in South America.

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Appendix A

A.1 British Architects Operating in Argentina between 1793 and 1945

The following paragraphs present some of the most relevant British architects and most important works in Argentina, with the aim of presenting briefly not only the impact of British architecture, but also the fact that the majority of the works were undertaken for British consumers.

The first British architect to arrive in Argentina was the Scot **Richard Adams (1793–1835)**. He joined the Monte Grande colony, where he constructed the Robertson residence, thirty houses and a chapel.¹¹³⁰ When the colony was dismantled, Adams went to the capital, where he was commissioned for more important jobs, such as the construction in 1831 of the Anglican Cathedral of St. John the Baptist. He later designed and built the Presbyterian Church of St Andrews (mentioned before, see **Figure A–1** and the chapel in the first Protestant cemetery in Buenos Aires, which was the first Neo-gothic building in the country (**Figure A–2**). He was also recognised as a great painter.¹¹³¹

Eduard Taylor (1801–1868) arrived in 1826. He started working for Urquiza's government in 1852 and made the new Customs building and passenger and merchant piers. In 1852 he formed part of the Board of Public Works of Buenos Aires and went on to participate in other important projects, such as the design of May Square (Plaza de Mayo), the Scottish Presbyterian church project of St. John's in Quilmes (today Florencio Varela), the urban project for Tandil including its parish church. He also built the village church of Lobos, the Club del Progreso and Club del Plata.¹¹³² It has been said that Taylor was responsible for the 'imposition of the

¹¹³⁰ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata(1800–1920)*. *Aportes Biograficos*, p. 17.

¹¹³¹ *Ibid.*, p. 17.

¹¹³² D. Schávelzon, *Haciendo un Mundo Moderno: la Arquitectura de Edward Taylor (1801–1868)* (Buenos Aires, 2010)., pp. 9–37.

ideology of the Italian Renaissance as a substitute for Spanish colonial architecture'.¹¹³³

The majority of British architects and engineers came with the railway boom. In the following, I explore some of the work of the most important architectural firms in Argentina.

The architectural firm **Conder, Follett and Farmer** was formed by three Englishmen – **Eustace Lauriston Conder** **Sydney George Follett** and **James Westbrook Farmer** in 1919. Follett had studied at Edinburgh School of Art and worked in London with Edwin Landseer Lutyens, during which time he met Farmer.¹¹³⁴ The firm was among the most important in the country. Among their projects were many railway stations (including warehouse and administrative buildings), mainly created for the FCCA, such as: Victoria, Tigre, San Fernando, Capilla del Señor (in Buenos Aires), Pyrano y Rosario, Rosario's Payments Office (Provincia de Santa Fe), Rio Segundo y Alta Gracia in Cordoba, Fisherton railway town. Retiro Station (one of the most important projects–See Section 3), and the 'oficina de ajustes' of FCCA.¹¹³⁵

They also designed buildings for British institutions and made alterations to the British Hospital, British cemetery, Belgrano Athletic Club, the Saint George School and St. Andrews School. They worked on the industrial, commercial and administrative buildings for several British companies: the Royal Insurance Co. Ltd., Thomson and Maple (see Section 3), Gath and Chavez, Harrods, and Pilkington, Crittal Manufacturing Company, Otis Elevator Company, Smithfield and Argentinian Meat Company Co, Lever Company, Goodlass, and Wall and Co. They also worked on bank buildings such as The Royal Bank of Canada (Buenos Aires), Banco Algo–Sudamericano (branches in Mendoza, Santa Cruz), Banco Britanico de

¹¹³³ Ibid., pp. 13–34.

¹¹³⁴ 'Eustace Lauriston Conder', http://www.scottisharchitects.org.uk/architect_full.php?id=205018 (accessed September 15, 2017).

¹¹³⁵ E. Radovanovic, 'Catalogo de Obras 1891–2008', in *studio de arquitectura Follett, 1891–2008 Conder, Follett, Farmer* (2008).

la America del Sud; Banco de Londres y America del Sur (branches in Paraná, Buenos Aires, Rosario and Mar del Plata).¹¹³⁶ Nick Follett, a descendent of Sydney Follett, still works for the Follett Architectural firm on projects for the small remaining British community in Argentina.¹¹³⁷

Some projects, such as Harrods, were shared with another important architectural firm, formed by the Englishman **Paul Bell Chambers** (1868–1930) and the American Louis Newbery Thomas, who had also worked in many railway stations. Among the most important projects of this firm were the La Plata FCS Station (see Section 3), Hipolito Station Yrigoyen (see Section 3), the extension of the building of Plaza Constitution Station, known as ‘Constitution III’ (see Section 3), the ‘Railway Building’ constructed to house the headquarters of the Anglo-South American Bank (today renamed Palacio de la Reconquista), the building for the British shipping company Mala Real Inglesa, the office building for the Central Railway Cordoba, the workers' colony in Banfield, the Bieckert brewery in Llavallol, the headquarters of the Ford Motor Company in Buenos Aires, and the headquarters of the Bank of Boston.¹¹³⁸

Between 1911 and 1924 the architect **Walter Bassett-Smith (1859–1933)**¹¹³⁹ who had worked in Buenos Aires since 1889, was a partner of **Bertie Hawkins Colcutt** (1883–1937), the architect of the Buenos Aires and Pacific Railway Co from 1901 to 1911,¹¹⁴⁰ in the firm **Bassett-Smith & Colcutt**. Their assistant was the Scotsman **John Macdonald Colvin** (1887–1976).¹¹⁴¹ Even though railway projects brought them to the country, they focussed more on residential projects, such as the chalets

¹¹³⁶ Ibid.

¹¹³⁷ ‘Follett Arquitectos’, <http://follett.com.ar/> (accessed December 10, 2015).

¹¹³⁸ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata(1800–1920). Aportes Biograficos*.

¹¹³⁹ Bassett-Smith became member of RIBA in 1925 after moving to Australia. RIBA nominations papers no. 2233 and Bassett-Smith, Walter B. RIBA Biographical File.

¹¹⁴⁰ RIBA nominations papers and Colcutt, Bertie Hawkins. RIBA Biographical File.

¹¹⁴¹ ‘Bassett-Smith & Colcutt’, http://www.scottisharchitects.org.uk/architect_full.php?id=404448. (accessed December 13, 2015).

created in Mar del Plata for important people such as Rafael Ocampo, Jose Cortejarena, Federico Green, Mabel Bonorino de Udaondo, Axel Aberg Cobo, Carlos Irigoyen. They built residences in Buenos Aires for Jose Balcarse and Carlos Madero, and estancias like those built for the Hahusen, Barry, Unzué, Pereyra Iraola and Saguier families. They also undertook commercial projects for Union Telefonica.¹¹⁴² Bertie Hawkins Collcutt was a member of RIBA in the UK and of the Sociedad Central de Arquitectos, its equivalent in Buenos Aires.¹¹⁴³

Walter Bassett-Smith used to design buildings in the Tudor or Gothic styles, and is considered to have spread English picturesque in Argentina as seen mainly in chalets in Buenos Aires and Mar del Plata.¹¹⁴⁴ Among the religious buildings he designed for the Protestant community were the Anglican churches of All Saints in Quilmes, (1892), San Salvador in Belgrano (1896), and the one in Temperley, a city with an important English community where Bassett-Smith lived. To these can be added the Prince George's Hall in Buenos Aires and Baker Memorial School in Lomas de Zamora, some residences for prestigious families, such as Anchorena, Balcarce, Leloir, Salas, Bari, and a particularly important house for Carlos Maria Madero and Sara Unzué that in 1947 was acquired by the British government to house the British Embassy in Temperley. Near Mar del Plata in Chapadmalal, he designed the residence of Martinez de Hoz in the Edwardian style along with other buildings such as the Boarding School San Carlos and single-family homes like the Urquiza chalet, among others.¹¹⁴⁵

¹¹⁴² In 1882, the Societe du Pantéléphone L. De Locht et Cie and the Telephone Company of Rio de la Plata merged; the resulting new company was based in London and acquired in 1886 by the Telephone Company Gower-Bell. It has operated since then under the name The United River Plate Telephone Company in England and Company Union Telefonica del Rio de la Plata in Argentina. Telefonica Union River Plate, abbreviated UT, with 6000 initial subscribers in 1886, ran telephone services in Argentina under British administration for 43 years until 1929 when it passed into American hands when it was acquired by the International Telephone and Telegraph company (ITT). See: <http://www.telefoniamerle.com/historia.htm>.

¹¹⁴³ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata(1800–1920). Aportes Biograficos*.

¹¹⁴⁴ ‘John Macdonald Colvin’, http://www.scottisharchitects.org.uk/architect_full.php?id=403553 (accessed December 12, 2015).

¹¹⁴⁵ M. Granero, ‘La Arquitectura Eclectica en Mar del Plata 1890/1930’.

Born in London, **Medhurst-Thomas** worked in Buenos Aires from 1906 to 1945. He made one of his first projects in Argentina – the Irish orphanage in 1897 – with the Scot Russell and later worked with Edward Inglelow Pitman and Juan Ochoa. From 1916 to 1945 he worked in partnership with George E. Harris on suburban developments, city buildings, hospitals and hotels. Medhurst-Thomas also worked for the Argentinian Ministry of Public Works (MOP) from 1918 to 1945 and for the Education department before that. He built many houses for wealthy people, including Rocardo del Cerro, Celso Rojas, Juan Lecot, Federio Mackinley, Bernadirno Ramos, Udaondo (**Figure A–3**) among others in Buenos Aires Province and a few more in Rosario, but he was also interested in developing low-cost houses and built many around Buenos Aires.¹¹⁴⁶

Sir Ambrose Macdonald Poynter (1887–1923) was the eldest son of Sir Edward Poynter, first baronet and President of the Royal Academy. He studied at Eton but began his career by entering the international competition to design a clock tower in Buenos Aires. The tower, now known as the 'English tower', was a present from the British community to Argentina and symbolises the Anglo-Argentine connection. Its construction was assigned to Hopkins and Gardom and everything used – cement, Portland stones, bricks, etc. – was brought from Great Britain (**Figure A–4**). In Britain, his most famous works were Vernon House and Polesden Lacey.¹¹⁴⁷

The Scot **Robert Russell Prentice** (1883–1960) arrived in Buenos Aires in 1910 and soon after became a partner to the French architect Luis Faure Dujarric (1875–1943).¹¹⁴⁸ Educated at Highgate School, he gained some experience in the firm Peddie & Washington Browne of Edinburgh before studying for two years at the Ecole des Beaux-Arts in Paris and moving to London in 1907 to join the staff of Mewes & Davis (well known for the Palm Court at the Carlton Hotel in London). In 1913 he migrated to Buenos Aires where he entered the offices of M. L. Fauré

¹¹⁴⁶ Charles Evans Medhurst-Thomas. RIBA biographical files.

¹¹⁴⁷ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata(1800–1920)*. *Aportes Biograficos* and Sir Ambrose Macdonald Poynter RIBA biographical files.

¹¹⁴⁸ Robert Russell Prentice. RIBA nomination papers.

Dujarric, who took him into partnership the following year. Their principal buildings were the Central Cordoba Railway Station in Retiro (**Figure A-5**), Buenos Aires, and the offices for the South-American Insurance Company along with some important residences, such as the Unzue Palace, now used as a luxury hotel (see Section 3).¹¹⁴⁹

Alfred Sinclair (?–1954) was a Scot who had studied at the University of Edinburgh, gained some work experience in the Scottish firm Greig & Fairbairn, specialised in housing and had some sketching experience before traveling to France, Germany and Holland and, eventually, Argentina. There he established himself in the Estancia Violeta, which is now a polo estancia managed by some relatives of the Sinclair family.¹¹⁵⁰

The Scot **James Smith (1879–1946)** trained at the Glasgow School of Art and Royal Technical College. He worked for the Caledonian Railway's architectural department before immigrating to Argentina to work for the Great Southern Railway, where he was appointed chief architect in 1911 but given the freedom to undertake private commissions. In 1925 he designed and built dwellings in the cities of Lomas, Banfield and Temperley in a Tudor style.¹¹⁵¹ In this area most of his private work on residences can be found.¹¹⁵² He became a member of RIBA in 1924 and, according to his nomination papers, his proposers were James Westbrook Farmer, Eustace Lauriston Conder and David Bateman Hutton. Smith was a prominent Freemason, and was for many years an Elder of the St Andrew's Scots Church in Buenos Aires.¹¹⁵³ Some of his work on railway stations will be described in Section 3.

¹¹⁴⁹ 'Robert Russell Prentice', http://www.scottisharchitects.org.uk/architect_full.php?id=205251. (accessed December 7, 2015).

¹¹⁵⁰ Alfred Sinclair. RIBA nomination papers.

¹¹⁵¹ Tartarini, *Arquitectura Ferroviaria*, p. 161.

¹¹⁵² The architect Bruno Cariglino, in cooperation with other neighbours of the area, is researching James Smith's work.

¹¹⁵³ 'James Smith', http://www.scottisharchitects.org.uk/architect_full.php?id=203592 (accessed December 16, 2015).

Helbert Boyd Walker (1864–1910) was an Englishman who moved to Rosario in Argentina to work on the Central Argentinian Railway in 1886. While there he also worked on residences for well-known people and families such as Carreras de Monts, Jose Nicolas Puccio (the Villa Hortensia, today the Municipal Center North District), Goyenechea, Ravena, Lubany and Carmelino. He also worked on some residences in Rosario and industrial buildings for E. Davis and Co. and the Anglo-Argentine company Molinera along with some religious buildings such as the Methodist chapel in Rosario and the Saint Patrick Hall and Dalmacio Temple in Cordoba and **(Figure A–6)**.¹¹⁵⁴

Charles A. Ryder worked mainly on residences for the city's upper-class families and on churches for the British community. In 1874 he designed, with compatriot **Edwin Merry**, the First Methodist Church in Buenos Aires, which still stands on Corrientes Avenue. He also designed with Merry the Anglican Church of the Holy Trinity in Lomas de Zamora and the Miraflores Palace – built in 1886 for the Dorrego-Ortiz Basualdo family in Flores. For the Scottish construction engineer, Alexander Hume, Ryder designed the luxurious mansion now known as Residence Maguire in around 1890 (see examples in Section 3).¹¹⁵⁵

J. Percy Clarke (1862–1930) designed and built the Sunchales railway station in 1891 in Santa Fe province.¹¹⁵⁶

Robert Harrison Lomax (1858–1924) made residences for Gaston Sansinena in Temperley, and for Eduardo and Juan Jose Madero. He also designed the buildings for the Buenos Aires Rowing Club and for the Banco Britanico de America del Sur.

¹¹⁵⁴ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata(1800–1920)*. *Aportes Biograficos* and 'Boyd Walker (1855 – 1910)', http://www.callesderosario.com.ar/boyd_walker.htm (accessed December 12, 2015).

¹¹⁵⁵ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata(1800–1920)*. *Aportes Biograficos*

¹¹⁵⁶ Ibid.

In collaboration with **William A. Harper**, he made the first Bristol Hotel in Mar del Plata (**Figure A-7**).¹¹⁵⁷

Herbert Arthur Inglis Russell (1862–?) was trained in Edinburgh. His most important projects were the Santa Brigida School, the Scottish church in Barracas, the Victoria Sailors Home, the Banco de Londres y Brasil, and other smaller projects for the Irish community.

John Robert Sutton arrived in Buenos Aires in 1889 and was the creator of the Royal Bank of Canada and the Royal and Sun Insurance buildings, along with residential dwellings for the Hirst, Gibson and Demarchi families. He also built the ‘La Popular’ tobacco building and the Irish school in Buenos Aires.¹¹⁵⁸

Engineers

James Bevans (1777–1832) was the first engineer to arrive in Argentina in 1822 and came at the request of Bernardino Rivadavia. As most of the professionals trained abroad they transmitted their previous experience in Argentina, as Bevans affirmed: ‘My studies enabled me to work as an hydraulic engineer. I have worked in the paving of many streets in London and I know everything about the public works that a city requires.’ Even though his plan for the Buenos Aires harbour, for which Rivadavia took the first loan from Baring, could not be undertaken at the time, he is still known in Argentina as the father of public works.¹¹⁵⁹

Following in Bevans’ steps was the Irishman, **John Coghlan (1824–1890)**. Educated at the Ecole des Arts et Manufacturers in Paris, and having some experience of railway and mining schemes in Europe, in about 1857 Coghlan was recruited as Engineer to the Buenos Aires Government. He designed the first waterworks and prepared the basis of the later design for the drainage system of Buenos Aires, where

¹¹⁵⁷ Ibid.

¹¹⁵⁸ Ibid.

¹¹⁵⁹ A. Garcia Basalo, ‘Santiago Bevans, Arquitecto en Londres. Sus aportes en la arquitectura penitenciaria y manicomial durante la Regencia’, *Epocas, Revista de Historia*, vol. 4, no. December (2011).

he worked for thirty years. He returned to London in 1887 after an ‘honoured, fruitful and laborious career in the Argentine Republic’ according to a testimonial from the President of Argentina. In London he was elected a Director of the FCS railway.¹¹⁶⁰

The majority of the engineers arrived after the 1860s to work on public works and the railways. In 1874, the president of the Institution of Civil Engineers drew attention to three distinguished British engineers operating in South America: **J. F. la Trobe Bateman**, who undertook waterworks in Buenos Aires; **Edward Woods**, who built railways in Peru, Chile, and Argentina; and **J. Brunlees**, who built railways in Brazil and Uruguay. It is usually said that Argentina owed much of its rapid economic development not only to the application of British capital but also to British engineering talent.¹¹⁶¹

John Frederick Bateman (1810–1889) worked for the London-based company Bateman, Parsons & Bateman. **George Higgin** a hydraulics engineer also worked for them between 1875 and 1877. The engineer, **Albert Mohr Bell** (1869–1926) was Bateman’s partner during his time in Scotland and served as his representative in Argentina. As the fast growth of Buenos Aires soon rendered Coghlan’s water scheme inadequate, John Bateman surveyed the city’s water supply and drainage in 1870–1871 and started work on it. A succession of resident engineers managed the project – Alfred Moore, George Higgin, Nystromer, L J Lowe – with Bateman and Richard Clere Parsons acting as UK consultants and paying regular visits. (see Section 3).

The first British engineers working on the development of the port facilities of Buenos Aires were the Scots Bell and Miller, who were involved in a number of works in South America. In 1862 the Buenos Aires engineer Eduardo Madero began to investigate the idea of docks for the port. In 1871 John Frederick (la Trobe) Bateman also reported on a dock scheme proposal, but nothing came of any of these

¹¹⁶⁰ Chrimes, ‘British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century,’ .

¹¹⁶¹ Buchanan, ‘The Diaspora of British Engineering’.

schemes – because of the capital involved and the political situation – until 1882 when Madero finally secured an Act for the construction of docks. On the advice of Baring Brothers he brought in **Sir John Hawkshaw** as Consulting Engineer, with **Thomas A. Walker** (and later C. H. Walker) as contractor and the **Armstrongs** responsible for the hydraulic equipment. The work of the resident engineer, the Scot **James Murray Dobson**, was so important that they founded the firm Hawkshaw, Hayter and Dobson, which was the first ‘British’ firm to have a resident partner overseas.¹¹⁶²

On the railways, the Scottish engineer **David Simpson (?–1916)**, who trained at the University of Edinburgh, arrived in Argentina to be part of the Transandino Railway, although he also did work for the state-owned FCO and the underground and became president of the Dock Sud Company.¹¹⁶³

Robert Crawford, another Scottish engineer, was involved in the construction of the Buenos Aires Southern Railway from Buenos Aires to Chascomús, and the Scot **David Angus** surveyed and constructed lines in Argentina as well as Brazil, Chile and Paraguay. His work in Argentina included the construction of part of the railway between Buenos Aires and Rosario and an electric tramway between the federal capital and La Plata.¹¹⁶⁴

The Scot **William Alexander Maccallum** from Glasgow, went to Argentina to become a representative of the Wood Edward and Co. engineering firm, which had an office in Buenos Aires. The majority of his work was in Patagonia for refrigeration companies like ‘La Blanca’, and in flour mills and warehouses, such as the Wilson warehouse in Galvan Port Rosario.¹¹⁶⁵

¹¹⁶² Chrimes, ‘British and Irish Civil Engineers in the Development of Argentina in the Nineteenth Century,’.

¹¹⁶³ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata (1800–1920)*. *Aportes Biograficos*.

¹¹⁶⁴ Morrison, *Scots in Argentina and Patagonia Austral, 1800–1950*.

¹¹⁶⁵ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata (1800–1920)*. *Aportes Biograficos*.

David Colville Bruce, worked for Garrick & Sons in Edinburgh and, in 1906, was sent to Buenos Aires for the construction of cranes commissioned by the Pacific Railway in the Galvan Port (**Figure A–8**) in Bahia Blanca, Buenos Aires Province.¹¹⁶⁶

The English Engineer **Charles B. Bradbury** worked on the railway lines, especially on the construction of bridges.¹¹⁶⁷

Hume Hermanos was a construction company founded in 1882 by two Scottish brothers, Alexander and Washington Hume. From 1908 to 1946 they worked mainly for railway companies, but also for other British companies, constructing buildings for Harrods, Alpargatas, and other factories, for example (see Section 3).¹¹⁶⁸

Founded in 1891, **John Wright** was another British company that focused on prefabrication. Among its more important works were the railway station hall for the Central Argentine railway, the ‘Solarium’ Hospital in La Perla, and many chalets for important families, including: Benjamin and Tomas Anchorena, Dalmiro Alsina, Tomas Reynal O’conor, Maria Unzue de Alvear, Pearson y Peralta Ramos.¹¹⁶⁹ An advert of 1918 (**Figure A–9**) shows a typical prefabricated residence provided by John Wright. The advert says, underneath a picture of a wooden prefabricated chalet, ‘this house has already erected over 10,000 buildings thought the Argentina Republic.’¹¹⁷⁰ However, these have not been identified yet. Indeed the suppliers of many prefabricated buildings in Argentina have yet to be identified, including the

¹¹⁶⁶ Gazaneo and Scarone, *Arquitectura de La Revolución Industrial*, p. 51.

¹¹⁶⁷ Lloyd, *Impresiones de La República Argentina En El Siglo Veinte: Su Historia, Gente, Comercio, Industria Y Riqueza*, p. 454.

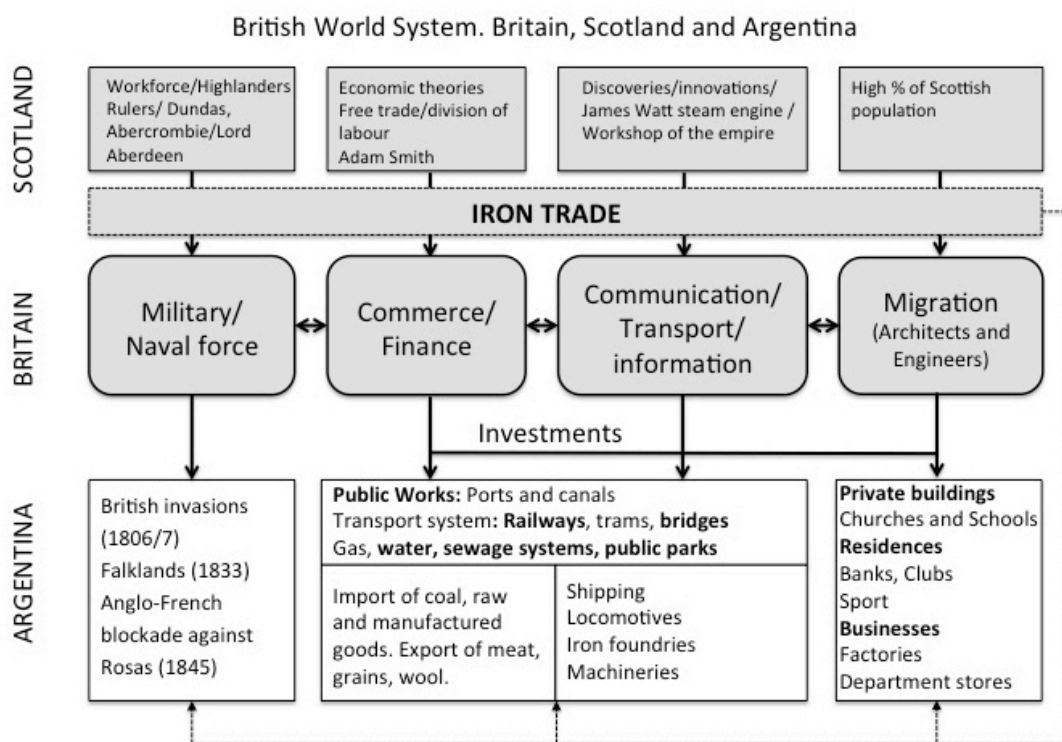
¹¹⁶⁸ The list of work in the Hume archive, held by Saint Andrews library, is very extensive. Selected works will be described in more detail in Section 3.

¹¹⁶⁹ Mendez, *Arquitectos E Ingenieros Britanicos En El Rio de La Plata (1800–1920). Aportes Biograficos*

¹¹⁷⁰ Anonymous, *Argentina Commercially Considered* (London, 1918).

first Escalada Chapel, which was part of the establishment of the workshop for Great Southern Railways.¹¹⁷¹

The above list of architects might look disconnected. It is therefore worth reminding ourselves of the interconnection between Britain, Scotland, and Argentina, as shown in the graph below.



Graph A–1. Main aspects of the British world-system. Source: Author

¹¹⁷¹ J. Montieth Drysdale, *A Hundred Years in Buenos Aires: St Andrew's Scots Church 1829–1929* (Buenos Aires, 1929)

A.2 Examples of Significant Scottish Ironwork Outside the UK. Report of Internship at the Historic Scotland

Report of Internship at the Historic Scotland

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1 Introduction

My research project is entitled 'Trading Nations: Architecture, Informal Empire and the Scottish Cast iron Industry in Argentina'. Its goal is to explore Scottish cast iron architecture in Argentina introduced by the British in general and the Scots in particular, under the policies of 'informal empire' during the period 1853 – 1948. The project is being undertaken at the University of Edinburgh in conjunction with Historic Scotland, where I am currently doing an internship.

The primary task of the internship is to identify and document the most significant samples of Scottish ironworks outside Great Britain, illustrating their extent and significance and thus contributing to the development of a national strategy towards industrial heritage.

Iron and steel were essential materials for city development, especially during the end of the 19th century and the beginning of the 20th. It was used to construct extensive railway lines, railway stations, ports and bridges that unified countries, improving means of communication and transport of people and goods. It was also crucial for new urban and sanitary facilities, such as drinkable water, gas and electricity; new public spaces like parks and new public and private buildings, including government buildings, hospitals, markets, theatres, libraries, schools, factories, departments stores, shops, houses and palaces. The main destinations for these products were Australia, Malaysia, South America (mainly Brazil, Argentina and Chile), the West Indies, India, South Africa, Canada and even European countries such as France that could not satisfy their internal demand despite having important iron foundries.

Some of these elements were designed, pre-fabricated, and exported abroad in their entirety; others were designed locally and sent to foundries to be built, while some were chosen from catalogues by professionals or directly by clients.¹ In fact, catalogues were also printed in other languages to improve trade. Spanish catalogues, as those by Carron, Macfarlane, C. D. Young and Glenfield and Kennedy among others, illustrate just how important was South America trade.

Scottish iron and Scottish experts were crucial for the development of industry. Since James Watt's separate condenser, the material was used for steam and other machines contributing to the industry and development of the whole world. The diversity of products that could be made of iron in general and cast iron in particular was enormous, as the flexibility of the material and the expertise of the Scottish firms allowed them to make "almost anything".²

Scottish iron foundry companies were able to contribute to world's development by shipping a wide range of products. Cast-iron buildings like bandstands and more often architectural elements, such as, gates, railings, lamps and fountains, supplied by Walter Macfarlane, George Smith and Co, Carron, P. & W. MacLellan & Co., McDowall Steven, Lion Foundry, David King and Sons, Mackenzie Moncur or even smaller foundries such as J. & A. Law, can be found in distant parts of the world.

Less decorative but with a huge impact in everyday life, water and sewage supplies used cast iron in different forms. Glenfield Hydraulic Engineers

1 L. Juarez, 'Documenting Scottish Architectural Cast Iron in Argentina,' *ABE Journal. European architecture beyond Europe*. <http://dev.abejournal.eu/>, no. 5 (2014).

2 Lion Foundry stated that they could make "almost anything in cast iron ranging from a 1b to 3 tons in weight" in The Herald newspaper on 31 July 1963. Taken from Lion Foundry Archive, Patrick Library.

provided a hydraulic system water supply for cities such as for Buenos Aires³, where cast iron pipes for water and sewage were provide by many different Scottish companies such as David King, Forth & Clyde, Shaw & McInnes, DY Stewart & Co., Thomas Edington & Sons.⁴

Scottish structural cast iron, wrought and steel were used in many places around the world for so many purposes. I shall give here the example of Argentina. Alexander Findlay & Co. made iron and steel structures for Plaza Constitución Station and other works for railways companies, including bridges in Buenos Aires and Bahia Blanca; Sir William Arrol was commissioned to provide railway bridges between Tucuman and Salta,⁵ Arrol Brothers supplied pedestrian bridges for many railway stations in Buenos Aires province such as Núñez, Martínez, Casilda, Coghlan, Vicente López, Wilde, Olivos, Tolosa, Rivadavia, among others.⁶ Similar pedestrian bridges can be found in Barracas station made by David Colville & Sons. Big companies like these were able to manufacture more than 300,000 tons per year.⁷

In addition, agrarian industries, such as meat, wool, grain and sugar, among others–also used Scottish cast iron machinery such as those made by Glaswegian company Mirrlees Watson and Co.⁸, Duncan Stewart & Co, McOnie & Co, or A. Harvey and Co. in Brazil, Argentina, West Indies and Madeira, among others.⁹

Interestingly, all these products and even iron bars, to be cast or forged in local industry abroad, were transported by sea in iron ships made by Scottish companies such as Alexander Stephen and Sons.¹⁰ Abroad, railway lines and locomotives as made by the Scottish firm North British Locomotive Company,

3 J. TARTARINI, *El Palacio de las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Histórico Nacional*, Buenos Aires: Agua y Saneamientos Argentinos S.A. AySA, 2012, p. 146.

4 From Baring Archives it can be seen that Baring provided the loans to these companies for cast iron pipes in 1873. http://www.baringarchive.org.uk/materials/the_baring_archive_hc4.pdf

5 Bolletin de servicio de los ferrocarriles del estado (4142 al 4150), p, 84.

6 J. TARTARINI, *Ferrocarriles Provincia Buenos Aires*, La Plata: 2009. Also, similar pedestrian bridges were manufactured by MacFarlane.

7 Peter L. Payne, *Colvilles and the Scottish Steel Industry*. Oxford: Clarendon Press, 1979, p.115.

8 This firm supplied sugar machinery for Sugar Mill San in Isidro in Salta; some machinery is now exhibited in the garden. In 1908 Mirrlees Watson also supplied complete sugar processing factories for a Sugar mill in Formosa *The Times*, 11th November 1908 in http://www.gracesguide.co.uk/Mirrlees_Watson_Co Grace

9 M. Watson, Scottish Cane Sugar Refineries in *Le patrimoine industriel de l'agro-alimentaire : Actes du 1er Colloque de l'APIC, Association pour le patrimoine industriel de Champagne-Ardenne*, Reims, Centre des Congrès, 7-8 novembre 1998 (Les cahiers de l'APIC, 2000)

10 http://www.gracesguide.co.uk/Alexander_Stephen_and_Sons

which produced over 600 locomotives a year¹¹; transported people and goods all over the globe.¹²

Many of the buildings and elements made in Scotland and shipped abroad still survive. Some are in full use -even cast iron pipes, invisible to our eyes, that still distribute drinkable water in many cities like Buenos Aires, food markets, theatres, and railways stations that are still functioning in their original purpose. All these elements were and are an essential part of Scottish industrial heritage. They greatly contributed to what Scotland is today and also to the development of other nations and should be considered a transnational heritage that is shared between countries. Scottish people should be very proud.

11 M. Nicolson, Glasgow, Locomotive Builder to the World, M. O'Neill, ed., Edinburgh , Polygan, 1987, p.10.

12 D.S. PURDOM, British Steam on the Pampas: the Locomotives of the Buenos Aires Great Southern Railway, London, Mechanical Engineering Publications, 1977.

2 Examples of significant Scottish ironwork outside the UK

The Scottish Ironwork Foundation, a registered charity that promotes historic architectural ironwork made or found in Scotland has identified more than thousand elements. My task was to propose new elements, evaluate and select those I considered most relevant based on their historical significance, originality, quality or scale, whilst trying to highlight their diversity in use. During the internship I have singled out one example to work with per day (twelve in total), all located in six different countries.

2.1 Australia

2.1.1 Corio Villa

<i>Name</i>		Corio Villa	<i>Type</i>	Cast-iron house	<i>Year</i>	1855
<i>Location</i>		Corio Bay, Geelong, Australia				
<i>Maker</i>		Designed by Bell & Miller, made by Robertson & Lister (generally attributed to CD Young, however the authorship of this work is still controversial) ¹³				
	<i>Ref</i>	<i>Image</i>			<i>Source</i>	
	1				Ironworks database	
http://ironworks.scran.ac.uk/database/record.php?usi=000-000-761-005-C&searchdb=ironworks_scran&scache=5ihrk5opz4						

¹³ Miles Lewis, 'The Glasgow Prefabricators' Conference in Glasgow, 4th July 2015.

2



[Ironworks
database](#)

http://ironworks.scran.ac.uk/database/record.php?usi=000-002-000-446-C&searchdb=ironworks_scran&scache=5ihrk5opz4

	3		Pinterest
https://www.pinterest.com/pin/480407485228489828/			

Additional resources

<http://geelong-visual-diary.blogspot.co.uk/2012/09/corio-villa-for-sale.html>

<https://oldestatesforsale.wordpress.com/2012/08/26/corio-villa-for-sale-after-67-years/>

Archives

There is a bilingual English/Spanish catalogue. I cannot find which archive might have it. It's called: *"Illustrative and Descriptive catalogue of machinery, Implements, Tools, Manufactured articles, Raw materials & Co., employed in Railways, Mines, marine department, Iron Architecture, Bridges, Piers, Breakwaters, Flour, Oil, and Saw Mills; Distilleries, Gas Works, Brick and Tile Works, Agriculture, Horticulture, and*

*Miscellaneous manufactures, & C. & C. for scientific and practical purposes in South American and other countries. Manufactured by Messrs CD. Young and Company London and Edinburgh. London: C, 1877".*¹⁴

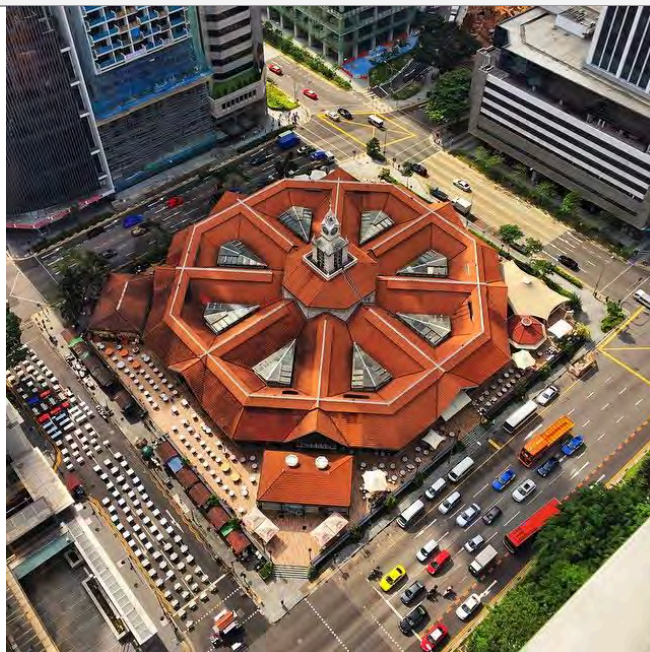
The catalogue is currently for sale at:

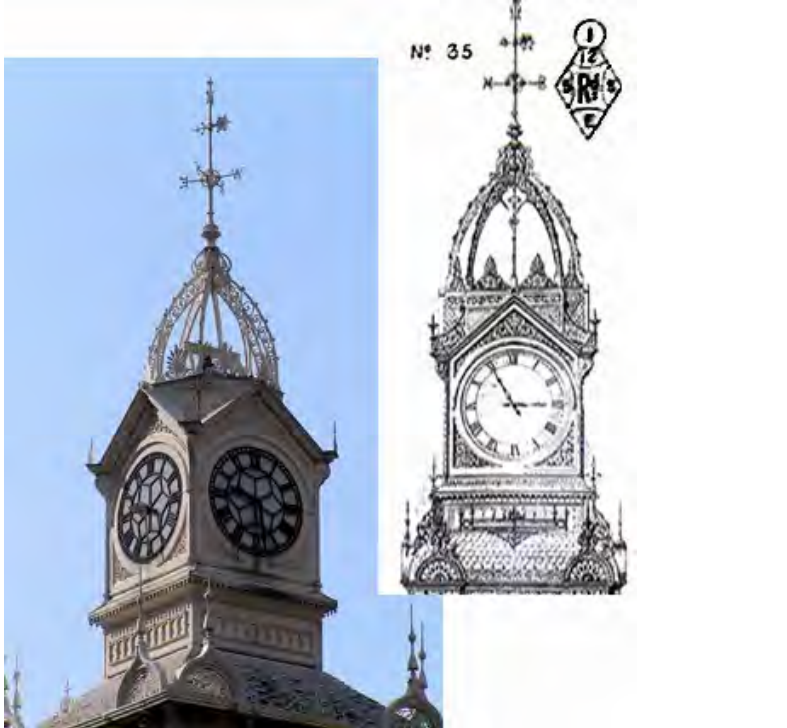
<http://www.abebooks.co.uk/servlet/BookDetailsPL?bi=10143303144&searchurl=sts=t%26tn=descriptive+catalogue+of+machinery,+implements,+tools,>

¹⁴ P. Guedes (Brisbane, 2011)

2.2 Singapore

2.2.1 Telok Ayer

<i>Name</i>	Telok Ayer (known as Lau Pa Sat)	<i>Type</i>	Market	<i>Year</i>	1890 - 1894
<i>Location</i>	Singapore				
<i>Maker</i>	Usually attributed to P. & W. MacLellan & Co, but with Walter Macfarlane stamps in the columns.				
<i>Data</i>	National monument since 1973, Architect: James MacRitchie (Scots Municipal Engineer)				
<i>Ref</i>	<i>Image</i>				<i>Source</i>
1				"Telok Ayer Market Above, June 2015". Licensed under CC BY 3.0 via Wikipedia	
https://en.wikipedia.org/wiki/File:Telok_Ayer_Market_Above,_June_2015.JPG - /media/File:Telok_Ayer_Market_Above,_June_2015.JPG					

2		"Telok Ayer Market 6, Jan 06" by User:Sengkang - Own work. Licensed under Copyrighted free use via Commons.
https://commons.wikimedia.org/wiki/File:Telok_Ayer_Market_6,_Jan_06.JPG - /media/File:Telok_Ayer_Market_6,_Jan_06.JPG		
3		Ironworks database
http://ironworks.scran.ac.uk/database/record.php?usi=000-002-000-905-C&searchdb=ironworks_scran&scache=57r865opz1		

4		Ironworks database
	http://ironworks.scran.ac.uk/database/record.php?usi=000-002-000-603-C&scache=57r865opz1&searchdb=ironworks_scran	
<i>Additional resources</i>		
Video: https://haryati96fyp.wordpress.com/tourist-spots/telok-ayer-market/ Official web government: http://www.nhb.gov.sg/places/sites-and-monuments/national-monuments/former-telok-ayer-market-now-known-as-lau-pa-sat		
<i>Archives</i>		

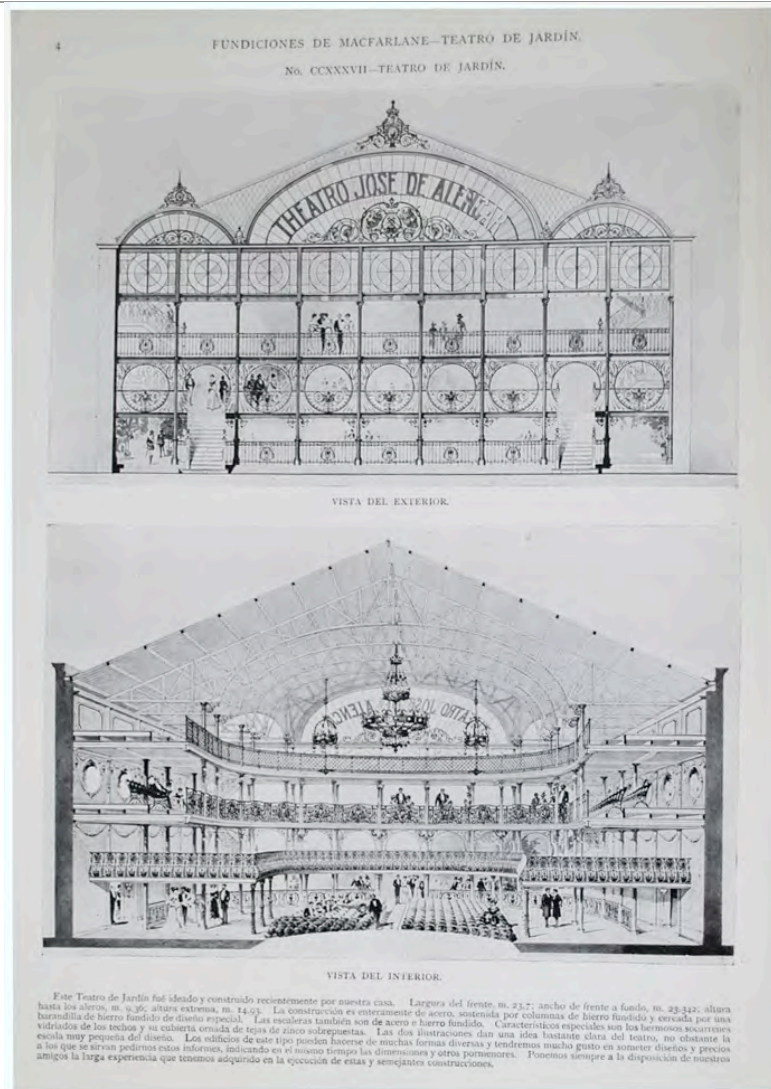
2.3 Brasil

2.3.1 José Alencar Theatre

Name	José Alencar Theatre	Type	Theatre	Year	1910
Location	Fortaleza, Brasil				
Maker	Walter Macfarlane				
Ref	Image	Source			
1		ME/Portal da Copa/Embratur Licensed Creative Commons http://www.copa2014.gov.br/pt-br/dinamic/galeria_imagem/41338 https://commons.wikimedia.org/wiki/File:José_de_Alencar_Theatre.jpg - /media/File:José_de_Alencar_Theatre.jpg			
2					

https://pt.wikipedia.org/wiki/Ficheiro:Theatro_José_de_Alencar.jpg

3



Page 4. Walter Macfarlane Spanish Catalogue supplement.

Courtesy and copyright of the Ironbridge Gorge Museum Trust

4

Additional resources

<http://g1.globo.com/ceara/noticia/2014/03/conheca-mais-sobre-o-theatro-jose-de-alencar-em-fortaleza.html>

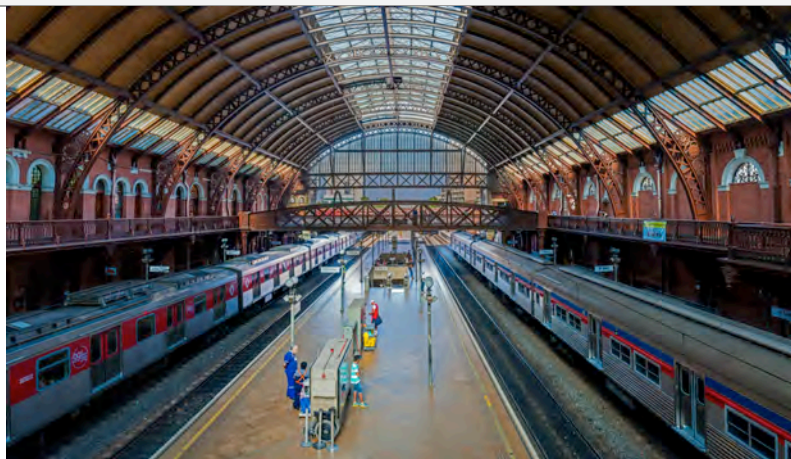
Archives

Contact: Joanne Smith

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Tel 01952 43 2141 or 01952 435 900
 email: joanne.smith@ironbridge.org.uk
 The IRONBRIDGE GORGE MUSEUM TRUST
 Coalbrookdale Telford Shropshire TF8 7DQ www.ironbridge.org.uk

2.3.2 Luz Station

Name	Luz Station	Type	Rail station	Year	1895 - 1901
Location	Sao Paulo, Brazil				
Maker	Walter Macfarlane				
Ref	Image				Source
1				"Estação da Luz 8" by The Photographer - Own work. Licensed under CC0 via Commons	
https://commons.wikimedia.org/wiki/File:Estação_da_Luz_8.jpg - /media/File:Estação_da_Luz_8.jpg					

	2		Constructalia
	http://www.constructalia.com/repository/transfer/en/resources/ContenidoProyect/01075147FOTO_AMPLIADA.jpg		
	3		
<i>Additional resources</i>			
http://marcuscabaleiro.blogspot.co.uk/2013/01/estacao-da-luz-sp.html			
<i>Archives</i>			

2.3.3 Municipal Market Manaus

<i>Name</i>	Fish & Meat Pavilion	<i>Type</i>	Municipal Market	<i>Year</i>	1906
<i>Location</i>	Manaos, Brasil				
<i>Maker</i>	Walter Macfarlane				
<i>Ref</i>	<i>Image</i>				<i>Source</i>

1		"Mercado de Manaus" by Lúcia Barreiros - Flickr. Licensed CC BY-SA 2.0, via Wikimedia Commons
2		http://ironworks.scran.ac.uk/database/record.php?usi=000-002-000-548-C&scache=1kfzp5opzf&searchdb=ironworks_scran Ironworks database

3		Page 6. Walter Macfarlane Spanish Catalogue supplement. Courtesy and copyright of the Ironbridge Gorge Museum Trust
4		
Additional resources		
Archives		
Contact: Joanne Smith, Museum Registrar Tel 01952 43 2141 or 01952 435 900 email: joanne.smith@ironbridge.org.uk The IRONBRIDGE GORGE MUSEUM TRUST Coalbrookdale Telford Shropshire TF8 7DQ - www.ironbridge.org.uk		

2.4 Argentina

2.4.1 Palacio de Aguas Corrientes

Name	Palacio de Aguas Corrientes	Type	Water supply	Year	1887 – 1894
Location	Ciudad autónoma de Buenos Aires, Argentina				
Maker	Walter Macfarlane (decorative: exterior gate and railing, lamps, caryatides, roof railings and terminals), see below cast iron pipe makers. Glenfield & Kennedy, water pump makers.				
Data	Water and sewage were provided by many different Scottish companies, such as David King, Forth & Clyde, Shaw & McInnes, DY Stewart & Co., St. Rollox, and Messrs. R. Laidlaw & Son and Thomas Edington & Sons, Messrs. Macfarlane, Strang & Co., Lochburn Iron Works. For instance, only in 1900, Messrs. Macfarlane, Strang & Co delivered about 10,000 tons of 36-inch and 48-inch pipes for Obras de Salubridad de la Capital, Buenos Aires. ¹⁵				
Ref	Image				Source
1				Photo: Lucia Juarez, with permission.	
Water Palace. Exterior gate and railing, lamps, caryatids, roof railings and terminals made by Walter Macfarlane. Terracotta cladding made by Royal Doulton and					

¹⁵ Local Industries of Glasgow and the West of Scotland, 1901.

Burmantofts from England.

2



Photo: Lucia Juarez, with permission.

Walter Macfarlane caryatides. Designed locally but manufactured by Saracen Foundry.

3

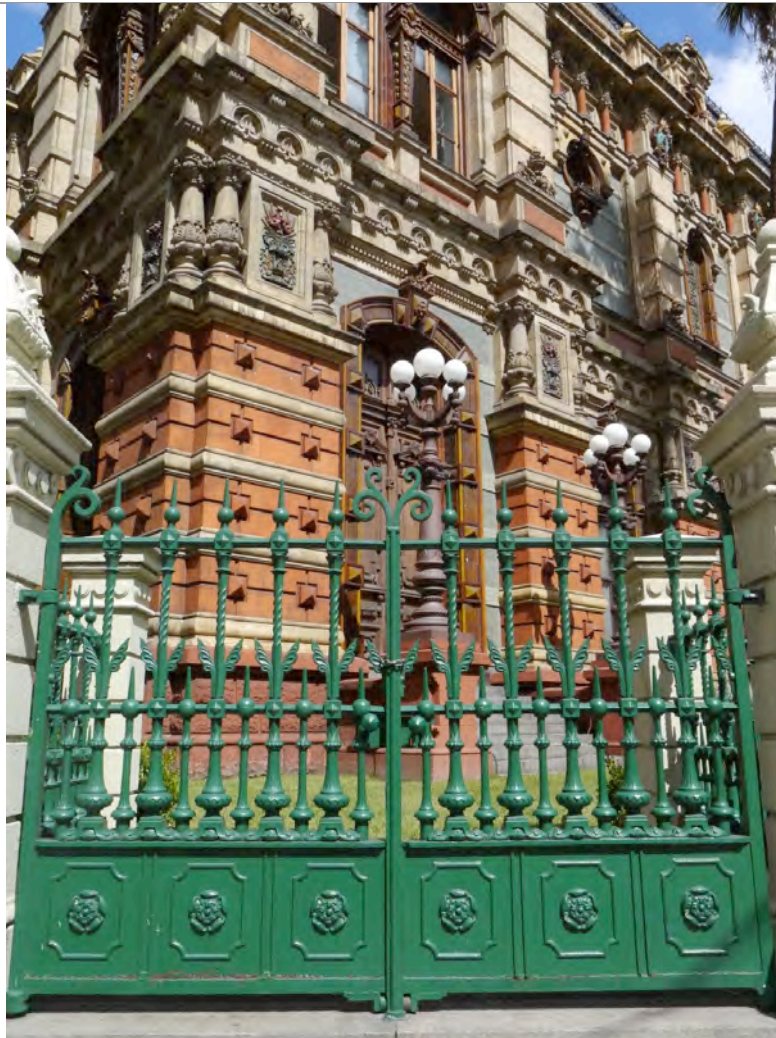


Photo: Lucia Juarez, with permission.

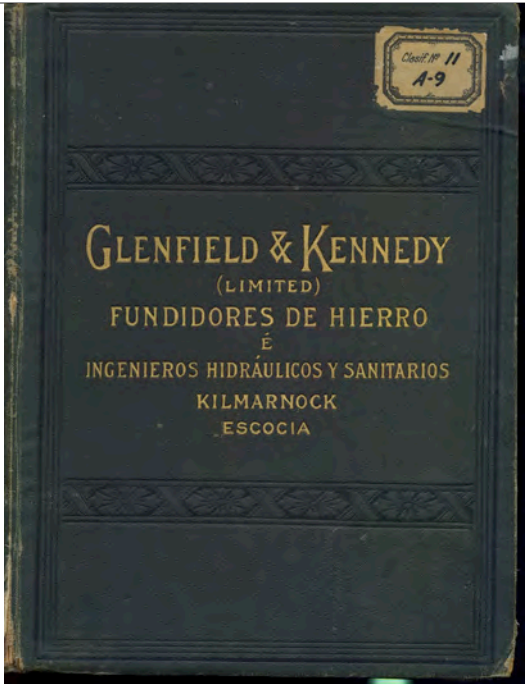
Macfarlane's gate and lamp.

4



Courtesy of Museum of Water and Sanitary History, AySA S.A.

Permission to use granted by Jorge Tartarini.

5		Glenfield & Kennedy Spanish catalogue, year 1913. Courtesy of Museum of Water and Sanitary History, AySA S.A. Permission to use granted by Jorge Tartarini.
6		Courtesy of Museum of Water and Sanitary History, AySA S.A. Permission to use granted by Jorge Tartarini.
Additional resources		
Archives		
Water Museum and Archive Health History AySA, Buenos Aires. Contact: Jorge Tartarini.		

Museum of Water and Sanitary History, AySA S.A.

Riobamba 750, 1st floor (C1025AAP), Buenos Aires

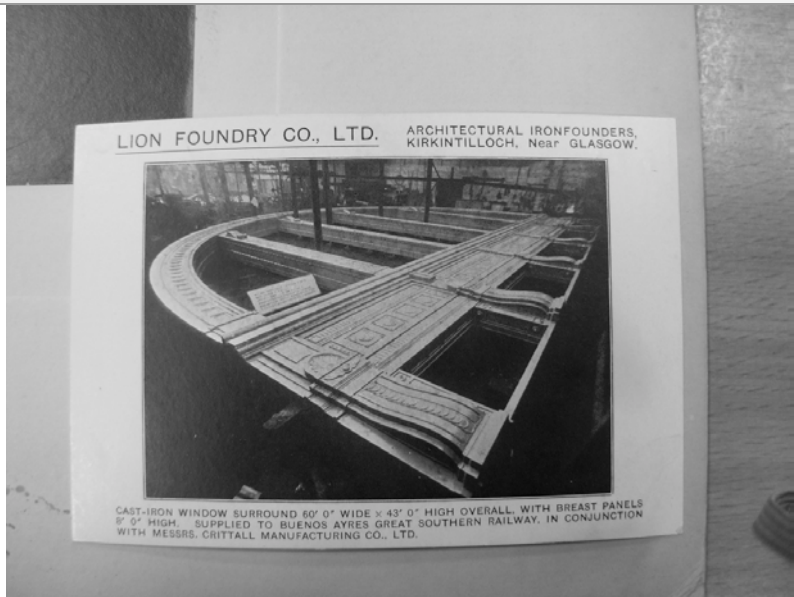
Tel: (54-11)6319-1104/1026

E-Mail: jorge_tartarini@aysa.com.ar

www.aysa.com.ar

Records of Glenfield & Kennedy Ltd, Hydraulic engineers, Kilmarnock, East Ayrshire, Scotland held at Glasgow University Archive Services (ref: gb 248 GB 248 UGD 005)

2.4.2 Station Plaza Constitución

Name	Plaza Constitución	Type	Railway station	Year	1929
Location	Ciudad Autónoma de Buenos Aires, Argentina				
Maker	Lion Foundry (cast iron window), Alexander Findlay and Company (cast iron and steel structure for platforms)				
Data	Alexander Findlay and company. Output 20,000 tons manufactured work per year (from the Engineer, 13 th August 1909)				
Ref	Image				Source
1				GD10/7/4/5/2 3/1 Patrick library. Lucia Juarez, taken from Lion foundry records Patrick Library. Contact Janice Miller for permission.	
http://www.scran.ac.uk/database/record.php?usi=000-000-498-269-C					

2		GD10/7/1/1/9. Illustrated Catalogue of examples of Ironworks executed by Lion Foundry. Photo Lucia Juarez taken from Lion foundry records Patrick Library. Contact Janice Miller for permission.
3		Plaza Constitution cast iron window. Photo: Lucia Juarez. With permission to use.

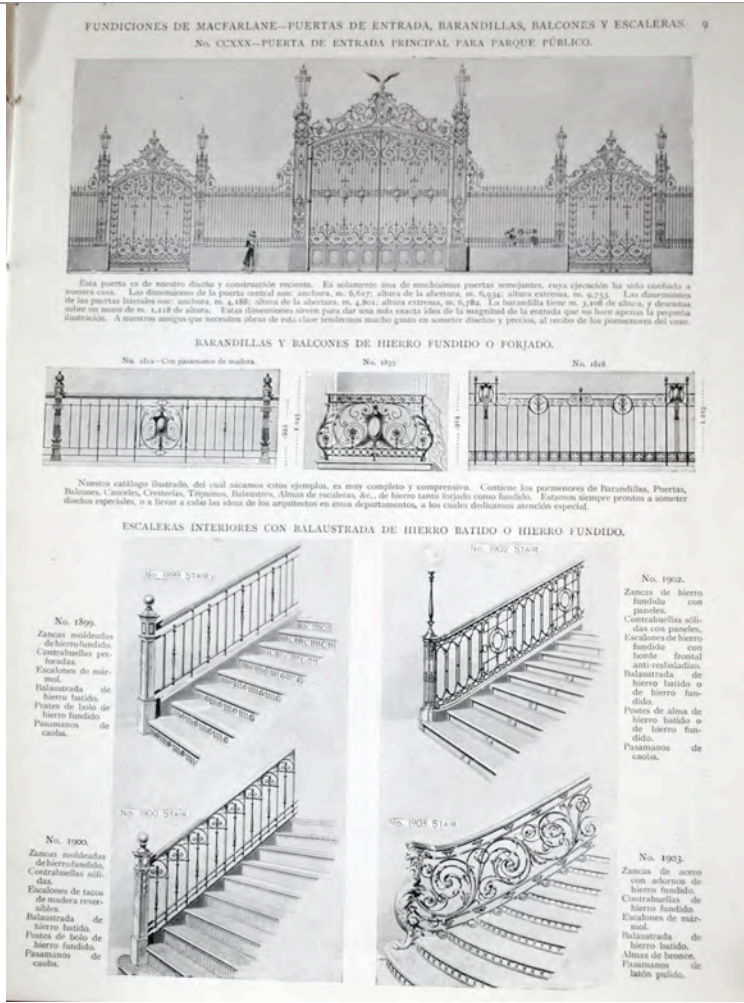
4		Station in the Alexander Findlay Co. Workshop before shipping to Argentina. Image U51/14/280 (7) taken by Lucia Juarez. Contact Wiebke McGhee from North Lanarkshire Archives for permission.
5		Structure installation. Image U51/14/146 (11). Contact Wiebke McGhee from North Lanarkshire Archives for permission.

6		Plaza Constitucion Station. Alexander Findlay Co. structure in use. Photo: Lucia Juarez. My permission to use.
<i>Additional resources</i>		
<i>Archives</i>		
WILLIAM PATRICK LIBRARY For lion foundry records: Janice Miller, Archivist (Janice.Miller@eastdunbarton.gov.uk) Archives & Local Studies, East Dunbartonshire Leisure & Culture Trust 2-4 West High Street Kirkintilloch G66 1AD t. 0141 777 3142 , f. 0141 777 3140 e. archives@eastdunbarton.gov.uk w. http://www.edlc.co.uk NORTH LANARKSHIRE ARCHIVES See: Wiebke McGhee (McGhee Wiebke McGheeWi@culturenl.co.uk) North Lanarkshire Archives		

2.4.3 San Martin Park

Name	Parque San Martín	Type	Park	Year	1908
Location	Mendoza, Argentina				
Maker	Walter Macfarlane (main gate), J. & A Law (bandstand)				
Data	Gates, railings made by Walter Macfarlane arrived in Buenos Aires, Argentina in 1908, in forty-six packages on board the steamer called "Belgrano" and taken to Mendoza in six wagons. ¹⁶				
Ref	Image	Source			
1		Walter Macfarlane gates at main entrance to San Martín Park. The most important Macfarlane gate. Photo by Patricia Favre, with permission to reproduce.			

¹⁶ P. Favre, *Escenarios del Poder. La Escultura en el Parque General San Martín* (Mendoza, 2015)

2	 FUNDICIONES DE MACFARLANE—PUERTAS DE ENTRADA, BARANDILLAS, BALCONES Y ESCALERAS. 9 No. CCXXX—PUERTA DE ENTRADA PRINCIPAL PARA PARQUE PÚBLICO. Esta puerta es de nuestro diseño y construcción reciente. Es solamente una de muchísimas puertas semejantes, cuya ejecución ha sido confiada a nuestra casa. Las dimensiones de la puerta central son: anchura, m. 6,47; altura de la abertura, m. 8,33; altura extrema, m. 9,75. Las dimensiones de las puertas laterales son: anchura, m. 4,18; altura de la abertura, m. 4,86; altura extrema, m. 6,28. La barandilla tiene m. 3,08 de altura, y distancia entre sus moles de m. 1,18 de altura. Estas dimensiones sirven para dar una idea exacta de la magnitud de la entrada que no hace aguas la pequeña ilustración. A nuestros amigos que necesiten obras de esta clase tendremos mucho gusto en someter diseños y precios, al recibo de los señores del caso. BARANDILLAS Y BALCONES DE HIERRO FUNDIDO O FORJADO. No. 1891—Con pasamanos de madera. No. 1892 No. 1893 Nuestro catálogo ilustrado, del cual sacamos estos ejemplos, es muy completo y comprensivo. Contiene los señores de Barandillas, Puertas, Balcones, Cascos, Cenefas, Trazados, Balustradas, Alas de escaleras, etc., de hierro tanto forjado como fundido. Estamos siempre prontos a someter diseños especiales, o a llevar a cabo los ideas de los arquitectos en sus departamentos, a los cuales dedicamos atención especial. ESCALERAS INTERIORES CON BALAUSTRADA DE HIERRO BATIDO O HIERRO FUNDIDO. No. 1899. Zancos moldados de hierro fundido. Contrahuellas perforadas. Escalones de mármol. Balustrada de hierro batido. Puntos de bala de hierro fundido. Pasamanos de caoba. No. 1900. Zancos moldados de hierro fundido. Contrahuellas sólidas. Escalones de mármol. Balustrada de hierro batido. Puntos de bala de hierro fundido. Pasamanos de caoba. No. 1901. Zancos de hierro fundido con pasamanos. Contrahuellas sólidas con pasamanos. Escalones de hierro fundido con baste frontal anti-resbaladizo. Balustrada de hierro batido o de hierro fundido. Puntos de alma de hierro batido o de hierro fundido. Pasamanos de caoba. No. 1902. Zancos de acero con adornos de hierro fundido. Contrahuellas de hierro fundido. Escalones de mármol. Balustrada de hierro batido. Alas de bronce. Pasamanos de latón pulido.	Page 9. Walter Macfarlane Spanish Catalogue supplement. Courtesy and copyright of the Ironbridge Gorge Museum Trust
3		Bandstand made by J& A Law from Glasgow, located in central area of San Martin Park (now demolished). Courtesy of Patricia Favre, with permission to use it.
4		

<i>Additional resources</i>	
<i>Archives</i>	
Spanish Walter Macfarlane catalogue in: Ironbridge library. Contact: Joanne Smith Museum Registrar Tel 01952 43 2141 or 01952 435 900 email: joanne.smith@ironbridge.org.uk The IRONBRIDGE GORGE MUSEUM TRUST Coalbrookdale Telford Shropshire TF8 7DQ Tel 01952 435 900 Fax 01952 435 999 www.ironbridge.org.uk	

2.4.4 3 de Febrero Park

<i>Name</i>		Bosques de Palermo and Zoo (both part of park <i>3 de Febrero</i>)	<i>Type</i>	Park	<i>Year</i>	1888 (aprox)
<i>Location</i>		Ciudad Autónoma de Buenos Aires, Argentina				
<i>Maker</i>		Walter Macfarlane (zoo bandstand), George Smith from Sun Foundry (gazebo in Palermo)				
	<i>Ref</i>	<i>Image</i>			<i>Source</i>	
	1				Macfarlane Bandstand in Buenos Aires Zoo. Photo: Lucia Juarez. Permission granted to reproduce.	
See also: http://abe.revues.org/821						

	2 	Back cover page of Walter Macfarlane Spanish Catalogue supplement. Zoo bandstand at Palermo Park, Buenos Aires is arrowed Courtesy and copyright of the Ironbridge Gorge Museum Trust.

3		George Smith & Co. gazebo at Palermo Park. Photo: Lucia Juarez. Permission granted to reproduce.
4		George Smith & Co. gazebo at Palermo Park. Photo: Old post card. Owner Lucia Juarez. Permission granted to reproduce.
Additional resources		
Archives		
Spanish Walter Macfarlane catalogue in: Ironbridge library.		

Contact: Joanne Smith

Museum Registrar

Tel 01952 43 2141 or 01952 435 900

email: joanne.smith@ironbridge.org.uk

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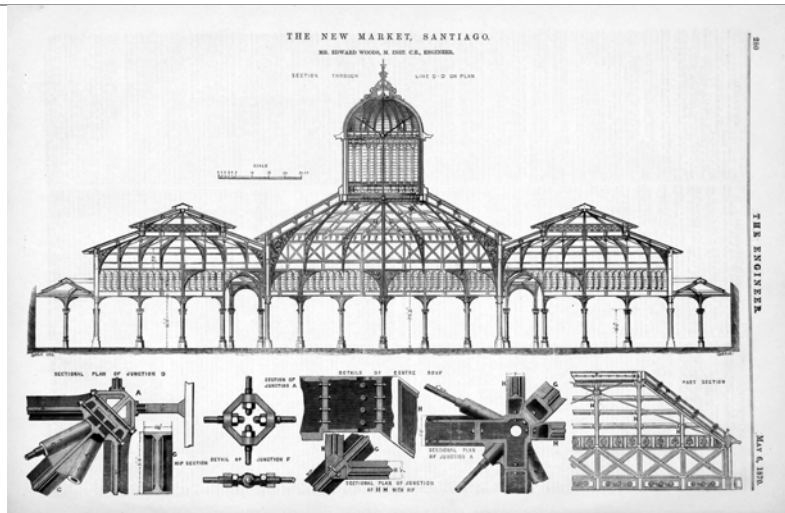
2.5 Chile

2.5.1 Market of Santiago

<i>Name</i>	Market of Santiago	<i>Type</i>	Market	<i>Year</i>	1869 - 1872
<i>Location</i>	Santiago de Chile, Chile				
<i>Maker</i>	R Laidlaw & Sons, Glasgow (designed by Charles Driver)				
<i>Data</i>	National monument since 1984. Laidlaw erected the whole structure before shipping. The shipping included some spare pieces in case of breakages in transit or erection. Only the roof used nearly 34.000 bolts. ¹⁷				
<i>Ref</i>	<i>Image</i>				<i>Source</i>

¹⁷ P. Guedes, 'El Mercado Central de Santiago antes de su Embarque a Chile / Santiago Market before it sailed to Chile,' *ARQ*, no. 64 (2006)

1



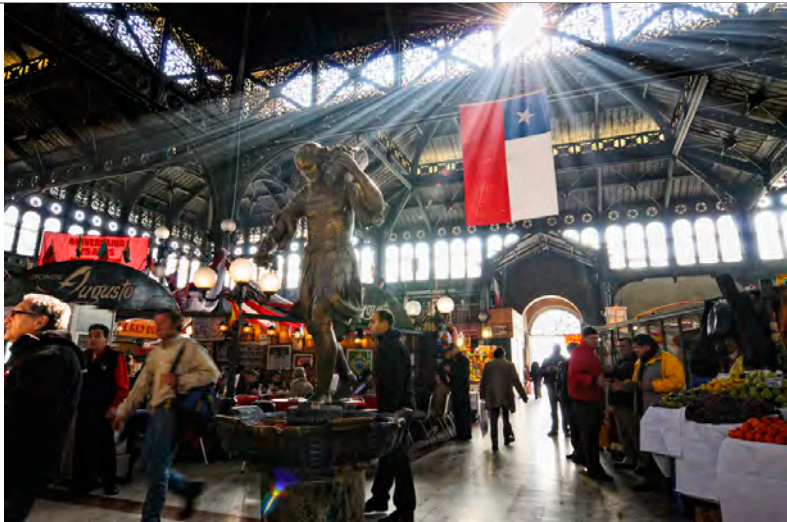
The Engineer
(6/05/1870)

2



RIBApix

<https://www.architecture.com/image-library/RIBApix/image-information/poster/central-market-santiago-view-of-the-prefabricated-structure-being-assembled-in-britain-before-shipme/posterid/RIBA13850.html>

3		Photo: Rodrigo Vega
https://www.flickr.com/photos/rodrigovega/6211430453		
4		Getty
http://www.gettyimages.co.uk/detail/photo/central-market-santiago-chile-high-res-stock-photography/452781469		
<i>Additional resources</i>		
<i>Archives</i>		

2.6 India

2.6.1 Mysore

Name		Mysore	Type	Palace	Year	1912
Location		Mysore, India				
Maker		Walter Macfarlane				
	Ref	Image			Source	
1					Gigapan	
http://gigapan.com/gigapans/2372						
2					Mysore Palace Gov	
http://www.mysorepalace.gov.in/Marriage_Pavillion.htm						

3		"Concert Mysore Palace" by Rajachandra Licensed under Public Domain via Commons
	https://commons.wikimedia.org/wiki/File:Concert_Mysorepalace.jpg#/media/File:Concert_Mysorepalace.jpg	
	4	

<i>Additional resources</i>
<i>Archives</i>

2.7 France

2.7.1 Gare du Nord

<i>Name</i>	Gare du Nord	<i>Type</i>	Railway station	<i>Year</i>	1861 - 1865
<i>Location</i>	Paris, France				
<i>Maker</i>	I think the roof was made by P. & W. MacLellan & Co / but the stamps on the columns are from Alston & Gourlay's ironworks, Glasgow				
<i>Data</i>	Regarding the year: 1862 date on stamp in column.				
<i>Ref</i>	<i>Image</i>			<i>Source</i>	

1		"Paris Nord Platform" by WiNG - Own work. Licensed under CC BY-SA 3.0 via Commons
https://commons.wikimedia.org/wiki/File:Paris_Nord_Platform.jpg - /media/File:Paris_Nord_Platform.jpg		
2		
"Gare du Nord Panoramia" by bodoklecks - own photo. Licensed under CC BY-SA 3.0 via Commons https://commons.wikimedia.org/wiki/File:Gare_du_Nord_Panoramia.JPG#/media/File:Gare_du_Nord_Panoramia.JPG		
3		Gare Du Nord © Historic Environment Scotland/ Mark Watson

4		The cast iron columns supporting the roof. Photographed in the yard of Alston and Gourlay, ironfounders. there are three MacLellans in the view. Duncan (left) and Peter (right) are leaning on the casting, while Walter is to Peter's right. ¹⁸. Forwarded by Dr. David Mitchell via email. Permission to be checked.
<i>Additional resources</i>		
Available for purchase: http://www.dreamstime.com/royalty-free-stock-photos-inside-view-paris-north-station-gare-du-nord-france-april-april-building-was-designed-jacques-hittorff-image38376528		
<i>Archives</i>		
P & W MacLellan Ltd records held by (ref: UGD153) Moir Rankin Email: dutyarch@archives.gla.ac.uk Tel: +44 (0)141 330 5515		

¹⁸ M. Moss and J. Hume, 'Bridge Building Achievements of P. & W. MacLellan & Co., (1850–1914),' *The International Journal for the History of Engineering and Technology*, vol. 72.

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Appendix B

B.1 Published Papers

ABE Journal

Architecture beyond Europe

5 | 2014 :
Ingénieries innovantes ?
Articles

Documenting Scottish Architectural Cast Iron in Argentina

LUCÍA JUÁREZ

Résumés

Deutsch English Español Français Italiano

Dieser Artikel erläutert die laufende Dokumentation gusseiserner Gegenstände und Erzeugnisse, die in Argentinien zu finden sind, aber in den drei wichtigsten Gießereien Schottlands - Carron Company, Saracen (Macfarlane) und Lion – hergestellt wurden. Der überwiegend auf Recherchen in schottischen Archiven basierende Artikel ist Teil eines größeren Forschungsprojekts der Universität Edinburgh in Kooperation mit der öffentlichen Agentur Historic Scotland unter dem Titel „Handelsnationen: Architektur, informelle Reiche und die schottische Gusseisenindustrie in Argentinien“ (Trading Nations: Architecture, Informal Empire, and the Scottish Cast Iron Industry in Argentina).

Argentinien erlebte die intensivste Phase seines Bevölkerungswachstums zwischen 1880 und 1930. Der hauptsächlich der europäischen Immigration geschuldete, markante demographische Wandel ging Hand in Hand mit dem tiefgreifendsten Urbanisierungsprozess der Geschichte des Landes. Für viele der zwischen den 1850er und 1930er Jahren errichteten Gebäude wurde Eisen verwendet, insbesondere vorgefertigtes Gusseisen für ganze Gebäude, tragende Teile oder Bauschmuck. Die Gusseisenelemente wurden per Katalog bestellt und waren in Europa bereits weit verbreitet, in Argentinien hingegen im Grunde noch unbekannt. Gusseisen wurde ausschlaggebend für den Modernisierungsprozess.

Zu dieser Zeit erfreute sich Schottland einer Führungsstellung in der vorgefertigte Eisenteile produzierenden Industrie. In Lateinamerika führte Argentinien schnelle Industrialisierung zu wachsendem Reichtum und die strategische Bedeutung nationaler britischer Interessen machte das Land zu einem wichtigen Markt für schottische Eisenwaren.

Einige der in Schottland hergestellten und per Schiff nach Argentinien gekommenen Gusseisenelemente sind noch erhalten und Teil einer transnationalen Architektur, die heute für ein gemeinsames und noch in seinem vollen Umfang zu entdeckendes Kulturerbe steht. Dieser Artikel identifiziert einige der Erzeugnisse aus den Gießereien Carron, Saracen und Lion, die zu den wichtigsten Eisenschmelzwerken für die Entwicklung von architektonischem Gusseisen in Schottland zählen.

This article will consider the process of documenting cast iron pieces and products located in

Argentina, but manufactured by three of Scotland's most important foundries: Carron Company, Saracen (Macfarlane) and Lion. It draws on work done mainly in Scottish archives, and is part of a more extensive project being undertaken at the University of Edinburgh in conjunction with Historic Scotland, entitled "Trading Nations: Architecture, Informal Empire, and the Scottish Cast Iron Industry in Argentina".

Argentina underwent its most intense period of population growth between 1880 and 1930. Owing mainly to European immigration, this drastic demographic change was accompanied by the most intensive urbanization process in the country's history. Many of the buildings erected between the 1850s and 1930s used iron, especially prefabricated cast iron, for whole buildings, structural parts, or ornamentation. The cast iron elements, sold via trade catalogues, had been widely used in Europe, but were virtually unknown in Argentina. Cast iron became crucial to the process of modernization.

At the time, Scotland enjoyed a commanding position in the pre-fabricated ironwork industry. In Latin America, Argentina's rapid industrialization, increased wealth, and strategic importance to British national interests made the country a significant market for Scottish ironwork.

Some of these cast iron elements manufactured in Scotland and shipped to Argentina still survive, and are part of a transnational architecture that today represents a shared heritage yet to be fully revealed. This paper identifies some of the products made at the Carron, Saracen, and Lion foundries, among the most important iron foundries in architectural cast iron development in Scotland.

Este artículo analiza el proceso de documentación de las piezas y productos de hierro fundido localizados en Argentina pero fabricados por tres de las mayores empresas de fundición de Escocia: Carron Company, Saracen (Macfarlane) y Lion. El artículo se basa en datos procedentes principalmente de los archivos escoceses, y forma parte de un proyecto más amplio emprendido por la Universidad de Edimburgo junto con *Historic Scotland*, titulado «Comercio entre naciones: la arquitectura, el imperio informal y la industria escocesa del hierro fundido en Argentina Trading» (Nations: Architecture, Informal Empire, and the Scottish Cast Iron Industry in Argentina).

El periodo de mayor crecimiento demográfico de Argentina va de 1880 a 1930. Debido sobre todo a la inmigración europea, esta drástica transformación demográfica se acompañó del proceso de urbanización más intenso de su historia. Muchos de los edificios erigidos entre las décadas de 1850 y 1930 utilizaban hierro, y en especial el hierro fundido prefabricado, para edificios completos, partes estructurales, y objetos decorativos. Los elementos de hierro fundido, vendidos por catálogo, eran muy utilizados en Europa pero casi desconocidos en Argentina. El hierro fundido se convirtió en un elemento crucial del proceso de modernización.

Por entonces, Escocia gozaba de una posición preponderante en el sector del hierro prefabricado. En Latinoamérica, la rápida industrialización de Argentina, el crecimiento económico y la importancia estratégica del país para los intereses británicos lo convirtieron en un mercado importante para la fundición escocesa.

Algunos de estos vestigios de hierro fundido fabricados en Escocia y enviados a Argentina aún sobreviven en la actualidad, y forman parte de la arquitectura transnacional que representa un patrimonio común que aún no se conoce plenamente. Este artículo identifica algunos de los productos fabricados en Carron, Saracen, y Lion, las empresas de fundición de hierro más importantes de Escocia.

Cet article évoque le projet de documentation d'objets et produits en fonte se trouvant en Argentine, mais fabriqués par trois des plus importantes fonderies d'Écosse : Carron Company, Saracen (Macfarlane) et Lion. S'appuyant sur un travail effectué majoritairement dans des fonds d'archives conservés en Écosse, l'étude s'inscrit dans un projet de recherche plus large mené par l'université d'Edimbourg en collaboration avec l'agence publique *Historic Scotland* sous le titre « Nations commerçantes : l'architecture, l'empire informel et l'industrie de la fonte écossaise en Argentine » (Trading Nations: Architecture, Informal Empire, and the Scottish Cast Iron Industry in Argentina).

Entre 1880 et 1930, l'Argentine a vécu sa période de croissance démographique la plus intense. Principalement dû à l'immigration européenne, ce changement remarquable a été accompagné par l'urbanisation la plus intense de l'histoire du pays. Entre les années 1850 et les années 1930, le fer, et notamment les éléments préfabriqués, a été utilisé pour la construction de nombreux bâtiments dans leur totalité, pour des parties portantes ou pour des décors architecturaux. Les éléments en fonte s'achetaient par correspondance et avaient largement été utilisés en Europe, mais ils demeuraient pratiquement inconnus en Argentine. Ainsi, la fonte devint un facteur déterminant dans le processus de modernisation.

À cette époque, l'Écosse se réjouissait de sa position dominante dans l'industrie de la fonte préfabriquée. En Amérique latine, l'industrialisation rapide de l'Argentine augmentait les richesses et l'importance stratégique pour les intérêts nationaux britanniques et faisaient du pays un marché important pour la ferronnerie écossaise.

Certains de ces éléments en fonte fabriqués en Écosse et transportés en bateau vers l'Argentine existent encore et font partie d'une architecture transnationale représentant aujourd'hui un héritage commun dont l'ampleur attend d'être révélée. Cet article identifie

certaines des produits fabriqués par les fonderies Carron, Saracen ou Lion, fonderies comptant parmi les plus importantes pour le développement de fonte architecturale en Écosse.

Questo articolo tratta del processo di documentazione e censimento di prodotti siderurgici in ghisa usati per l'edilizia in Argentina, ma fabbricati da tre delle più importanti fonderie scozzesi: Carron Company, Saracen (Macfarlane) e Lion. Le fonti provengono principalmente da archivi scozzesi e il progetto fa parte di un'opera più vasta intrapresa dall'università di Edimburgo in collaborazione con *Historic Scotland*, l'agenzia governativa scozzese responsabile dei monumenti storici, e intitolato « Nazioni commercianti: architettura, impero informale e industria siderurgica scozzese in Argentina » (Trading Nations: Architecture, Informal Empire, and the Scottish Cast Iron Industry in Argentina).

Tra il 1880 e il 1930 l'Argentina ha conosciuto il suo più intenso periodo di crescita demografica, dovuto soprattutto all'immigrazione europea. Questo drastico cambiamento demografico è stato accompagnato dal processo di urbanizzazione più intenso nella storia del paese. Il ferro, in particolare i pezzi prefabbricati in ghisa, entrava nella fabbricazione di molti edifici eretti tra la metà dell'Ottocento e gli anni Trenta ed era usato per interi edifici, per parti specifiche della struttura o per la decorazione. Gli elementi in ghisa, venduti tramite cataloghi commerciali, erano già ampiamente usati in Europa, ma erano praticamente sconosciuti in Argentina. La ghisa divenne cruciale per il processo di modernizzazione.

All'epoca la Scozia godeva di un posto di primo piano nell'industria dei prefabbricati siderurgici. All'interno dell'America latina la rapida industrializzazione dell'Argentina, il suo benessere crescente e l'importanza strategica rispetto agli interessi della Gran Bretagna fecero del paese un mercato molto importante per la siderurgia scozzese.

Alcuni di questi elementi siderurgici fabbricati in Scozia e inviati in Argentina esistono ancora oggi e fanno parte di un'architettura trans-nazionale che oggi rappresenta un patrimonio culturale comune ancora da svelare nella sua interezza. Questo articolo si concentra su alcuni dei prodotti delle fonderie Carron, Saracen e Lion, tre delle principali fonderie scozzesi per quanto riguarda lo sviluppo della siderurgia architettonica.

Entrées d'index

Index de mots-clés : fonte, commerce du fer, fer, Carron Company, fonderie, Lion Foundry, archives d'entreprise, Macfarlane Saracen Foundry

Index by keyword : cast iron, iron, iron trade, foundry, Carron Company, corporate archives, Lion Foundry, Macfarlane Saracen Foundry

Indice de palabras clave : hierro, fundición, comercio del hierro, archivos de empresa, Carron Company, Lion Foundry, Macfarlane Saracen Foundry

Schlagwortindex : Gusseisen, Eisen, Eisenhandel, Gießerei, Unternehmensarchive, Carron Company, Lion Foundry, Macfarlane Saracen Foundry

Parole chiave : ghisa, ferro, commercio del ferro, fonderia, archivi d'impresa, Carron Company, Lion Foundry, Macfarlane Saracen Foundry

Index géographique : Royaume-Uni, Argentine, Écosse

Notes de l'auteur

This project is funded by the Arts and Humanities Research Council (UK) in conjunction with Historic Scotland as part of the Collaborative Doctoral Scheme administered by Research Councils UK.

Texte intégral

Introduction

¹ Argentina, from its earliest years as a newly independent nation, made an effort to incorporate technical, scientific, and cultural knowledge and capital resources from Europe in its development. The National Constitution of 1853 strengthened that intention. It promoted European immigration, free trade, industrial enterprise, the construction of railways and canals, settlement of public lands, the introduction and establishment of new industries, and the importation of foreign capital.¹

² One of the consequences of these constitutional policies was a steep increase in population growth. In 1869, the national census recorded a population of 1,830,000

inhabitants. By 1895, this number had increased by 2.2 times, and the population reached 7,904,000 in 1914. The majority were Italians, followed by Spaniards and French; Germans and British accounted for the minority. Nevertheless, in 1930, the number of British reached a peak of 60,000. That made it the largest British expatriate community outside the British Empire, excluding the United States.² Even though the British were a minority group, they wielded considerable influence in Argentina.

3 Argentinian national policy provided an arena in which the British could flourish. Free trade, industry, railways and canals, investment, and land settlement were their areas of expertise, and the means by which Britain could expand its influence. At that time, Great Britain commanded the world's most powerful empire. It led in the capital markets as well as in the most important industries – including iron – that Argentina needed, for continued development. Although not a formal colony of Great Britain, Argentina was certainly enmeshed in its economic influence, resulting in an 'informal' imperial relationship.³ The railways and ports, which contributed greatly to Argentina's urban development, also encouraged a co-dependent client-state relationship. Recent research has shown that the construction of extensive railway networks across Argentina's vast territory, which required a huge quantity of iron, enabled Britain to extend and consolidate imperial power.⁴

4 This informal imperial relationship, based on economic dependency, is thus one of the keys to understanding the massive importation of British iron into Argentina during the late 19th-and early 20th-centuries.

5 As part of the same imperial network, iron buildings were built for or by British firms connected to British markets supplying the Empire with agrarian products from the meat-packing, wool, sugar, and grain industries, to name a few. The companies that processed these goods also used British cast iron machinery, like the equipment manufactured by the Scottish company Mirrless Watson Co.⁵

6 Likewise, firms connected to the British Empire hired British professionals, who relied on British shipping for British materials. Their enterprises were financed by British banks,⁶ contributing to a tight network that helped to expand the empire. Iron was closely involved in this dynamic, because even the ships carrying iron were made of iron. Argentinean freight travelled by trains drawn by iron locomotives like those made for the Scottish firm Great North of Scotland Railways.⁷

7 Iron was essential, not only for railway lines and stations, or the development of ports and bridges. It was also crucial for new urban and sanitary networks, such as drinking water, gas, and electricity; new public spaces like parks; and new public and private buildings including government buildings, hospitals, libraries, schools, factories, shops, department stores, apartment buildings, and even palaces. An enormous variety of products could be made of cast iron. The flexibility of the material and the expertise of the Scottish foundries allowed them to make "almost anything."⁸

8 Scottish iron foundry companies were able to contribute to Argentina's development by shipping a wide range of elements. For example, Alexander Findlay & Co. made iron and steel structures for Plaza Constitución Station and bridges in Bahía Blanca, Sir William Arrol was commissioned to provide railway bridges between Tucumán and Salta.⁹ Arrol Brothers supplied pedestrian bridges for many railway stations in Buenos Aires province such as Núñez, Martínez, Casilda, Coghlan, Vicente López, Wilde, Olivos, Tolosa, and Rivadavia, among others.¹⁰ Andrew Handyside¹¹ made cast iron fountains, as well as the railway station in San Miguel de Tucumán. Water and sewage supplies used cast iron in different forms. Glenfield Hydraulics Engineers provided a hydraulic system for Buenos Aires' water supply,¹² while cast iron pipes for water and sewage were provided by many different Scottish companies, such as David King, Forth & Clyde, Shaw & McInnes, DY Stewart & Co., and Thomas Edington & Sons.¹³ Moreover, although less important in terms of iron-import tonnage to Argentina, architectural cast iron, such as

bandstands, gates, railings, lamps and fountains, supplied by the Carron, Macfarlane, and Lion foundries, had a huge influence on the Argentinian urban landscape, being so visible and decorative.

- 9 Trade catalogues and company records have helped to identify some of these elements in Argentina, but much research remains to be done to reveal this invaluable heritage shared by two countries.¹⁴ Because this issue of *ABE* is dedicated to business archives, primary sources taken from Carron, Macfarlane, and Lion records and trade catalogues found in Scotland have been used. Secondary sources collected in Scotland and Argentina have helped to set up the historical context in which Scottish cast iron elements were designed, created, and exported in the late 19th and early 20th centuries.

Argentina's iron consumption

- 10 Argentina's growth spurt led to an increase in iron consumption, because the metal was an essential component in the development of the country's infrastructure. In Buenos Aires alone, in 1912, 3,000 buildings were under construction, and the majority used iron and steel in their structures.¹⁵ The same year, *The Times* commented on the rapid rate of Argentina's development and its demand for iron and steel.¹⁶ In 1913, Argentinian iron consumption reached a peak of 200,000 tons – more than double the average consumed in the rest of the world.¹⁷
- 11 Since Argentina could not develop an iron industry of its own, at least not with the speed, quality and variety that it needed for its rapid expansion, it had to import all iron elements from abroad, mainly from Great Britain, where iron was “the most important staple manufacture of the United Kingdom.”¹⁸ Scotland, in particular, was a significant supplier. The city of Glasgow, one of its principal centres of industry, was considered “the seat of great iron manufacture.”¹⁹
- 12 Even though Argentina had iron ore of its own, dependence on imports of British fuel and British raw iron, along with the high cost of transportation (also in British hands, since their companies owned 75% of the railway network)²⁰ and fierce competition from British and other European iron companies, made it almost impossible for the local iron industry to develop.²¹ Import policies at that time provided no incentive, either, because the iron and steel used for railways were duty free. Meanwhile, iron ingots used by local foundries to manufacture their own products were subjected to a 5% value-added tax.²²
- 13 A few local foundries, such as Don Silvestre Zamboni or Pedro Vasena, were able to acquire good quality iron, but supply was not enough to meet Argentina's demand. The Scottish industry operated on a much vaster scale, as the following figures show. In 1891 there were more than two hundred foundries working on architectural cast iron in Glasgow,²³ as compared to only thirty-three in Buenos Aires, in 1892. ²⁴ By that time the United Kingdom was exporting more iron and steel to South America than it did to China, Japan, South Africa, Australia, Canada, or even India.²⁵
- 14 Although the use of cast iron in Argentina continued into the 1930s, the First World War dealt a great blow to the industry, not only hindering trade but also reducing the numbers of skilled molders.²⁶ After the war, Britain's hegemonic position in Argentina was threatened by competition from the United States.²⁷ In addition, most of the railway lines, to which British imperial influence in Argentina had been staked, were completed.

The significance of the Scottish cast iron industry

- 15 Iron had been used since ancient times. However, its significance increased sharply after 1707, when Abraham Darby began to use readily available coke, instead of the rapidly diminishing supplies of charcoal, for smelting iron in England. His innovation paved the way for the industrial revolution. Improvements in casting and techniques made it possible to mass produce precision cast iron parts cheaply and rapidly.²⁸
- 16 Darby's revolutionary techniques were transferred to Scotland with the foundation of Carron Company in 1759. Using skilled workers from Coalbrookdale, in England, it became the first ironworks in Scotland to use coke for smelting iron and the first one to produce iron on a major scale. It was also the first to cast decorative iron elements.²⁹ With the discovery of black-banded ironstone in 1801 and the invention in 1828 of the hot blast furnace, which considerably reduced fuel consumption, Scotland was set to produce the best quality iron quickly and for a competitive price. In addition, improvements to Scotland's transport network (railways and ships) helped to distribute Scottish iron to the market. All these factors guaranteed the prominence of the iron industry in Scotland and around the world.³⁰
- 17 Carron's success helped stimulate the early iron industry in Scotland. Foundries were prolific, prosperous, and innovative.³¹ They were the most extensive in the world, and were capable of producing very large quantities of the best quality iron.³²
- 18 It seems that a lack of distinction between the countries that form the United Kingdom means that Scotland's role in the development and expansion of the British Empire is often overshadowed by England's.³³ Similarly, the Coalbrookdale Company has enjoyed much more attention than the Scottish firms, even though it never matched the product diversity and range of the major Scottish firms.³⁴
- 19 At least Walter Macfarlane from the Saracen Foundry, has received fairer worldwide recognition. It was considered one of the most important architectural iron founders in the world. No other firm equalled the Saracen foundry in stature, quality, output, or global reach.³⁵ Macfarlane's cast iron elements can be found in India, Australia, Malaysia, Canada, and Greece, but also in Latin American countries such as Mexico, Chile, Brazil, and Argentina.³⁶

Architectural cast iron design and trade catalogues

- 20 Although it is difficult to describe a "Scottish" cast iron style, iron foundries employed the most prominent artists of the time to create their designs. The quality of the decoration and the influence of these artists were remarkable. Drawing books and catalogues became powerful tools for the promotion of cast iron architecture.
- 21 Carron Company was among the pioneers in developing trade catalogues and, by 1780, had already published a second edition of 100 pages.³⁷ By that time, it was quite clear that trade catalogues were effective sales aids, and British firms had increasingly adopted them. The advantages of trade catalogues were great and varied: they contained a record of the company's standard offerings, making it easier for customers to place orders, and minimizing risks of error; they offered customers a view of the wide variety of a company's products, including their dimensions, possible combinations, and assembly instructions;³⁸ they kept wholesalers and retailers around the world up-to-date with the latest designs;³⁹ they mitigated the need for face-to-face business and usefully extended the reach of British imperial commercial interests.⁴⁰ Trade catalogues became essential for the cast iron industry in the promotion and export of their products throughout the Empire and beyond.⁴¹
- 22 The popularity of trade catalogues grew considerably in middle of the 19th century, when the "Great Exhibition of the Works of Industry of all Nations" at the

Crystal Palace⁴² in 1851 exposed British products to new export markets. In addition, Applegath and Cowper's new press, capable of printing 5,000 pages per hour, made illustrated catalogues the most appropriate medium for promoting Britain's growing industries as they took their first steps towards globalization.⁴³

23 The chief draftsman of the iron foundry was usually in charge of preparing designs and illustrations for the trade catalogues. Carron Company, for example, employed the Scottish architects Robert and James Adam. Their classical principles strongly influenced the company style, which in turn influenced cast iron ornament in general.⁴⁴ Carron's incorporation of quality design and pattern work was essential to their success. The Adam brothers took great advantage of the low production costs of cast iron, compared to the intensive labour and costs of wrought iron, to create ironwork that was not merely functional but also decorative.⁴⁵ The publication in 1773 of Robert and James Adam's "The Works in Architecture" promoted the use of cast iron and was vital in making the neo-classical style popular.⁴⁶

24 Like Carron, Macfarlane commissioned the best architects, including Alexander "Greek" Thomson, James Boucher, and Charles Driver,⁴⁷ to provide ornamental designs for the company.⁴⁸ Interestingly, in 1893, William Cassells, Chief Draughtsman and Designer of Walter Macfarlane's at Saracen, was persuaded to take the same job position at Lion. James Leitch, who was responsible for many of the Art Nouveau designs, succeeded Cassells.⁴⁹

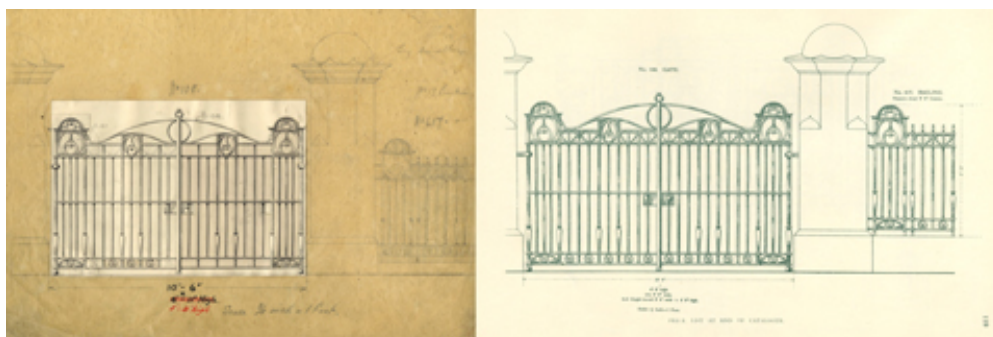
25 Macfarlane printed its first illustrated catalogue in 1857.⁵⁰ The company dedicated considerable effort to publishing high-quality illustrated catalogues containing a wealth of information – something that distinguished them from other manufacturers. They also published some sample books illustrating their cast iron products *in situ*, in different parts of the world, to show the extent of the manufacturing range.⁵¹

26 In general, there was a significant increase in the number of cast iron designs offered by iron foundries after 1850. For instance, Macfarlane, which offered hundreds of designs by 1865, listed thousands just ten years later.⁵² One of the most important catalogues for the quality and quantity of its designs is the sixth edition of Macfarlane's catalogue from 1882.⁵³

27 Lion's company records reveal how the company draftsmen re-used and recombined old designs to create new ones, sometimes adding new, more fashionable patterns. The variety was enormous, and the company also offered a bespoke service for its customers.

28 Preparing these catalogues for publication was time-consuming and meticulous. The drawings had to match the finished product exactly, so that customers could see what to expect. Because so much work went into editing the content, foundries tended to omit the publication year, most likely to prevent the catalogues from going out of date. As a result, it is often difficult to be certain of the year of publication.⁵⁴ They required so much preparation that as much as 17 years might elapse between printings. For example, at Lion, the third edition (**fig. 1**) of the trade catalogue printed in 1895 was not published until 1912.⁵⁵

Figure 1: Lion Foundry, Leitch's Gate design number 108.



Draft in working catalogue for the third edition (left) and trade catalogue, third edition (right).

Since the issue of the second edition [1895] we have, owing to the demand for our goods, found it necessary to make a considerable increase in variety of our Patterns, and hope the new designs herein illustrated will enable our numerous professional friends more freely to select and specify our manufactures of the high standard of which they have evidence in our former supplies. Our Works are conveniently situated and thoroughly equipped, thus giving every facility for the prompt execution of orders. We are also in position to prepare Special Designs, when required, and in these we are able to give our Customers the benefit of wide, practical, and artistic experience.⁵⁶

- 29 Iron foundries also produced catalogues, or other published material, written in other languages and using different measuring systems to reach customers around the world. It is not clear exactly when iron foundries started the practice, but in 1775 the ceramics manufacturer Josiah Wedgwood had already published trade catalogues in French, German, Italian, Dutch, and Russian.⁵⁷ The Carron, Macfarlane, and Lion foundries published catalogues, supplements and pamphlets in Spanish to support their trade with South American countries. Special publications were also distributed at local exhibitions. For instance, at the Buenos Aires exhibition of 1910, organizers expressed the “desirability of having their [exhibitors] trade catalogues and price lists in the Spanish language.”⁵⁸ Similarly, in 1931, the British Exhibition of Arts and Industry in Buenos Aires, in a promotional piece on the event in an Anglo-Spanish supplement of *The Engineer*, commented that all exhibitors had printed catalogues and pamphlets in English and Spanish.⁵⁹

The records and legacy in Argentina of the Carron, Saracen and Lion Foundries

- 30 Carron was the most prominent of this triumvirate of Scottish foundries. It was the first in Scotland, the first to work iron and ornamental cast iron on a large scale, and one of the first to publish trade catalogues. Almost every subsequent foundry had a direct or indirect relationship to it. Macfarlane was the most distinguished foundry, known worldwide for the high quality of its iron. Examples of Macfarlane ornamental work can still be found all over the world. Lion Foundry is known for the manufacture of the famous red British telephone box. Even though other companies also made the boxes, Lion had the biggest contract.
- 31 Documentation found in Carron Company (Edinburgh, National Records of Scotland) and Lion Foundry records (Kirkintilloch, William Patrick Library) and Macfarlane’s trade catalogues are an invaluable source of information and help when identifying and documenting Scottish cast iron in Argentina.
- 32 In South America, it seems that Buenos Aires was an important regional centre, where the agents of British companies handled orders from other Latin American countries. Documentation found reveals both the addresses of their offices and the names of those in charge. Many British architects or engineers also had subsidiary offices in Buenos Aires, while their headquarters and showrooms were most likely in London.

Carron Company

- 33 Foundry name: Carron Ironworks
Company name: Roebuck, Garbett & Caddell (1759), known as “Carron Company” since 1773 when it received a royal charter for guns

Operation dates: 1759–1982

Location: Falkirk, Stirlingshire, Scotland (**fig. 2**)

- 34 Significant architectural examples: ornamental cast iron balconies for New Town in Edinburgh (a Unesco World Heritage site); shelter at Clacton-on-Sea, bandstands, porches, cast iron shop fronts such as those on the Automobile Association building and Harvey Nichols in London, stoves, chimneys, and domestic appliances.

Figure 2: Aerial view of Carron ironworks in 1928.



Source: Edinburgh (Scotland), Royal Commission on the Ancient and Historical Monuments of Scotland.

- 35 Carron Company was founded in 1759 near Falkirk, in Stirlingshire, by two Englishmen (Samuel Garbett and John Roebuck) and a Scotsman (William Cadell). The site, close to the River Carron, was perfect, with easy access to coal and ironstone.⁶⁰ The men decided to smelt with coke (Abraham Darby's technique). The works expanded very rapidly, and at the end of 1761 the company had 500 employees.⁶¹ Early on, they specialized in cylinders and other parts for pumping engines; cast iron pipes for water supply, and nails and armaments, one of which, the carronade naval cannon, used in the Napoleonic Wars, made the company famous. It also produced ornamental railings, stoves, and grates, as well as cooking and domestic appliances.⁶²
- 36 Carron Company was one of the oldest iron foundry businesses in the world and occupied an important place in the industrial history of Great Britain. From the very beginning, the company tried to be up-to-date with new technologies, such as the water wheel or James Watt's steam engine. By implementing new inventions such as these, it became the first large-scale iron foundry. The famous "carronade" cannon and other armaments, sold in Britain and abroad,⁶³ helped the company transcend British borders and become prominent around the world – an achievement that encouraged further iron production in Scotland.⁶⁴
- 37 As early as 1814, the company already had 2,000 workers, making it the largest iron works in Europe.⁶⁵ From the 1870s onward, it underwent management changes and the enlargement of the works. Starting in the 1890s, the company developed its export trade, increasing it successfully until 1914.⁶⁶ The inter-war period was filled with uncertainty, and Carron tried to adapt to new markets⁶⁷ by focusing on domestic appliances.⁶⁸
- 38 By 1965, the company had moved into the manufacture of plastic baths. But failing to make a profit, it went bankrupt in 1982. The company still exists today under the name of "Carron Phoenix," producing stainless steel and plastic moulded sinks.⁶⁹

Carron company records

- 39 The National Records of Scotland, located in Edinburgh, hold an extensive collection from Carron Company. Although there are some gaps, it is possible to

follow the history of the firm from its origins in 1759 through its 200 years of operation. Part of the collection includes documents relating to armaments from the time of the Napoleonic Wars to the Second World War, as well as miscellany concerning bathroom ware, industrial and domestic heating, domestic appliances, and hydraulic and other engineering equipment. Records also exist relating to the Carron Shipping line and other subsidiary companies.⁷⁰

Carron Company in Argentina

40 It is not clear exactly when Carron's representative office in Buenos Aires opened, but documentation shows Carron Company used it to deal products throughout South America.

41 There are two Carron catalogues from 1913, written in Spanish to trade with South American countries. One of them contains electrical and gas appliances for cooking, stoves and fireplaces, iron elements for stables, farm implements like ploughs and harrows, iron structures such as bandstands, stairs, and canopies, gates and railings, and domestic utensils like pots and toasters. The other one focuses on ploughs and the pig iron bars that were used by Argentina's local foundries.

42 A 1924 company photo album called *Structural Book* and a trade catalogue published in 1938 (both in English) contain pictures of cast iron railings and a staircase made by Carron for Maple Company, an English furniture store in Buenos Aires (**fig. 3**).

Figure 3: Carron Company, Maple Company.



Left: Maple Company pictures in the *Structural Book*, 1924 (left) and Maple Company premises in Buenos Aires. Carron Catalogue, 1938 (right).

Source: Edinburgh (Scotland), National Records of Scotland, GD58/19/56 and GD58/16/97.

43 In 1928, a Carron representative named Fraser travelled to Argentina to evaluate the market and find a new sales agent for the company. He considered the River Plate to be a "large market," and noted that most of the company's "well-known competitors" had "abandoned all attempts at business."⁷¹ This was probably due to the fact that most of the British businesses were connected with the railway system, almost completed by that time.

44 Analyzing the market for domestic appliances, Fraser found these the most

suitable products to promote in Argentina.⁷² In his “sales visits,” he met with many import companies, stores, and also railway companies. As we mentioned earlier, trade catalogues were essential to him in conducting a transatlantic cast iron business. According to his reports:

Great Southern Railway: “meeting with Mr. Smith architect and Mr. McDonald, chief draughtsman...left catalogue...Mr. Smith promised to use Carron in next specifications.”

Central Cordoba and Retiro Station: “Saw chief engineer who recommended we send particular cooking apparatus for hotels”

Central Argentine Railway: “send catalogues to chief engineer department.”

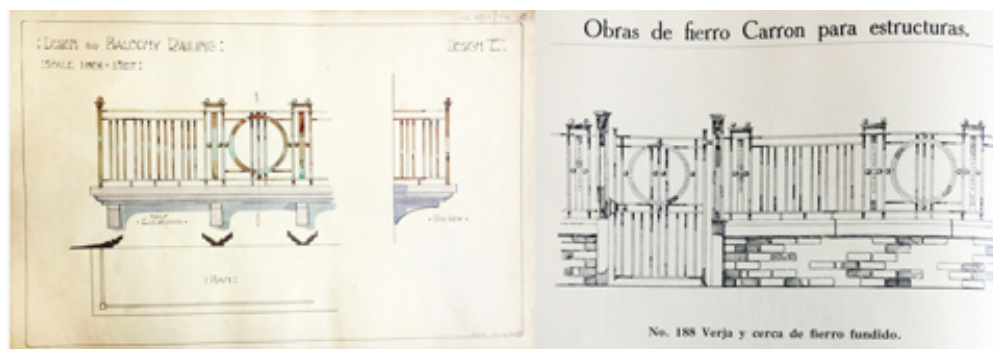
Pacific Railway: “Mr. Barton, acting chief mechanical engineer, promised to mention our name in next specifications. Left catalogue.”⁷³

45 These meetings also illustrate how the imperial network functioned. Many British engineers working on railways in Argentina developed projects and drawings, liaised with contractors, and ensured that work was undertaken according to their specifications. They also decided which firms would provide the materials, and tended to choose the British companies they knew and trusted.⁷⁴

46 Documentation outlining trademark specifications can also be found in the Carron records. From a trademark agreement of 1936, it can be seen that Buenos Aires was importing cast iron pipes from Carron Company. The document also gives us the name of the representative agent of Carron Company in Argentina: Horacio John Hale. It also demonstrates the common mistake of making no distinction between Scotland and England.⁷⁵

47 The original drawings used for the Carron catalogues, including the one written in Spanish, can be found in an Ornamental Drawing folder. The design drawing illustrates how it was possible to re-purpose the pattern for other uses. For example, the balcony-railing design illustrated below could also be used for other railings and gates (**fig. 4**).

Figure 4: Carron Company, design number 188 for gate and railings.



Ornamental drawings (left) and Trade catalogue for South America, 1930 (right).

Source: Edinburgh (Scotland), National Records of Scotland, GD58/16/42 and GD58/17/116/.

Saracen Foundry

48 Company name: Walter Macfarlane & Co

Foundry name: Saracen Foundry

Operation dates: 1850–1967

Location: Possilpark, Glasgow (**fig. 5**)

49 Significant architectural examples: buildings and shop fronts including the Cotton Exchange, G.H. Lee & Co. in Liverpool, Selfridges and John Barker & Co. in London, University College and Elvery & Co. in Dublin and the Coates building in Belfast; bridges including Exe Bridge, Rochester, New Southwark in England, Kelvin and

Union Bridges in Scotland; many shelters and bandstands (including a bandstand in Buenos Aires Zoo, Argentina); and railway stations such as Glasgow Cross and Central in Scotland. Significant works that were shipped abroad include the Summer Palace in Sipri, an arcade and verandas in Johannesburg, the Durbar Hall in Mysore, and banking premises in India. In South America, Macfarlane sold whole buildings, in Brazil:⁷⁶ Sao Paulo Station, the market in Manaus, José de Alencar Theatre in Fortaleza. To promote their business around the world, Macfarlane's catalogues featured some of these works, like the gate of San Martin Park in Mendoza, Argentina.⁷⁷

Figure 5: Aerial View of Saracen Foundry, 1928.



Source: Edinburgh (Scotland), Royal Commission on the Ancient and Historical Monuments of Scotland.

50 Founded in 1850 by Walter Macfarlane and James Marshall (Thomas Russell was later included as an associate), the Saracen Foundry is probably the most famous iron foundry in the world. Walter Macfarlane can be considered the key figure in architectural iron founding in Scottish history. No other company gained such a reputation or international profile.⁷⁸ Macfarlane thrived in the late 19th and early 20th centuries, when there was a great demand for highly ornamental cast iron.

51 By 1965 the company had become part of the Allied Ironfounders, and in 1966 was absorbed by Glynwed Group. A year later, the 80-acre foundry site at Possilpark closed.⁷⁹ In 1993 Macfarlane's company name was bought by a conservation and restoration company from Glasgow called Heritage Engineering, which continues to manufacture many of the original designs of the Saracen Foundry.⁸⁰

Macfarlane company records

52 It is not clear what happened to Macfarlane's company records. There is some likelihood that most of the records and patterns were burned in 1965 when Allied Ironfounders absorbed the company. Unfortunately, only fragments of Macfarlane business records survive in the National Records of Scotland. These are foremen's instruction books⁸¹ and the files from the company's dissolution.⁸²

Macfarlane in Argentina

53 Currently there is no evidence for the existence of any representative office or Macfarlane agent in Argentina or any other Spanish-speaking country. Even though the company had agents in other parts of the globe,⁸³ it is quite possible that there were none in Argentina, since one of the company's goals was to eliminate intermediaries and focus on direct sales.⁸⁴ Orders could have been placed directly, using information from catalogues, and sales were mainly managed from the London office.⁸⁵ As Macfarlane stated: "With the view of simplifying the ordering of our goods, we refer you to the 'Directions for ordering' on first page of each section."

54 A Macfarlane's trade catalogue supplement written in Spanish can be found in the Ironbridge Library. Because it is only a catalogue supplement, unfortunately, it is not clear if the catalogue itself was written in Spanish or in English. Likewise, the year of publication is unknown. The supplement focuses on theatre fixtures, such as the ones at the José de Alencar in Brazil, bandstands, gates, and railings. Macfarlane's bandstands, in particular, were very popular and page seven shows a variety of options for "Kioskos para música." (**fig. 6**) A Macfarlane bandstand, model number 249, can still be seen at Buenos Aires Zoo and has recently been restored.⁸⁶

Figure 6: Macfarlane Company, bandstands.





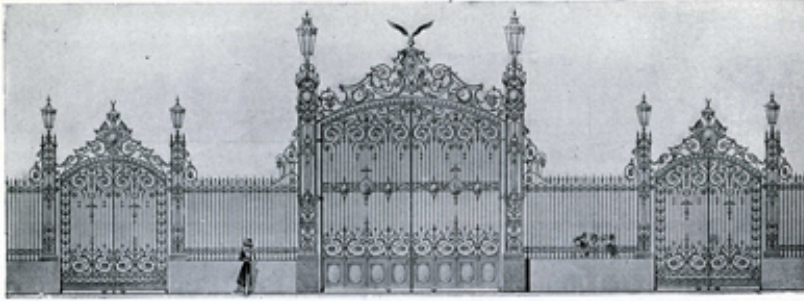
Supplement catalogue written in Spanish (above) and Macfarlane's bandstand number 249 in Buenos Aires Zoo (below).

Source: Shropshire (England), Ironbridge Gorge Museum Trust Library and Lucía Juárez.

55

In the same Macfarlane Spanish supplement, page 9 shows a gate as an example for a park entrance: “this gate was designed and built recently by us...” In fact, this particular gate is the one located in San Martín Park in Mendoza (**fig. 7**). It is used as an example in other Macfarlane catalogues.

Figure 7: Macfarlane Company, gate at San Martín Park, Mendoza, Argentina.



Esta puerta es de nuestro diseño y construcción reciente. Es solamente una de muchísimas puertas semejantes, cuya ejecución ha sido confiada a nuestra casa. Las dimensiones de la puerta central son: anchura, m. 6,617; altura de la abertura, m. 6,934; altura extrema, m. 9,753. Las dimensiones de las puertas laterales son: anchura, m. 4,188; altura de la abertura, m. 4,866; altura extrema, m. 6,784. La barandilla tiene m. 3,108 de altura, y descansa sobre un muro de m. 4,118 de altura. Estas dimensiones sirven para dar una más exacta idea de la magnitud de la entrada que se hace apenas la pequeña ilustración. A nuestros amigos que necesiten obras de esta clase tendremos mucho gusto en someter diseños y precios, al recibo de los perenneros del caso.



Catalogue supplement written in Spanish (above) and the same gate in Macfarlane's examples of architectural ironwork (below).

Source: Shropshire (England) Ironbridge Gorge Museum Trust Library and Stirling (Scotland), Scottish Ironwork Foundation.

56

Other examples of Macfarlane's gates and railings can be identified in Argentina, namely, in Buenos Aires, in the Palacio de las Aguas Corrientes (Macfarlane also designed the caryatids on the facade),⁸⁷ and in the Depósito Caballito.⁸⁸ In other provinces, such as Tucumán, Macfarlane made the entrance to Sagrado Corazón School (**fig. 8**).

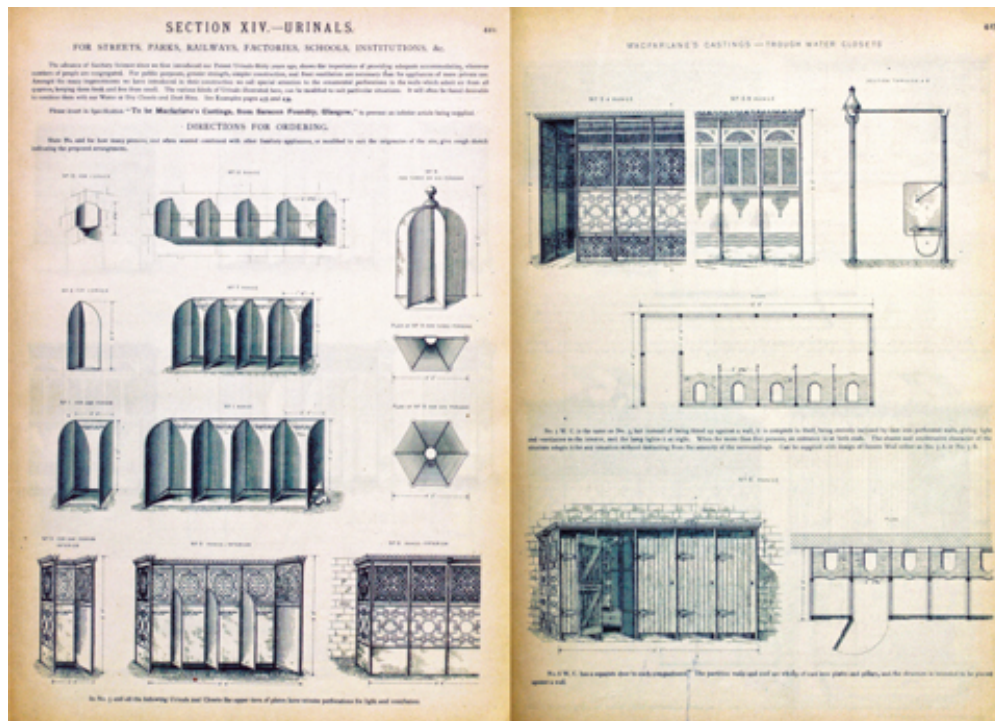
Figure 8: Macfarlane, Sagrado Corazón School gate.



WALTER MACFARLANE AND CO., *Illustrated catalogue of Macfarlane's castings*, sixth edition, Glasgow, 1882, vol. 1, design number 461 and Source: Lucía Juárez.

- 57 Similarly, in the Belgrano railway station in Córdoba, columns, railings, and terminals made by Macfarlane can be identified.⁸⁹ Other Macfarlane elements can be found in other Argentinian railway stations. For example, a Macfarlane cast iron urinal – the height of fashion in sanitary products at the time – can still be seen in Iraola and Coronel Vidal railway stations in Buenos Aires province (**fig. 9**).⁹⁰

Figure 9: Macfarlane company, urinals.



Source: SCOTTISH IRONWORK FOUNDATION (ED.), *Macfarlane's Architectural Ironwork*, Balerno: Harlaw Heritage, 2006, p. 421, 427.

Figure 10: Macfarlane company, Urinals.



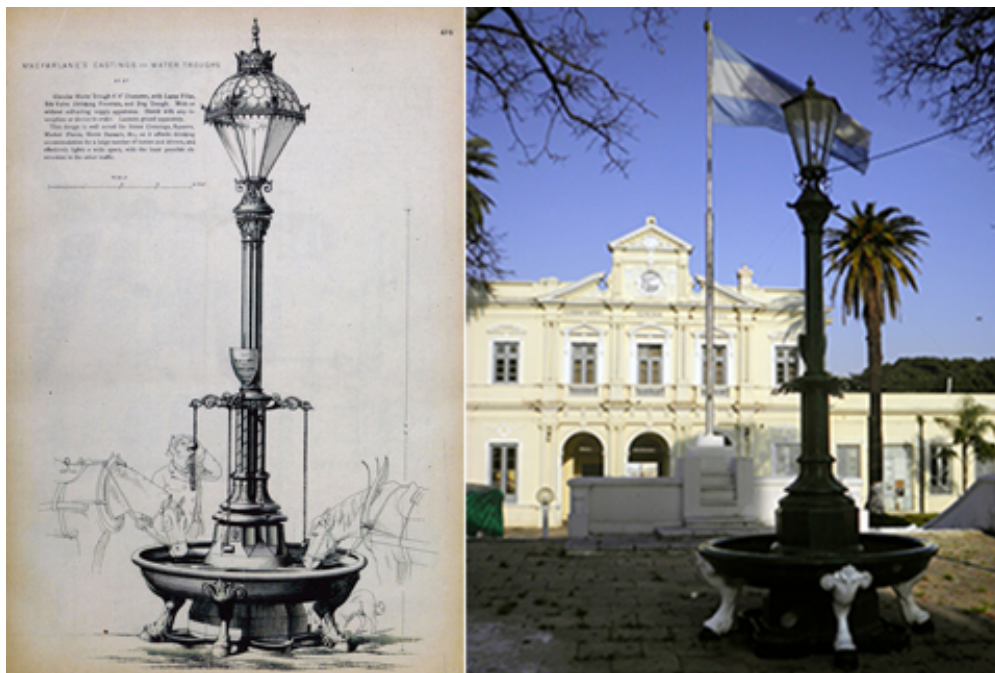
Urinals number 5A in Coronel Vidal Station (above) and same model in Iraola Station (below).

Source: Pablo Marzilio and Jorge D. Tartarini.

58

Smaller elements, such as cast iron balconies, bandstands, ornamental gates, and fountains, were connected to the idea of imperialism, since they are the only element that is fairly uniform within formal (and informal) colonies: “They are still what makes the former parts of the empire distinctive and recognisable.”⁹¹ Interestingly, in 1901, the British community of Paraná donated a water trough in commemoration of Queen Victoria's Government as “demonstration of gratitude for the feelings demonstrated by the Argentine people,” as the cast iron plaque still proclaims.

Figure 11: Macfarlane company, water trough.



Water Trough number 27 in catalogue sixth edition, vol. 2 (left) and the same model in Paraná.

Source: SCOTTISH IRONWORK FOUNDATION, *Macfarlane's Architectural Ironwork*, Balerno: Harlaw Heritage, 2006 and Pablo Marzilio.

- 59 Macfarlane was one of the most famous firms, and always used visible trademarks. As a result, it is easier for scholars to identify elements they manufactured.
- 60 Macfarlane's trade catalogues offered the vision of the modern European city that Argentina sought to emulate. For that reason, it is no surprise to find many of the elements represented in the Macfarlane show room, illustrated in the first page of the sixth edition, in Argentina. The water trough in the centre of the image, the urinals on the left, and the park gates on the right are all examples found in Argentina (**fig. 11**).

Figure 12: Macfarlane, showroom.



Catalogue sixth edition, first page.

Source: Collection Lucía Juárez.

Lion Foundry

61 Company name: Jackson, Hudson & Brown

Foundry name: Lion Foundry

Operation dates: 1880–1984

Location: Kirkintilloch, Scotland (**fig. 13**)

62 Significant architectural examples: window surround supplied to the Constitución railway station in Buenos Aires; a large number of cast iron building fronts such as the main façade of the Unilever Building, London; cast iron stairs for Tower Bridge, London and cast iron parapet for the new Lambeth Bridge, London; bandstands in Great Britain and elsewhere; and railings and gates, including, for example, about 1830m of ornamental railing and twelve gates shipped to Bombay, India, for a prince's residence, like the railings for a race course in Calcutta; tram and bus shelters around the UK; verandas, canopies, or balconies supplied to a large number of theatres, including the London Hippodrome and theatres in Sheffield, Nottingham, Portsmouth, Leeds, Holloway, Liverpool, Douglas, Cardiff, etc.; ornamental ironwork for Leeds County Arcade; shelter for Mansion House, London; several porticos for Indian banks;⁹² and red telephone kiosks around the world.

Figure 13: Aerial view of Lion Foundry.



Source: Edinburgh (Scotland), Royal Commission on the Ancient and Historical Monuments of Scotland.

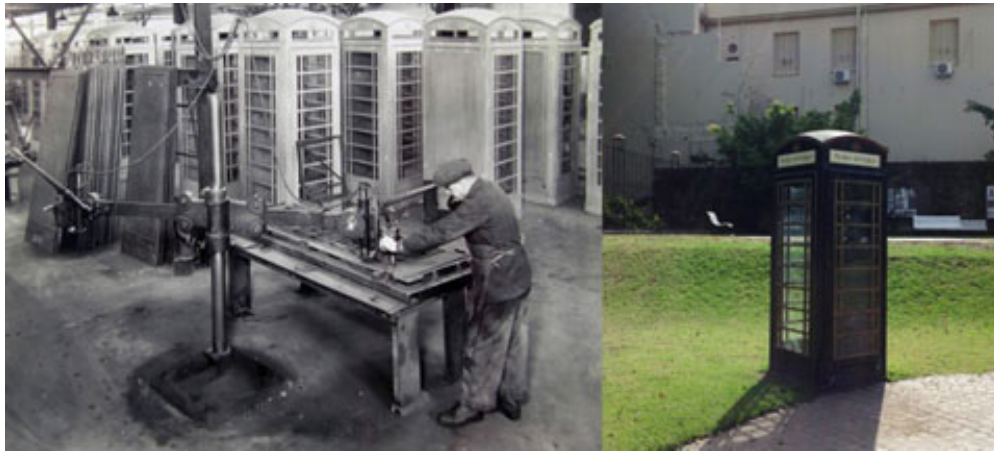
63 Three former employees of Saracen Foundry and Macfarlane & Co. founded the original company in 1880: Jackson, Brown, and Cuthbert. Later, another key figure joined the firm, William Cassells, also from Saracen.⁹³ In 1885 the company changed its name to the Lion Foundry.

64 The foundry was erected near the North British Railway and the Forth and Clyde Canal, from which raw materials could be brought and finished products easily distributed.⁹⁴ It specialized in fine ornamental and architectural cast ironwork, including building front panels, fire-escape stairs, bridge parapets, bandstands, arcades, verandas, balconies, and shelters, as well as sanitary ware and building and plumbing castings.⁹⁵

65 After the Second World War the firm began to specialize in engineering castings, including the famous red telephone kiosks, also manufactured by their competitors Carron Foundry, Saracen Foundry (Macfarlane), McDowall Steven, and Bratt

Colbran. However, the Lion Foundry did not survive the end of the contract for the Sir Giles Gilbert Scott phone boxes.⁹⁶ After the 1930s, some items, such as the telephone kiosks, were still shipped to Argentina. The one located at the National Library is not in use. It was repainted as part of an outdoor exhibition, and many other can be found in Pecoleta area, Buenos Aires.

Figure 14: Lion's finishing shop (left) and Lion's telephone box (right).



Source: Kirkintilloch (Scotland), William Patrick Library and Lucía Juárez.

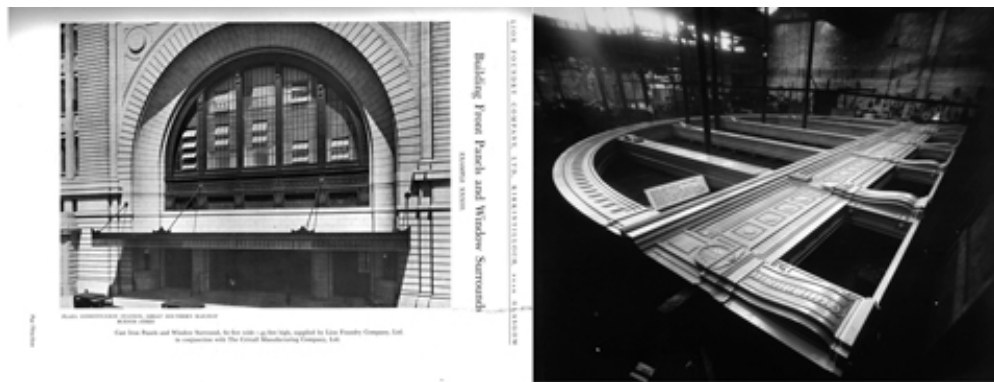
Lion company records

- ⁶⁶ A company archive composed of 1,000 photographs and 2,300 drawings, along with financial records, staff and administrative records, and advertising and publicity material, is held by the East Dunbarstoneshire Archives in the William Patrick Library. Likewise, original patterns made of wood, plaster, or iron, and other foundry artifacts, are on display at the Auld Kirk Museum, also in Kirkintilloch.⁹⁷

Lion in Argentina

- ⁶⁷ Like Carron Company, Lion Foundry had a representative agent in Buenos Aires, although it is difficult to establish the dates. The representative was L. P. Winby Engineers and Contractors who, as can be seen from a brochure, also had an office in London.
- ⁶⁸ Britain was the Lion Foundry's main market, but it is possible to find elements of their work in other parts of the world, including Argentina. They manufactured an impressive cast iron window (in conjunction with Crittall Manufacturing Co.) for Plaza Constitución Station in Buenos Aires, which was the head station of the Buenos Aires Great Southern Railway. As with most other lines, the railway was mainly constructed and managed by British engineers and architects. Interestingly, in that station, another Scottish company called Alexander Findlay and Co. provided the interior structure made in cast iron and steel.⁹⁸

Figure 15: Lion Company, Cast iron window made for Plaza Constitución Station (left) and cast iron window in workshop (right).



Source: Kirkintilloch (Scotland), William Patrick Library.

Conclusion

69 British materials – especially iron – machinery, professionals, and capital – made Argentina’s development possible. Argentina’s constitution opened the doors for European immigration and free trade, and promoted a liberal ideal of nationhood. Laws encouraged the import of British manufactured products such as iron (in the form of bars, rolling stock, structural elements, bridges, urban furniture, etc.) and, at the same time, hampered the development of local business. In its rush to become a “modern” country, Argentina actually became a part of Britain’s informal empire. Control of the materials, such as iron, needed for development gave Britain enormous power in these emerging economies. Scotland, as the workshop of the world, played an important role in this, as did the networks of British engineers, architects, and designers who collaborated on projects in Argentina.

70 Documenting industrial heritage in general is a difficult task, mainly because so many companies’ archives have been lost. When such heritage is transnational, involving more than one country, the difficulty is far greater. The iron industry was so important in Scotland that one would hope that company records would have been preserved. Sadly, most iron casting companies’ archives have disappeared, even those from famous firms like Walter Macfarlane. As a result, trade catalogues are the most important source of information for the architectural historian. They record the inventory offered by the companies, and how it was marketed. The fact that catalogues were printed in Spanish illustrates just how important these books were, for expanding the informal empire.

71 Documentation found in Scottish company records and libraries has helped to identify new architectural cast iron items in Argentina, to understand how they were created and traded, and clarify whether important foundries had representative agents or offices in Argentina. It also yields other relevant information that is already leading to further investigation. However, this is not enough, and research on the documentation needs to be complemented by further research in Scotland and Argentina.

Notes

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2 David ROCK, “The British of Argentina,” in Robert A BICKERS (ed.), *Settlers and Expatriates: Britons Over the Seas*, Oxford: Oxford University Press, 2010 (Oxford history of the British Empire companion series), p. 18.

3 For informal empire in Argentina, see Matthew BROWN (ed.), *Informal Empire in Latin America: culture, commerce, and capital*, Oxford: Blackwell, 2008 (Bulletin of Latin American research book series), in which Argentina’s case has been analysed by Alan KNIGHT (Chapter I), David ROCK (Chapter II), Colin LEWIS (Chapter IV) and Andrew THOMPSON (Chapter

- X). Also see Alan KNIGHT, "Britain and Latin America," in Andrew PORTER (ed.), *The Oxford History of the British Empire. 3. The Nineteenth Century*, Oxford: Oxford University Press, 1999 and "Latin America," in Judith BROWNE, William Roger LOUIS and Alaine M. LOW (eds.), *The Oxford History of the British Empire. 4. The Twentieth Century*, Oxford: Oxford University Press, 1999.
- 4 Clarence B. DAVIS, Kenneth E. WILBURN and Ronald E. ROBINSON, *Railway imperialism*, New York: Greenwood Press, 1991 (Contributions in Comparative Colonial Studies, 26), p. 2.
- 5 This firm supplied sugar machinery for the sugar mill in San Isidro, Salta, where some machinery is now exhibited in the garden. In 1908, it also supplied complete sugar processing factories for a sugar mill in Formosa. *The Times*, 11 November 1908 in URL: http://www.gracesguide.co.uk/Mirrlees_Watson_Co. Accessed 15 November 2014.
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- 10 Jorge D. TARTARINI, *Ferrocarriles Provincia Buenos Aires*, La Plata: Instituto Cultural de la Provincia de Buenos Aires, 2009. Also, similar pedestrian bridges were manufactured by Macfarlane.
- 11 Andrew Handyside was Scottish but his company was based in England.
- 12 Jorge D. TARTARINI, *El Palacio de las Aguas Corrientes. De Gran Deposito Distribuidor a Monumento Histórico Nacional*, Buenos Aires: Agua y Saneamientos Argentinos S.A. AySA, 2012, p. 146. Glenfield Co. appeared as English, but it is actually from Kilmarnock, East Ayrshire in Scotland.
- 13 From Baring Archives it can be seen that Baring provided the loans to this companies for cast iron pipes in 1873. URL: http://www.baringarchive.org.uk/materials/the_baring_archive_hc4.pdf. Accessed 15 November 2014.
- 14 In Brazil, Scottish ironworks have been surveyed by Geraldo GOMES DA SILVA and Cacilda TEXEIRA DA COSTA. However, nothing of this kind has been done in Argentina. The publication edited by Romano JODICE (ed.), *L'architettura del ferro. 9. L'Argentina 1850–1930* (Roma: Kappa, 2003) offers a good general view of the range of ironworks in Argentina but only the caryatids of the Water Palace and platform structure for Plaza Constitution are identified as Scottish, and the publication is written only in Italian. Some Scottish ornamental cast iron has been identified in Mendoza by Patricia Favre, others in Cordoba by Mónica Ferrari and in Buenos Aires by Jorge D. Tartarini, but in no case has a publication been dedicated exclusively to Scottish ironworks in Argentina or the study of its influence in the British Empire.
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- 18 Samuel GRIFFITHS, *Griffiths' Guide to the Iron Trade of Great Britain*, London: Samuel Griffith, 1873, preface.
- 19 John R. Hume and Michael S. Moss, *Beardmore: The History of a Scottish Industrial Giant*, London: Pearson Education, 1979, p. 11.
- 20 See Winthrop R. WRIGHT, *British-owned Railways in Argentina: Their Effect on Economic Nationalism, 1854-1948*, Austin, TX: Institute of Latin American Studies, University of Texas Press, 1974 (Latin American monographs, 34).
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- 22 *The Argentine year book*, Buenos Aires: J. Grant & Son, 1903.
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- 25 Duncan L. BURN, *The economic history of steelmaking, 1867-1939; a study in competition*, Cambridge: Cambridge University Press, 1961, p. 80.
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- 29 David S. MITCHELL, *Macfarlane's castings: Walter Macfarlane & Co., Saracen Foundry, Glasgow : catalogue, sixth edition*, Edinburgh: Historic Scotland, Technical Conservation Group, 2009 (Technical reference series), vol. 1, introduction.
- 30 David S. MITCHELL, *Development of the architectural iron founding industry in Scotland*, Ph.D. dissertation, The University of Edinburgh, Edinburgh, 2013, p. 579.
- 31 *Ibid.*, p. 588.
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- 33 For more information about the role and importance of Scotland within the British Empire see: John MACKENZIE and T. M. DEVINE, *Scotland and the British Empire*, Oxford; New York, NY: Oxford University Press, 2011 (Oxford history of the British Empire companion series).
- 34 David S. MITCHELL, *Development of the architectural iron founding industry in Scotland*, *op. cit.* (note 31), p. 584.
- 35 *Ibid.*, p. 579–89.
- 36 *Ibid.*, p. 580–8.
- 37 Paul DOBRASZCZYK, *Iron, Ornament and Architecture in Victorian Britain*, *op. cit.* (note 29), p. 32–3.
- 38 Calcida TEXEIRA DA COSTA, *O Sonho e a Técnica. A Arquitetura de ferro no Brasil*, São Paulo: Edusp, 2001.
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- 48 Paul DOBRASZCZYK, *Iron, Ornament and Architecture in Victorian Britain*, *op. cit.* (note 29), p. 14.
- 49 David S. MITCHELL, *Development of the architectural iron founding industry in Scotland*, *op. cit.* (note 31), p. 209.

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51 *Ibid.*, p. 449.

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59 *The Engineer*, 1 March 1931. URL: <http://www.gracesguide.co.uk/images/5/53/Er19310313Supp.pdf>. Accessed 15 November 2014.

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70 Information taken from archive description of the collection.

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72 Edinburgh (Scotland), The National Records of Scotland, GD58/6/11/41. Sales visits. S. Fraser trip to Argentina report, July 1918, p. 22–6.

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	Titre	Figure 1: Lion Foundry, Leitch's Gate design number 108.
	Légende	Draft in working catalogue for the third edition (left) and trade catalogue, third edition (right).
	Crédits	Source: Kirkintilloch (Scotland), William Patrick Library, 610/7/1/21 and 6010/7/1/13.
	URL	http://abe.revues.org/docannexe/image/821/img-1.jpg
	Fichier	image/jpeg, 68k
	Titre	Figure 2: Aerial view of Carron ironworks in 1928.
	Crédits	Source: Edinburgh (Scotland), Royal Commission on the Ancient and Historical Monuments of Scotland.
	URL	http://abe.revues.org/docannexe/image/821/img-2.jpg
	Fichier	image/jpeg, 16k
	Titre	Figure 3: Carron Company, Maple Company.
	Légende	Left: Maple Company pictures in the <i>Structural Book</i> , 1924 (left) and Maple Company premises in Buenos Aires. Carron Catalogue, 1938 (right).
	Crédits	Source: Edinburgh (Scotland), National Records of Scotland, GD58/19/56 and GD58/16/97.
	URL	http://abe.revues.org/docannexe/image/821/img-3.jpg

		image/jpeg, 132k
	Fichier	image/jpeg, 132k
	Titre	Figure 4: Carron Company, design number 188 for gate and railings.
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	Crédits	Source: Edinburgh (Scotland), National Records of Scotland, GD58/16/42 and GD58/17/116/.
	URL	http://abe.revues.org/docannexe/image/821/img-4.jpg
	Fichier	image/jpeg, 60k
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	Crédits	Source: Edinburgh (Scotland), Royal Commission on the Ancient and Historical Monuments of Scotland.
	URL	http://abe.revues.org/docannexe/image/821/img-5.jpg
	Fichier	image/jpeg, 60k
	Titre	Figure 6: Macfarlane Company, bandstands.
	Légende	Supplement catalogue written in Spanish (above) and Macfarlane's bandstand number 249 in Buenos Aires Zoo (below).
	Crédits	Source: Shropshire (England), Ironbridge Gorge Museum Trust Library and Lucía Juárez.
	URL	http://abe.revues.org/docannexe/image/821/img-6.jpg
	Fichier	image/jpeg, 416k
	Titre	Figure 7: Macfarlane Company, gate at San Martin Park, Mendoza, Argentina.
	Légende	Catalogue supplement written in Spanish (above) and the same gate in Macfarlane's examples of architectural ironwork (below).
	Crédits	Source: Shropshire (England) Ironbridge Gorge Museum Trust Library and Stirling (Scotland), Scottish Ironwork Foundation.
	URL	http://abe.revues.org/docannexe/image/821/img-7.jpg
	Fichier	image/jpeg, 188k
	Titre	Figure 8: Macfarlane, Sagrado Corazón School gate.
	Crédits	Walter Macfarlane and Co., <i>Illustrated catalogue of Macfarlane's castings</i> , sixth edition, Glasgow, 1882, vol. 1, design number 461 and Source: Lucía Juárez.
	URL	http://abe.revues.org/docannexe/image/821/img-8.jpg
	Fichier	image/jpeg, 92k
	Titre	Figure 9: Macfarlane company, urinals.
	Crédits	Source: Scottish ironwork foundation (ed.), <i>Macfarlane's Architectural Ironwork</i> , Balerno: Harlaw Heritage, 2006, p. 421, 427.
	URL	http://abe.revues.org/docannexe/image/821/img-9.jpg
	Fichier	image/jpeg, 192k
	Titre	Figure 10: Macfarlane company, Urinals.
	Légende	Urinals number 5A in Coronel Vidal Station (above) and same model in Iraola Station (below).
	Crédits	Source: Pablo Marzilio and Jorge D. Tartarini.
	URL	http://abe.revues.org/docannexe/image/821/img-10.jpg
	Fichier	image/jpeg, 372k
	Titre	Figure 11: Macfarlane company, water trough.
	Légende	Water Trough number 27 in catalogue sixth edition, vol. 2 (left) and the same model in Paraná.
	Crédits	Source: Scottish ironwork foundation, <i>Macfarlane's Architectural Ironwork</i> , Balerno: Harlaw Heritage, 2006 and Pablo Marzilio.
	URL	http://abe.revues.org/docannexe/image/821/img-11.jpg
	Fichier	image/jpeg, 156k
	Titre	Figure 12: Macfarlane, showroom.
	Légende	Catalogue sixth edition, first page.

	Crédits	Source: Collection Lucía Juárez.
	URL	http://abe.revues.org/docannexe/image/821/img-12.jpg
	Fichier	image/jpeg, 60k
	Titre	Figure 13: Aerial view of Lion Foundry.
	Crédits	Source: Edinburdh (Scotland), Royal Commission on the Ancient and Historical Monuments of Scotland.
	URL	http://abe.revues.org/docannexe/image/821/img-13.jpg
	Fichier	image/jpeg, 144k
	Titre	Figure 14: Lion's finishing shop (left) and Lion's telephone box (right).
	Crédits	Source: Kirkintilloch (Scotland), William Patrick Library and Lucía Juárez.
	URL	http://abe.revues.org/docannexe/image/821/img-14.jpg
	Fichier	image/jpeg, 28k
	Titre	Figure 15: Lion Company, Cast iron window made for Plaza Constitución Station (left) and cast iron window in workshop (right).
	Crédits	Source: Kirkintilloch (Scotland), William Patrick Library.
	URL	http://abe.revues.org/docannexe/image/821/img-15.jpg
	Fichier	image/jpeg, 51k

Pour citer cet article

Référence électronique

Lucía Juárez, « Documenting Scottish Architectural Cast Iron in Argentina », *ABE Journal* [En ligne], 5 | 2014, mis en ligne le 01 décembre 2014, consulté le 26 juillet 2016. URL : <http://abe.revues.org/821> ; DOI : 10.4000/abe.821

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Function and Fantasy

Iron Architecture in the Long Nineteenth Century

Edited by Paul Dobraszczyk and Peter Sealy

ROUTLEDGE



Scottish Cast Iron in Argentina: Its Role in the British Informal Imperial System

Lucia Juárez

British iron – especially Scottish cast iron – played a significant role in Argentina as part of a complex imperial system. This chapter will explore the historical contexts of British iron in Argentina, first exported to the country after free trade began in 1853. It will describe the range of iron structures and some of the ornamental motifs used, elucidating iron's role in shaping design outcomes and the social expectations concerning architecture in Argentina.

Even now it is possible to find British-made cast-iron structures in many areas of Argentina. Some form parts of important monuments; others are so well incorporated into urban life that they go unnoticed. When they are noticed, it is usually because of a visible trademark displaying the name of their manufacturer and place of origin: for example, "London," "Liverpool," or "Glasgow." These places are so far from Argentina that their appearance begs several questions: why are most of these trademarks British? How and why did these structures move from Britain to Argentina and – once they had arrived – how did they affect the built environment in Argentine cities? Who were the professionals involved in their commissioning, design and export? While this chapter cannot answer all of these questions it will try to address many of them as part of its focus on the phenomenon of British – and especially Scottish – ironwork in Argentina and some of its architectural, historic, cultural and economic dimensions.¹

BRITAIN, SCOTLAND AND ARGENTINA

The majority of the relationships established by the British in Argentina were carried out in the wider context of formal empire (both commercial and territorial), in which Scotland played an active and important role.² In fact, it was the Scottish 71st Regiment of Foot, known as Fraser's Highlanders, that participated in the first of two British attempts to incorporate the River Plate area (today, the land that encompasses Buenos Aires and Montevideo) as a formal colony in 1806 and 1807.

Documentation shows that after the failure of these attempts the British decided on a less aggressive approach that would fulfil their desire for economic expansion. As the then British Secretary of State for War, Lord Castlereagh, stated:

it may be doubtful whether the silent and imperceptible operation of our illicit commercial intercourse with that portion of the world during the war would not be more operative and beneficial, if we approached it only as traders, than when, by approaching it as enemies.³

Argentina's first President, Bernardino Rivadavia (1780–1845), was positively disposed towards industrial capitalism and had spent some time in England. He believed that a strong, centralised government and greater freedom of commerce would advantageously connect Argentina to the global market. Under his influence, in 1825 the Treaty of Friendship, Commerce, and Navigation was signed, which established the legal foundations of a mutually beneficial British–Argentine trade relationship.⁴ Nevertheless, that relationship was asymmetrical, since Britain was able to exercise a significant degree of control over the Argentinian economy. For that reason some scholars consider that Argentina was an “informal” part of the British Empire, an idea that has been contested since the 1950s.⁵ However, many years before that there was a local feeling that Argentina was in effect a semi-colonial country, especially with regard to its railway system.⁶

From the mid-nineteenth century onwards, Argentina embraced the ideals of European urban modernity, and with them began to import not only those ideals but the technology, materials and buildings required to implement them. At that time, railways were the epitome of modernity, and were even included in Article 67 of the Argentinian constitution, which gave Congress the power to promote the construction of railways as part of its duty “to provide for all that conduces to the prosperity of the country, to the advancement and welfare of all the provinces, and to the advancement of the people.”

The Argentinian government oversaw the development of the country's extensive railway system, which was begun 1857 as the principal means by which to unify the new republic. At the same time, the country rapidly urbanised, a process that reached its peak between 1880 and 1930. By 1869, when the first Argentinian census was carried out, the total population was 1,830,000; by 1914, it had risen to 7,904,000, with the greatest number concentrated in Buenos Aires.⁷ This period of dramatic demographic growth was accompanied by the development of infrastructure such as railways lines, tramways, ports and bridges as well as urban facilities such as water and gas pipes, electricity cables and street furniture. It also saw a massive increase in the construction of new buildings. Indeed, such was the rate of growth in the capital city that, at the beginning of the twentieth century, more than 3,000 buildings per year were under construction, the majority using iron and steel as structural materials.⁸

Such rapid modernisation required foreign investment, professionals and materials; among the latter, prefabricated cast-iron in particular offered a short-cut for rapid urban development. Since Britain, especially Scotland, already dominated

the international market for architectural ironwork, the urbanisation of Argentina presented a potentially lucrative new market for British manufacturers, as well as the opportunity to develop new forms of prefabricated architectural technology. It was the development of the railways and ports that provided the most important contribution to Argentina's urban development and created a relationship between the two countries that was both co-dependent and imperialistic. In this period, Britain became the greatest investor in Argentina; however, the majority of those investments were in British-based enterprises, with these in turn related to financial and public services. Through their considerable financial interests, the British influenced Argentina's political and economic structures to further the aims of their global empire.

One of the most significant foreign investments in Argentina during the nineteenth century was in the creation of a railway network, which was almost completely owned by British companies. Designed and built by British engineers and using duty-free coal, iron and locomotives imported from Britain on British ships, railway development in Argentina helped to increase the value of land owned by Britons and facilitated the distribution of British goods around the country. Even though the railway greatly contributed to the unification, development and urbanisation of the country, it was also seen by local farmers and industrial workers as a means of control, as railway tariffs were used to guide local industry and to increase commercial opportunities for the British.⁹

In the context of the railways, iron was perhaps the most important material, used for everything from rolling stock to entire bridges and railway stations. Iron was also used in other contexts such as in the development of ports, sewage and water-supply systems (pipes, tanks or even buildings) and other public and private enterprises in which the British were engaged. All of these contributed to an expanding field of control that helped to enlarge the British Empire beyond its military and political boundaries. From this point of view, the introduction of large amounts of British iron into Argentina exemplified Britain's wider, "informal" imperial strategy.

THE IRON INDUSTRY: TRANSATLANTIC EXCHANGES

The industrial development of Britain was inextricably linked to the advanced manufacture and use of iron. In fact, the production and use of iron has always been vital to a nation's standing; it was an essential material for creating military ordnance and thus became a crucial way of measuring national strength against one's potential enemies. By the mid-nineteenth century, iron was regarded as a kind of wonder material that could, in the words of Scottish chemist Ian Ure, "accommodate itself to all wants ... desires, and even ... caprices; it is equally serviceable to the arts, the sciences, to agriculture, and war; the same ore furnishes the sword, the ploughshare, the spring of a watch or of a carriage, the chisel, the chain, the anchor, the compass, the cannon and the bomb."¹⁰ In the second half of the nineteenth century the iron industry was considered to be the most important

staple manufacture of the United Kingdom.¹¹ Scotland, in particular, occupied a significant place in Britain's economic and industrial development, with Glasgow, one of its principal centres of industry, considered not only the "workshop of the world"¹² but also the second city of the empire.¹³

The story of Scotland's pre-eminence as a centre of iron production actually began in England in 1709, when Abraham Darby first used coke instead of charcoal (which was in short supply) to produce iron in the blast furnaces at Coalbrookdale (see the Introduction to this volume).¹⁴ Darby's innovation stimulated iron production outside England and, in 1759, two Englishmen founded the Carron Company near Falkirk, Scotland on a site close to the River Carron with easy access to coal and ironstone. This iron foundry was the first in Scotland to use coke for smelting, and also the first to produce decorative cast-iron products on an industrial scale.¹⁵ Later developments, such as the invention of the cupola furnace in 1794, contributed to the emergence of specialist ornamental foundries.¹⁶ Two other developments further contributed to the rise of the Scottish iron industry: the first was David Mushet's discovery of black-band or Mushet iron-stone in 1801; the second was James Neilson's invention of the Hot Blast technique, which reduced fuel consumption and production costs in the casting process.¹⁷ By the mid-nineteenth century, Scottish smelting firms were the most successful in the world and had the ability to make very large quantities of the best-quality iron.¹⁸ In addition, the rapid development of Scotland's transport infrastructure on land and at sea allowed the country's foundries to offer cheap transport; in short, they soon monopolised foreign markets.¹⁹

Argentina's native iron foundries attempted to resist the dominance of their British competitors. Among them were the company of Jaunet Hermanos (founded in 1848), which mainly produced ordnance, as well as Fundición Argentina de Don Francisco Carulla (1853), Fundición Casa Amarilla (1858), Don Silvestre Zamboni (1860) and Los Hermanos Schwartz (1863). However, these foundries were small and generally specialised in small-scale castings, such as machine parts for use in local industries.²⁰ Only Taller de Pedro Vasena, whose work included the first Abasto Market (1893), was able to expand his work to include architectural cast iron and, later, steel.²¹ Even in this case, Pedro Vasena's foundry required British investment, thus becoming the British-backed Argentina Iron and Steel Manufactory in 1912. In short, Argentina's iron industry could not compete with imports from British manufacturers. This British dominance was clear: by 1892, Buenos Aires was home to 33 foundries,²² with only a handful producing architectural castings, as compared with the more than 200 listed in Glasgow just a year earlier.²³

While Argentina had the potential to exploit its abundant reserves of iron ore, domestic production was negligible due to the high costs of raw materials and transportation, both of which were in the hands of the British.²⁴ Only a few local foundries, such as Vasena or Zamboni, could produce high-quality decorative cast iron such as that produced for the railings and conservatory of the Anchorena Palace (1905–09) or the Colon Theatre marquee (1909). However, even these native foundries used British iron as a raw material and it is also difficult to establish to what extent they were copying models from European foundries. In any case, the

native foundries could not produce ornamental iron in sufficient quantities to meet the country's demand. Indeed, no country's iron foundries could match the output and quality of the products made by Scottish iron founders such as Walter Macfarlane.²⁵ Given this situation, Argentina unsurprisingly imported the majority of its iron products from Scotland and also depended on iron and coal from Britain for its industrial and urban development.

Between 1873 and 1889, Britain exported more iron and steel to South America than it did to China, Japan, South Africa, Australia, Canada and India combined.²⁶ In 1912, *The Times* commented on the rapid rate of Argentina's development and its demand for iron and steel.²⁷ In 1913, Argentinian iron consumption reached a peak of 200,000 tonnes – more than the double the global average per country.²⁸ The bulk of the iron imported by Argentina was used for the construction of railways, including stations (there were more than 570 in Buenos Aires province alone),²⁹ new public and private buildings, street furniture and numerous other structures deemed essential for the development of urban and transport infrastructure.³⁰ Prefabrication facilitated rapid construction and iron as a product was economical, durable, functional and ornamental.³¹ Moreover, iron was associated with the notion of progress; it was desirable as well as necessary, allowing Argentina to model itself on European centres of prosperity.

The majority of ironwork imported by Argentina before the First World War probably came from Scotland.³² Scottish iron products – like those made by Walter Macfarlane and including bandstands, fountains and even entire ornamental buildings – were exported throughout the British Empire and beyond.³³ For the Scottish foundries, the export of ironwork was particularly attractive, as the costs were very low. Indeed, it cost more to send an iron building by rail from Glasgow to London than to send that same building from a British port to India or Australia. This was partly because shipping companies were only too pleased to accept iron for its utility as ballast on their voyages and, because they could bring meat and other raw materials back from Argentina, their journeys were even more profitable.³⁴

IMPERIAL CAST IRON IN ECLECTIC ARGENTINA

The emergence of Britain as the world's most powerful trading nation was the direct result of industrialisation in the Victorian period. Industrialisation brought with it new ways of advertising; mass production needed mass marketing and iron foundries, especially Macfarlane, fully exploited the advantages of these new visual cultures of display.³⁵ Moreover, mass production and marketing also led to an international style of ornamentation that was disseminated through trade catalogues to the British Empire and beyond. In such a vast empire that included formal colonies such as India, Australia, South Africa and the West Indies, and informal ones such as Argentina, the exporting of ornamental iron produced a truly global aesthetic.³⁶

In Argentina and other Latin American countries, some British foundries set up their own branch companies in these informal colonies. Throughout Latin America,

Buenos Aires functioned as a headquarters for such operations, with some, such as Walter Macfarlane, even publishing Spanish-language trade catalogues to ease the trade with Latin American countries.³⁷ Macfarlane's catalogues not only displayed an astonishing array of products that could effectively remake entire cities (see Figure 1.1), but also facilitated a form of exchange that was not bound by geographical constraints.³⁸ Finally, the designs seen in these catalogues were often imitated by native foundries, which further contributed to the formation of an international style.³⁹

Many of the leading Scottish foundries exported iron structures to Argentina, including the Carron Company, Water Macfarlane, the Lion Foundry and the Sun Foundry (George Smith & Co). Many of these structures were designed, prefabricated and exported to Argentina in their entirety; some were designed in Argentina and then built to order by Scottish foundries, while others were chosen from catalogues by architects, urban officials or individual clients.⁴⁰ In fact, the use of trade catalogues was so prevalent in Argentina that native architects often produced designs according to the options presented to them in Scottish catalogues, elaborating their designs according to the dimensions and information already laid out.⁴¹

As Argentina underwent its most significant demographic and urban changes, it looked to Europe, especially London and Paris, as its model. The Argentine constitution of 1853 promoted the opening up of the country to international markets, offering incentives to European (and particularly English) immigrants, who were seen as more civilised and skilled than natives. Indeed, according to Juan Bautista Alberdi (1810–84), the mastermind of the constitution, “the English[man] is the most perfect of men ... Without the cooperation of that race it is impossible for liberty and material progress to prevail and prosper.”⁴² Among European immigrants to Argentina were architects, engineers and builders, some of whom travelled to the country looking for work, while others had been contracted for specific jobs. As the influx of foreign construction professionals increased, the country's built environment took on a more European appearance. The 1895 census recorded 396 architects and 1,481 engineers living in Argentina, nearly all of whom were foreigners.⁴³ Even after the establishment of the first educational institutions for architects and engineers in Argentina, the influence of European modes of practice continued to be felt strongly, for most of the early teachers in these institutions had been trained in Europe. This dominant European influence led to a preponderant taste for lavish ornamentation in Argentinian architecture, in marked contrast to buildings constructed during the period of Spanish rule. In the second half of the nineteenth century, the Italianate style informed the design of many of Buenos Aires's buildings. The adoption of this style was strongly influenced by Italian migrant architects such as Pedro Fossati (1827–93), Nicolas Canale (1807–74) and his son José Canale (1833–83),⁴⁴ although British and German architects, such as Edward Taylor (1801–68), Henry Hunt and Hans Schroeder also contributed.⁴⁵ The Italianate style was characterised by sequences of round arches, framed by ornamental mouldings or columns and pilasters, and featuring neoclassical motifs such as acanthus

leaves, scrolls and medallions (see also Chapter 1). Cast iron played a role in many buildings that adopted the Italianate style, being used in balconies that fronted windows, in ground-floor gates and also as moulded decoration in the form of sculptures, vases, urns and friezes, the majority of which were prefabricated in and imported from Britain, France or Belgium.

The Italianate style is evident in early financial buildings in Buenos Aires, including the Stock Market (1862), the Bank of London and River Plate (1867; since demolished), the Provincial Bank of Buenos Aires (1869–74; since demolished) and the Hypothecary Bank (1876; now the Central Bank).⁴⁶ Iron played a role in the construction of these buildings: for example the Stock Market building featured a double-height patio illuminated by a vaulted iron-and-glass roof,⁴⁷ while the Provincial Bank included a tower topped by a cast-iron terminal, similar to those illustrated in the 1882 edition of Macfarlane's catalogue. In addition, the Hypothecary Bank featured a bronze door cast in Britain by Bunnet and Co. and a cast-iron railing made by the Turner & Allen iron foundry in London.⁴⁸

As seen across Europe, the Italianate style was inherently flexible, adaptable to many different building types and contexts, providing architects with a wide range of choice in terms of design. The inevitable eclecticism that resulted was ideally suited to cast iron, a material that could, after all, be formed into most any desired shape by means of moulds. With the choice of style left to individual taste, eclecticism spread rapidly.⁴⁹ Unlike Europeans, who generally found cast iron to be a poor substitute for more conventional building materials, it seems that Argentinian architects (and others in Latin America) freely accepted its use without any of the concerns that had been expressed by such influential figures as Pugin, Ruskin or Viollet-le-Duc (see the Introduction to this book).⁵⁰

In Argentine cities there was a free adoption of neoclassical motifs in cast iron that had been developed by the architects Robert (1728–92) and James Adam (1732–94) for the Carron Company in the late eighteenth century.⁵¹ Their characteristic anthemion pattern – a decorative motif of radiating plant forms of honeysuckle or the Lotus Palmette adapted from ancient Greek sources – became the most common decorative detail in the cast-iron balconies of the Georgian period; the design was widely disseminated through its inclusion in pattern books and trade catalogues.⁵² Neoclassicism characterised Carron's approach to cast-iron ornament; indeed, the use of patterns based on classical designs was a mainstay in ornamental cast-iron products even as they generally became more eclectic in their motifs (see Chapter 3). In addition, as both Carron and the Adam brothers have proved, classical motifs were eminently adaptable to cast iron, their conventional forms being ideally suited to the casting process. An example of this can be seen in the IRSA building office, formerly the Maple Store, an English furniture shop, in Buenos Aires (Figure 6.1). The Carron Company manufactured the railings and staircase in 1914 employing a Greek fret pattern derived from much earlier neoclassical models. In fact, as illustrated in the Carron Company's *Drawing and Design Book* (1820–69),⁵³ this design was also used in iconic British retail buildings such as Harrods.⁵⁴ The Maple Store itself was an equally iconic symbol of luxurious consumerism in Buenos Aires.



6.1 Interior of the Maple Store (1914), Buenos Aires, showing ironwork made by the Carron Company. Photograph by the author.

However, the historical associations of classical ornament did not necessarily sit easily with building types that had no precedent in Argentina. The two cast-iron kiosks placed at either side of the entrance to the passenger pier that was built by the English engineer Edward Taylor between 1855 and 1857 as part of the new Customs House project provide an example of this difficulty (Figure 6.2). The 210-metre-long timber-and-iron pier was built on land in the centre of the city that had been reclaimed from the River Plate – a project that heralded the beginning of the long process of urban modernisation across Argentina during the period of British influence and beyond.⁵⁵ The pier was widely celebrated as a boon to Argentina's prospects: according to Sarmiento, it was like "the hand of Buenos Aires moving towards the river to welcome civilisation sent from the world through the ships." For many, the pier heralded a new era of prosperity, one that would release Argentinians from the "slavery of hard needs" to a new life that would make man "independent of nature" and the "king of creation."⁵⁶ Yet, in spite of this praise, there were some who criticised the pier's appearance, especially its kiosks. Among the first prefabricated cast-iron structures imported to Buenos Aires, these kiosks were covered with corrugated iron and wood cladding and, according to Schávelzon, had "very picturesque" roofs.⁵⁷ Nevertheless, as one German visitor stated, the cast-iron kiosks were "curios" that were "strangely attached" to the rest of the pier structure. This visitor also remarked that the "obsession for kiosks has migrated from the banks of the Seine to the distant Father Plata [the River Plate]."⁵⁸

Early iron structures in Argentina – such as kiosks and bandstands – may have initially been regarded as rather incongruous additions to the built environment. However, they soon became fashionable and popular on account of their clear association with modernity. Indeed, structures such as gazebos and bandstands were commonly provided for urban parks and gardens in the late nineteenth and early twentieth centuries as an important element in the increasing leisure time of the working classes. Beginning in Britain in the 1830s, the rapid industrialisation of urban areas, coupled with a new awareness of and theories of health and hygiene, led to the promotion of urban parks. These were considered to be essential in ensuring not only the physical health of the working classes but also their moral well-being, and urban parks proliferated in the period between 1880 and 1914.⁵⁹

Cast-iron bandstands were important elements of public parks, along with other cast-iron structures such as gates, railings, fountains, shelters, glasshouses and lamps.⁶⁰ In Britain, the first cast-iron bandstand was installed in 1861 in the Royal Horticultural Gardens in Kensington, and it and many others like it became popular sites for social gatherings centred on music.⁶¹ These developments were mirrored in Argentina, where cast-iron bandstands were also an important part of social events and leisure activities. Perhaps the best surviving example is the bandstand made by J. and A. Law which still stands in San Martín Park in Mendoza.

Charles Thays, a French landscape designer and director of Mendoza's parks and gardens from 1891, developed San Martín Park in 1896. In fact, Thays designed most of the significant parks in Argentina, providing many of them with Scottish-made cast-iron bandstands. For his most prestigious project, the Tres de Febrero



6.2 Cast-iron kiosks on the Passenger Pier, Buenos Aires Argentine National Archive.



6.3 Cast-iron gazebo made by George Smith & Co. in Palermo Parks, Buenos Aires. Photograph by the author.

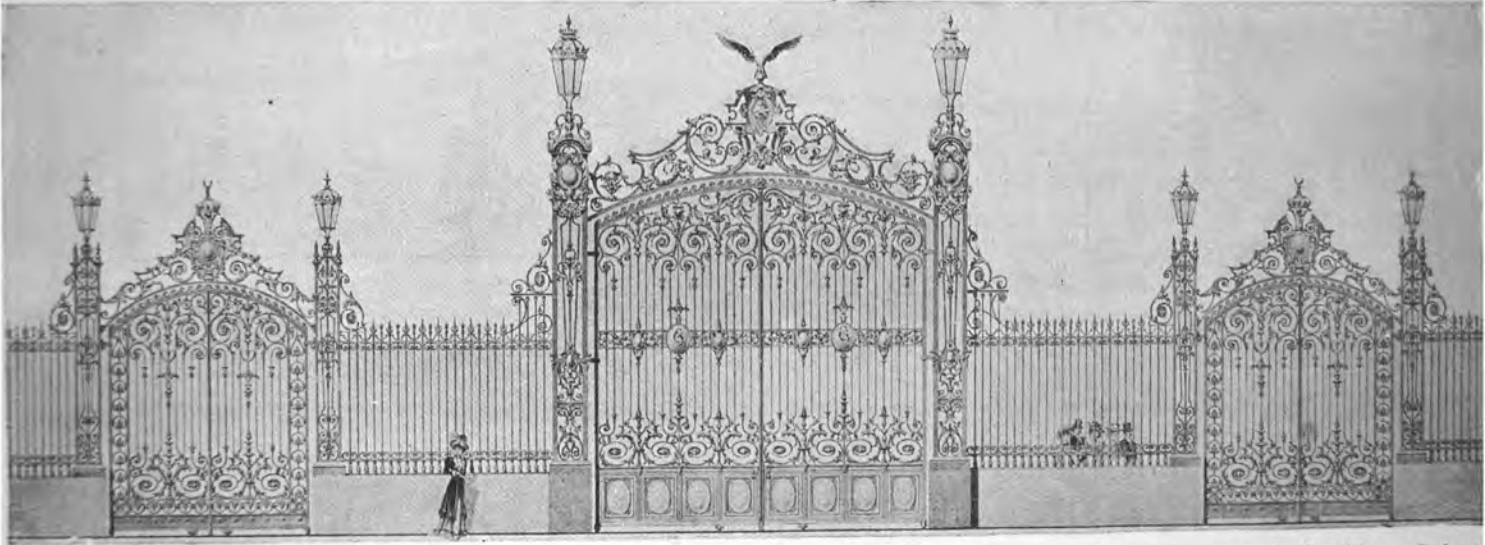
Park (1875), known as Palermo Parks, in Buenos Aires, he ordered a gazebo manufactured by Macfarlane's principal rival, George Smith & Co.⁶² (Figure 6.3) and a Macfarlane bandstand for the Zoo (Figure 6.4; model number 249 from the fifth edition of company's catalogue);⁶³ both of which are still standing.

San Martin Park also featured a pair of spectacular cast-iron gates manufactured by Macfarlane in 1909 (Figure 6.5).⁶⁴ A *tour de force* of cast-iron design, these gates combined many individual products illustrated in Macfarlane's catalogues, including panels and railings, terminals and lamp pillars that featured in the 1882 edition of the company's catalogue, and many bespoke elements such as the figure of a condor (symbol of the Andine region) and Mendoza's civic shield. In effect, these gates demonstrated the range of possibilities for Macfarlane's customers and the company's ability to provide mass-produced serial products that could nonetheless be combined to create a sense of individuality.⁶⁵ Indeed, Macfarlane was an expert in this systems-based approach to design and manufacture: of the roughly 7,000 individual products illustrated in the sixth edition of the company's catalogue, many were constructed from combinations of other products.⁶⁶

6.4 Cast-iron bandstand made by Walter Macfarlane in Buenos Aires Zoo. Photograph by the author.



FUNDICIONES DE MACFARLANE—PUERTAS DE ENTRADA, BARANDILLAS, BALCONES Y ESCALERAS.
No. CCXXX—PUERTA DE ENTRADA PRINCIPAL PARA PARQUE PÚBLICO.



Esta puerta es de nuestro diseño y construcción reciente. Es solamente una de muchísimas puertas semejantes, cuya ejecución ha sido confiada a nuestra casa. Las dimensiones de la puerta central son: anchura, m. 6,617; altura de la abertura, m. 6,934; altura extrema, m. 9,753. Las dimensiones de las puertas laterales son: anchura, m. 4,188; altura de la abertura, m. 4,801; altura extrema, m. 6,782. La barandilla tiene m. 3,108 de altura, y descansa sobre un muro de m. 1,118 de altura. Estas dimensiones sirven para dar una más exacta idea de la magnitud de la entrada que no hace apenas la pequeña ilustración. A nuestros amigos que necesiten obras de esta clase tendremos mucho gusto en someter diseños y precios, al recibo de los pormenores del caso.

6.5 Gates made by Walter Macfarlane in 1909 for the San Martin Park, Mendoza.
Courtesy of the Ironbridge Gorge Museum Trust Library.

While other Macfarlane-made gates can be found in Argentina, none is as impressive as those in Mendoza. Examples include: the railings surrounding the Palacio de las Aguas in Buenos Aires (number 28 of the railings illustrated in Macfarlane's 1882 catalogue); small gates such as the ones in the Deposito Caballito in Buenos Aires; the gate and railings of the former Alexander Hume Palace (railing number 970 in the 1882 catalogue); and French-style gates fronting the Sagrado School in Tucumán (number 461 in the 1882 catalogue).⁶⁷

French and British styles mixed in Argentina, producing a distinctive form of eclecticism in its ornamental cast iron. Thus, the geometric and naturalistic designs that characterised Macfarlane's products were mixed with a sculptural approach that derived from French manufacturers. In large cities like Buenos Aires and Mendoza, urban parks served as places not only of entertainment, but also of health, education and art. For that reason, the cast-iron structures that characterised these spaces were usually a mixture of the functional (railings, lamps and benches) and the symbolic (statues and ornamental fountains), thus bringing together utility and art. Cast-iron fountains, in particular, embodied this coming together of the aesthetic and the functional, one example being the fountains in the Plaza Independencia and Sarmiento School in Tucumán, manufactured by the Derby-based founder Andrew Handyside & Co (Figure 6.6).⁶⁸ Handyside took over the former Britannia Iron Works in Derby in 1848 with the intention of specialising in ornamental castings.⁶⁹ In the 1862 International Exhibition in London, the *Art Journal* singled out Handyside's sculptures as "admirable copies from antique models."⁷⁰ This imitation of fine-art sculptures in cast iron may have caused many critics in England to react with horror; in Argentina, it was a sign of the country's civilising and its path to modernity.

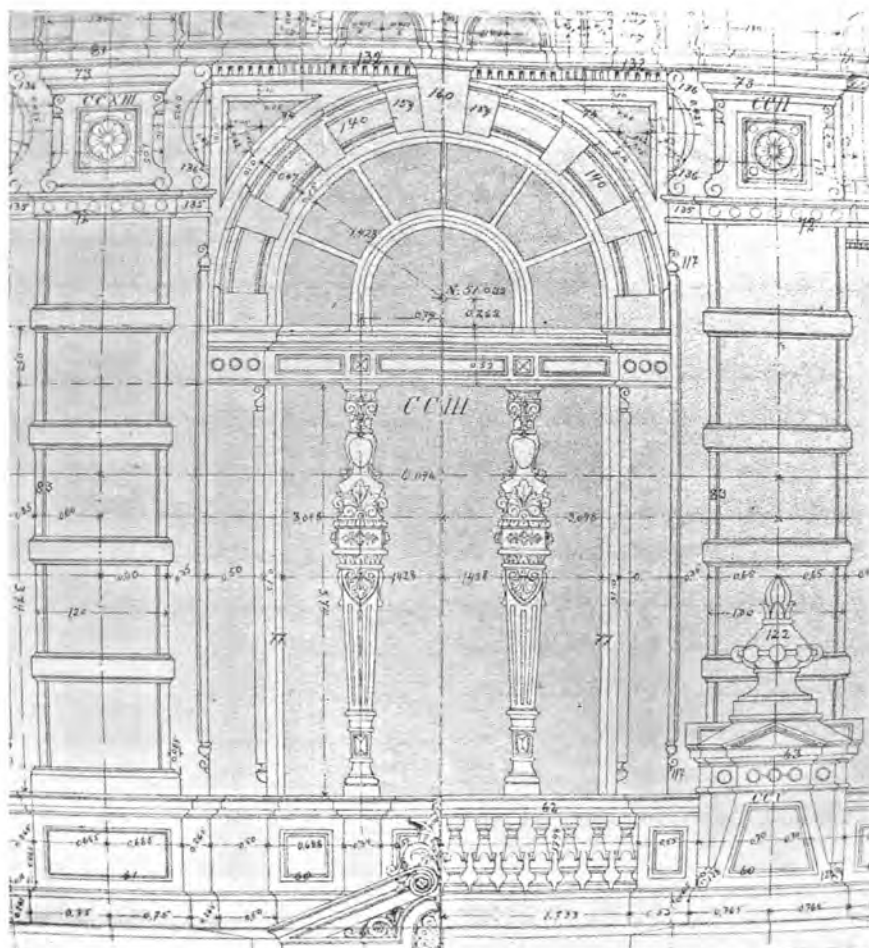
Handyside exhibited his fountains at the 1862 International Exhibition as a way of showcasing the company's new and more "artistic" work that was concerned with "promoting taste and beauty" (see also Chapter 5).⁷¹ Yet, at the same time, Handyside emphasised the economical nature of his fountains: because they were made of cast iron they were "readily accessible to persons of moderate resources."⁷² The idea that ornamental cast iron allowed the extension of refined aesthetics to lower social classes had found early expression in Lewis Cottingham's *The Ornamental Metal Workers' Director* (1823), where cast iron was celebrated as an economical way of decorating every class of building.⁷³

Two of Handyside's fountains were installed in Tucumán's Plaza Independencia in 1872. Identical copies of the same Handyside fountain can also be found in Stavanger, Norway and in the garden of Temple Newsam House near Leeds, England.⁷⁴ Another Handyside fountain design can be found in Sarmiento School in Tucumán; once again, copies of this model can be seen in Adelaide, Australia and in St George's Pearson Park in Port Elizabeth South Africa. Both designs feature three intertwined dolphins and two cherubs, motifs that became one of Handyside's trademarks. Critics such as John Ruskin condemned this sense of exact repetition by mechanical reproduction in Britain;⁷⁵ yet, in Argentina, these designs were considered to be products of a more advanced industrialised country, one that Argentina was keen to emulate.

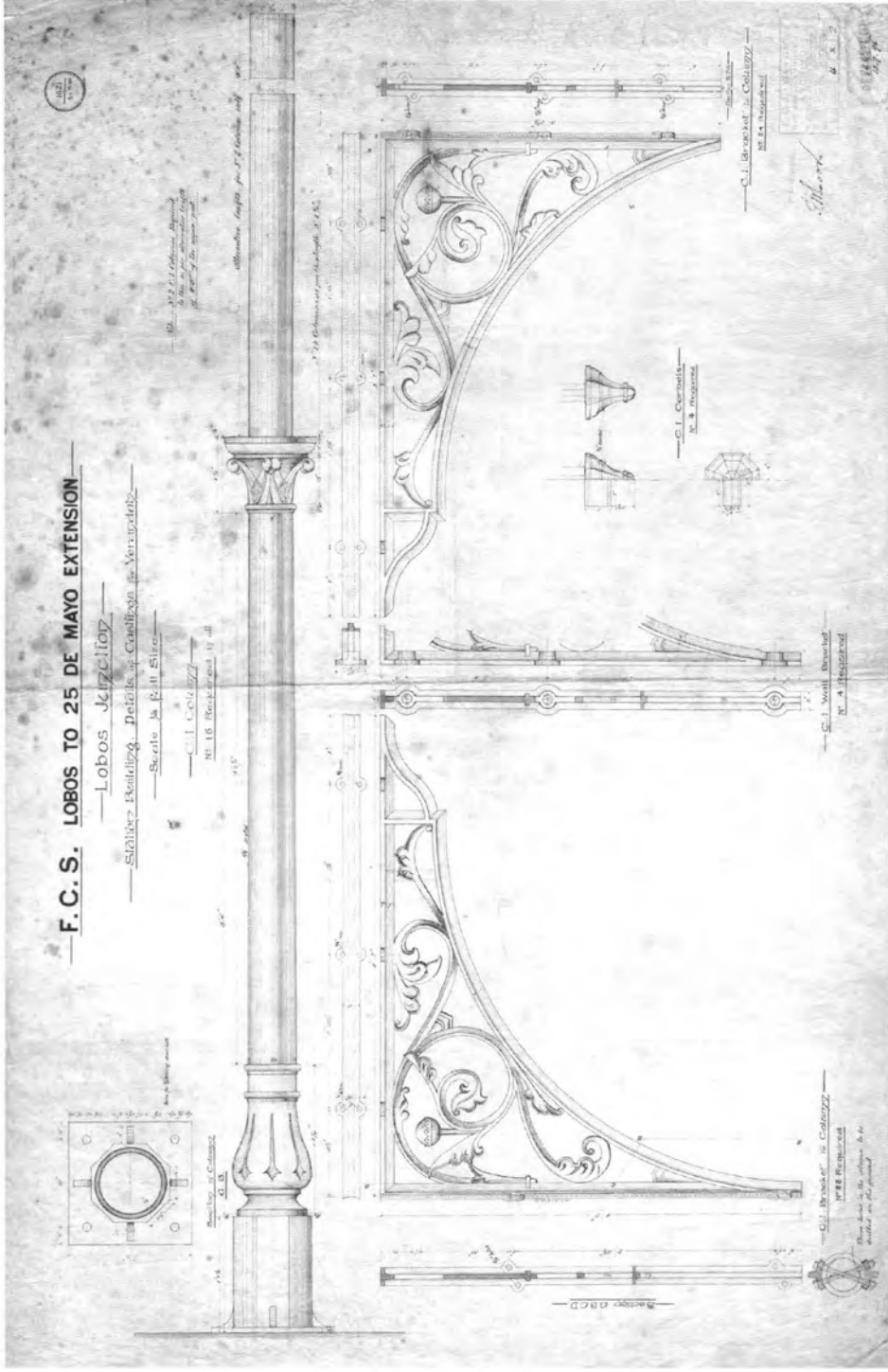


6.6 Ornamental spray fountain manufactured by Andrew Handyside & Co. for the Plaza Independencia, Tucumán. Photograph by the author.

6.7 Drawing showing two cast-iron caryatids supplied by Walter Macfarlane for the Palacio de las Aguas, Buenos Aires, in 1894. Courtesy of Colección Museo del Agua.



Handyside's promotion of his company's work was centred on the success of its products in exhibitions, starting with the London International Exhibition in 1862. In Argentina, the first exhibition of this kind was held in Cordoba in 1872, principally to promote domestic products. However, one of the most important stands in this exhibition was one showcasing British manufacturers, including iron founders. This exhibition presented an opportunity to display (and hopefully sell) British cast-iron products to an Argentine audience. With the financial assistance of the British-owned Central Argentine Railway, British founders were able to transport their goods tax-free to Cordoba.⁷⁶ Handyside was one of the British founders who participated in the exhibition, displaying two of the company's fountains, and it is thought that the Tucumán fountains were acquired there. The promotion of cast-iron fountains in urban spaces was driven by a perceived need for a hygienic form of water supply, especially after epidemics caused by insanitary environmental conditions in urbanising Argentina.⁷⁷ In Buenos Aires, the English engineer John Frederick Bateman took charge of the city's water supply, building



6.8 Drawing of cast-iron brackets, corbels and columns for the new Lobos station, Buenos Aires. Reproduced by permission of Luis Maria Benitez and Roberto Igarzabal.

reservoirs such as the Palacio de las Aguas in 1894. Constructed by Bateman's British company, Bateman, Parsons and Bateman, the building is one of the most peculiar in the city of Buenos Aires. The Norwegian architect Olaf Boye was responsible for the exterior of the building, while the Swedish engineer Carlos Nystromer was the project manager.⁷⁸ The entire façade was built in Britain using English terracotta and Scottish prefabricated iron elements provided by Macfarlane, including eight bespoke cast-iron caryatids (Figure 6.7). Other Macfarlane-made components can be found throughout the building, including lamps, the roof cresting and terminals (numbers 132 and 148, and terminal number 462 from the 1882 catalogue).

As already discussed above, cast-iron structures and components like those illustrated in Macfarlane's catalogues could be chosen for several reasons: as one-off design features of specific buildings; as part of a range of products from trade catalogues; or from catalogue designs that were copied by local foundries. In the case of the railways, all of these options came into play. Thus, in the case of the impressive cast-iron window in the Plaza Constitution station (1923) in Buenos Aires, the Lion Foundry created a bespoke design; while for many other stations cast-iron components were chosen from trade catalogues. These included the original Monte Grande station, with brackets from Macfarlane's 1882 catalogue (no. 58); Buenos Aires and Belgrano stations in Cordoba, with their columns, railings (no. 785) and terminals (no. 308) all corresponding to designs in Macfarlane's 1882 catalogue. In other cases architects or engineers designed their cast-iron components using catalogue designs as models, as evidenced by the columns and brackets used in Lobos station, which are adapted from Macfarlane's own designs but probably made by a local foundry (Figure 6.8).

While the Crystal Palace (1851) showcased the possibilities of entire prefabricated buildings in iron and glass, most of its successors did not adhere to this model.⁷⁹ In many buildings post-1851, iron and glass were combined with more conventional materials and modes of construction, including external masonry columns and brick walls. Part of the reason for this was that iron (and particularly cast iron) was regarded as unsuitable for exposed construction – it had a tendency to rust and was brittle and weak in tension.⁸⁰ Even though cities in Argentina were not generally subject to problems associated with fire – their adobe-built colonial buildings being fireproof – the country nevertheless followed London's example with regard to cast-iron construction. Thus, even in Buenos Aires, with its enormous variety of buildings, very few display any exposed cast-iron structure, even though many used this material in their ornamental details and interior structures.

CONCLUSION

In Argentina the widespread use of imported iron and the development of the country's native iron industry were closely linked to Britain's commercial dominance, and particularly that of Scottish iron founders. This relationship was

reciprocal: iron imported by sea led to the modernisation and industrialisation of Argentina; the Scottish manufacturers who provided that iron reaped large profits, while Britain extracted raw materials from Argentina. At the same time, British professionals (manufacturers, architects and engineers) in addition to heavy investment, contributed to the creation of an informal imperial relationship between Britain and Argentina.

With the beginning of free trade in 1853, the new Argentine republic opened itself up to European architectural influences, of which the British, French and Italian were strongest. This led to the use of iron in diverse contexts that embraced the aesthetics of mass-produced iron ornament as a sign of cultural refinement. This aesthetic – promoted in the pages of illustrated trade catalogues produced by iron founders – married individual choice and serial production.

The ornamental ironwork produced by Scottish manufacturers such as Walter Macfarlane was ideally suited for worldwide export: serially produced, easy to assemble and highly ornamental, it appealed to the eclectic tastes prevalent in Argentina to the end of the nineteenth and early twentieth centuries. Indeed, there is a close relationship between eclecticism, cast iron and imperialism: as stated by Gavin Stamp, “the ubiquity of cast iron is not merely British; it is imperial,” because exact replicas of individual products such as balconies, bandstands, ornamental gates, fountains and even whole prefabricated buildings can be found throughout the British Empire, in both its colonial and informal contexts.⁸¹ Cast iron created a certain cultural and design uniformity across the British Empire that affected all colonial lands, including Argentina. However, this sense of an imperial style provoked little resistance. Instead, it symbolised Argentina’s and, especially, its major cities’ aspirations to be like their more “civilised” counterparts at the European imperial centre.

NOTES

- 1 This chapter forms part of my ongoing doctoral research, “Trading Nations: Architecture, Informal Empire, the Scottish Cast Iron Industry in Argentina,” which explores larger questions concerning the nature and extent of British involvement in Argentina, especially during the late nineteenth and early twentieth centuries.
- 2 On Scotland’s role in the British Empire see MacKenzie and Devine, *Scotland and the British Empire*.
- 3 Ferns, *Britain and Argentina in the Nineteenth Century*, quoting from Castlereagh, *Correspondence*, vii, p. 320.
- 4 Ferns, “Britain’s Informal Empire,” 60–75.
- 5 “Informal imperialism” is a concept that has held currency since the 1950s, especially in Gallagher and Robinson’s “The Imperialism of Free Trade”.
- 6 See Ortis, *Historia De Los Ferrocarriles Argentinos*; and Irazusta and Irazusta, *La Argentina y el Imperialismo Británico*.
- 7 The National Institute of Statistics and Censuses (INDEC) http://www.indec.gov.ar/nivel2_default.asp?seccion=P&id_tema=2.
- 8 Santamarina, *The Argentine Republic*.

- 9 As the local conservative administration believed that the British railways were essential to Argentine economic prosperity and growth and that their interests "must be respected," it did nothing to control high railway tariffs until the mid-1930s, after which rates were publicly considered "enormous and unbearable and a serious threat to the entire export economy." See Solberg, *The Prairies and the Pampas*.
- 10 The chemist Andrew Ure (1778–1857) was born in Glasgow. His most significant publication was the *Dictionary of Arts, Mines and Manufactures*. This definition was quoted in Scrivenor, *History of the Iron Trade*, 2.
- 11 Griffiths, *Griffiths' Guide to the Iron Trade*, Preface.
- 12 Moss and Hume, *Workshop of the British Empire*.
- 13 See MacKenzie, "The Second City of the Empire."
- 14 See <http://www.oxforddnb.com/view/article/7137?docPos=1>.
- 15 Dobraszczyk, *Iron, Ornament and Architecture*, 9.
- 16 Mitchell, "The Development of the Architectural Iron Founding Industry in Scotland," 50.
- 17 Scrivenor, *History of the Iron Trade*.
- 18 Griffiths, *Griffiths' Guide to the Iron Trade*, 162.
- 19 Campbell, "Developments in the Scottish Pig Iron Trade."
- 20 Aristides Bryan Dominguez, "El General Savio Y El Desarrollo Siderúrgico e Industrial De La República Argentina," available at <http://www.acadning.org.ar/anales/2010/017-Dominguez3.pdf>.
- 21 Ibid.
- 22 Helguera, *La Produccion Argentina en 1892*, 200.
- 23 Mitchell, "Iron Structures in Public Parks."
- 24 Helguera, *La Produccion Argentina en 1892*, 200.
- 25 Mitchell, "The Development of the Architectural Iron Founding Industry in Scotland," 579–89.
- 26 Burn, *The Economic History of Steelmaking*, 80.
- 27 "Argentina's Increasing Demand for Steel and Iron," *The Times*, 22 April 1912, 1. Available at <http://www.newspapers.com/newspage/33231209/>.
- 28 Wässman, *Sobre Las Posibilidades De Una Industria Siderúrgica*, 8–9.
- 29 Tartarini, *Ferrocarriles Provincia Buenos Aires*, Introduction.
- 30 Wässman, *El Hierro Viejo Y Su Aprovechamiento*.
- 31 Gay and Stamp, *Cast Iron*, 7.
- 32 Juarez, "Documenting Architectural Scottish Cast-Iron in Argentina."
- 33 MacKenzie and Devine, *Scotland and the British Empire*, 233.
- 34 Higgs, "The Exported Iron Buildings of Andrew Handyside."
- 35 Dobraszczyk, *Iron, Ornament and Architecture*, 29.
- 36 Gay and Stamp, *Cast Iron*.
- 37 Macfarlane's Spanish-language trade catalogue can be found in the library at the Ironbridge Gorge Museum Trust. A Spanish-language Carron catalogue can be found

- in the National Archives of Scotland. See Juárez, "Documenting Architectural Scottish Cast-Iron."
- 38 Contreras, "Los Catálogos De Piezas Constructivas."
 - 39 Gay and Stamp, *Cast Iron*, 11.
 - 40 Juárez, "Documenting Architectural Scottish Cast-Iron."
 - 41 Ferrari, "Los Catálogos De Fabricación en Hierro."
 - 42 See Alberdi, "Bases y Puntos" [italics in original].
 - 43 Waisman, "La Infraestructura Técnica Y Profesional en Las Provincias."
 - 44 De Paula, "El Neorrenacimiento Y Los 'Revivals' (1852–1880)."
 - 45 Ibid.
 - 46 Guiñazu, *Banco De La Nación Argentina*.
 - 47 Piccioni and Novick, "Poderes, Imágenes y Edificios," 156.
 - 48 *Builder*, 29 January 1876, 100.
 - 49 Martini and Peña, *La Ornamentación en La Arquitectura De Buenos Aires*, 39.
 - 50 Silva, *Arquitetura Do Ferro No Brasil*, 89.
 - 51 See Dobraszczyk, *Iron, Ornament and Architecture*, 32–6.
 - 52 Gay and Stamp, *Cast Iron*.
 - 53 GD58/16/1: Drawings and Design book. Carron Company Records. National Archives of Scotland.
 - 54 These companies also sold British items. The Carron Company archives indicate that cast-iron products were sold in both Harrods and the Maple Company Store. See documents in GD58/6/11/41: Carron Company Records. Sales Visits in 1928.
 - 55 Schávelzon, *Haciendo Un Mundo Moderno*, 73.
 - 56 Ibid., 95.
 - 57 Ibid., 93.
 - 58 Ibid.
 - 59 See Jordan, "Public Parks, 1885–1914."
 - 60 See Mitchell, "Iron Structures in Public Parks."
 - 61 See Rabbitts, *Bandstands*; and Dobraszczyk, *Iron, Ornament and Architecture*.
 - 62 Members of the Scottish Ironwork Foundation helped to identify this gazebo. Lucrecia Araoz kindly went to the site to verify the foundry mark.
 - 63 The Macfarlane bandstand is one of eleven illustrated in the Spanish-language catalogue held by the Ironbridge Gorge Museum Trust. According to David Mitchell this model was the earliest example erected by Saracen in 1875 at Priory Park, Great Malvern in England (Mitchell, "The Development of the Architectural Iron Founding Industry in Scotland," 520). For San Martín Park's bandstand and gates see: Favre, *Escenarios del Poder*, 57.
 - 64 Mitchell, "The Development of the Architectural Iron Founding Industry in Scotland," 479.
 - 65 Dobraszczyk, *Iron, Ornament and Architecture*, 17.

- 66 Ibid., 47–50.
- 67 Torre, Terán, and Viola, *Iglesias De Tucumán*, 221.
- 68 Andrew Handyside was a Scotsman but was based in Derby in England.
- 69 Higgs, "The Exported Iron Buildings of Andrew Handyside."
- 70 Anon., *Art Journal Illustrated Catalogue of the International Exhibition*, 20.
- 71 Ibid. Andy Savage kindly identified these Handyside fountains (numbers 15 and 18). He is currently cataloguing Handyside products around the world (see <https://maps.google.com/maps/ms?msid=208452953436306162382.00048e30a316aab2a5d23&msa=0&ll=12.554564,30.761719&spn=114.338888,270.527344>). Marcelo Beccari also helped to find copies of the Tucumán examples in England.
- 72 Anon., *Art Journal Illustrated Catalogue of the International Exhibition*, 20.
- 73 Gay and Stamp, *Cast Iron*, 10.
- 74 See <http://www.lagaceta.com.ar/nota/453493/Tucumanos/historia-fuentes-tucumanas-tienen-mellizas-dispersas-mundo.html>.
- 75 Dobraszczyk, *Iron, Ornament and Architecture*, Introduction.
- 76 "The Edinburgh Gazette," *The Edinburgh Gazette*, 26 January 1869.
- 77 Tartarini, *El Patrimonio Industrial De Las Obras De Salubridad*.
- 78 Ibid.
- 79 Gay and Stamp, *Cast Iron*, 14.
- 80 Ibid.
- 81 Ibid., 11.