

The Macarthur family wool business - Australia's first producer-driven Global Value Chain

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Abstract

From 1797 to 1827, the Macarthur family specialised, collaborated collectively and persisted to create Australia's first producer-driven GVC in fine-wool. Product, process and logistical innovation were all necessary for success. In this paper, we use an in-depth longitudinal case study to demonstrate how these innovations were enabled as a result of the unique qualities afforded to family businesses. Long-term focus on value creation through sustained collective and collaborative innovation by geographically separated family members across multiple fronts was required to take advantage of the opportunity arising from the changing context of the Industrial Revolution in England, and leave a legacy.

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Introduction

“Distance is a characteristic of Australia as mountains are of Switzerland. By sealanes or airplanes most parts of Australia are at least 12,000 miles from western Europe, the source of most of their people, equipment, institutions and ideas. The coastline of Australia also stretches for 12,000 miles and the coast encloses as much land as the U.S.A., excluding Alaska. The distance of one part of the Australian coast from another, or the distance of the dry interior from the coast, was a problem as obstinate as Australia’s isolation from Europe”

Geoffrey Blainey (1966, p. viii).

The Macarthur family have a well-established legacy in Australia. John Macarthur is known as “the father of the wool industry” (Garran & White, 1985, book cover), adorned the Australian \$2 bank note² and “probably did the country greater material service than any other man” (Ellis, 1973, p. xiii). Elizabeth Macarthur is now recognised for her pastoral prowess in running the Macarthur estate (Grenville, 2020; Tucker, 2018).³ Not much is known on the role of the girls, but all four boys helped shape the family business, positioning Australia as the leading global wool producer (Day, Jessup, & Cameron, 1984; H. King, 1989, p. 22). Despite the undeniable role of the Macarthur family in establishing the young Australian colony’s foothold in the wool industry, there is no retrospective case analysis that holistically assembles the facts around how Australia’s first family business producer-driven Global Value Chain (GVC) was established.⁴ This paper details how the Macarthurs collectively innovated to overcome the “tyranny of distance” through the five dimensions of family socioemotional wealth (Berrone, Cruz, & Gomez-Mejia, 2012; Blainey, 1966). In doing so, we extend our understanding of family business impact on GVC structures and lead firm’s innovation development, and the significance of GVCs in the field of international business (Ambros et al., 2021; Buciuni & Pisano, 2021; McWilliam et al., 2020).

Family businesses are a significant part of an economy (Shanker & Astrachan, 1996). According to Chirico, Sirmon, Sciascia, and Mazzola (2011), family firms account for 85 percent of companies worldwide. However, researching family businesses requires a long period of study, as transgenerational intention and patient capital defines family firms (Handler, 1994; Sharma, 2004; Short & Payne, 2020). For example, cymbal maker Zildjian has a 387 year family genealogy (Anwar & Tariq, 2011). Other significant case studies that have been approached historically include inter-generational Greek Tramp shipping firms (Harlaftis & Theotokas, 2004), AB Gust

² Reserve Bank of Australia ceased issuance of \$2 notes following introduction of \$2 coin in 1988

³ John was largely credited despite being abroad for half of the 24 years it took from the first Merino to achieve success in the English market.

⁴ Although recent work (see Gereffi, Humphrey, & Sturgeon, 2005) has interpreted GVCs with five governance types, we draw upon the original two governance types developed by Gereffi (1994) and Gereffi and Korzeniewicz (1990) with focus on the producer-driven type, which most closely describes the Macarthurs GVC. Nonetheless, we adopt the contemporary GVC terminology, which has superseded the earlier Global Commodity Chain (GCC) framework. The colony had only been in place for two years, when John, Elizabeth and baby Edward arrived in 1790 on the second fleet as free settlers. They were among the first free settlers to Australia.

Carlsson in the Swedish printing industry (Ottosson & Lundgren, 1996) and William Rushworth in the cultural industry (Wong & McGovern, 2020). Furthermore, Dejung (2013) highlighted that well into the twentieth the world's largest trading firms remained family businesses. Outside of trading, examples of 'born global' family business have not been found (Rennie, 1993).

The link between family business and international business remains subject to further work (Arregle, Hitt, Sirmon, & Very, 2007; Calabrò, Chrisman, & Kano, 2022; Casillas & Moreno-Menéndez, 2017; Metsola, Leppäaho, Paavilainen-Mäntymäki, & Plakoyiannaki, 2020). The way in which family businesses operate is distinct, as is their approach to internationalisation (Chrisman, Kellermanns, Chan, & Liano, 2010; Graves & Thomas, 2008; Litz, 1995; Sharma, Chrisman, & Chua, 1997; Sorenson & Bierman, 2009). Most recently, Debellis and Rondi (2021) opened discussion on better understanding the link between family business and GVCs (Gereffi et al., 2005).

GVCs are a type of international business and an established field of study in their own right (Ambos, Brandl, Perri, Scalera, & Van Assche, 2021; Antràs & Chor, 2021; Bair, 2005; De Marchi, Di Maria, Golini, & Perri, 2020; Kano, Tsang, & Yeung, 2020). GVCs have activities which add value to a product that take place across two or more regions (Sturgeon, 2001). On that basis, the Macarthur's family business can be characterised as a GVC, the first known example in Australia. Although early businesses engaged in GVC activity, including the producer-driven GVC of Dutch Shell with its refinery based in Dutch Borneo in 1897 and the multi-regional triangular trade across regions in the 17th century (Shell, 2021; Singhal, 2009), few cases have been published.⁵ What makes the Macarthur GVC novel compared to other international businesses is that sheep were not native to Australia, they were all imported, and the business began with an export orientation from the onset, as no market existed for fine-wool in Australia's early colonial period (Rennie, 1993; Ville, 2005).

Debellis and Rondi (2021) propose that family firms design their GVC by vertically integrating their operations and adopt a relational governance, whereas non-family firms tend towards outsourcing and captive GVC governance (Gereffi et al. (2005)). We use the establishment of the Macarthur family business GVC to test this hypothesis. We also use the Macarthur family-run business to explore the proposition that family business GVCs are driven by their socioemotional needs (Berrone et al., 2012; Debellis & Rondi, 2021).

⁵ Connell (2003) is one of the first to interpret early trading companies through the lens of value chains (Giacomin, 2018). Linneweh (2019) has since examined rubber trading through the lens of commodity chains.

Key characteristics of socioemotional wealth are observed (Berrone et al., 2012). John Macarthur controlled the family business, and there was strong binding relational ties between family members. Wool became a key part of the family's identity (Belk, 1988) and the Macarthurs perceived success in wool as an extension of their family's wellbeing (Miller & Le Breton-Miller, 2005). Family and wool activities became inseparable (Gersick, Lansberg, Desjardins, & Dunn, 1999; Payne, 2018). The Macarthur story provides evidential support for the contention by Debellis and Rondi (2021) that from a socioemotional wealth perspective, non-financial goals and family binding social ties are distinctive characteristics that shape family firm GVC design and governance.

Legacies form part of the socioemotional needs (Barbera, Stamm, & DeWitt, 2018). Social ties between family members enable long-term commitment to innovation, decision making, generational succession and external relational continuity internationally (Arregle et al., 2007; Astrachan & Kolenko, 1994; Sirmon & Hitt, 2003). Unknown in England, the Macarthurs arrived to the Australian colony in 1790 and over 40 years, cemented a legacy by selecting a product tailored to local conditions, implemented many innovations, elicited ongoing feedback from end-users, and advanced both political and financial institutional changes, while acting as a demonstrator to their peers across the globe.

We use a novel mixture⁶ of primary sources and well-established secondary sources to examine the actions taken by the Macarthur family in the period 1797 to 1827, with a focus on the period from 1800 to 1821. In undertaking an in-depth longitudinal case study approach, we better understand how the Macarthur family acted as “demonstrators” on quality fine-wool production to both the colony and England, developed a relational producer-driven GVC and in doing so initiated one of Australia's longest running and successful export industries.

Theoretical framework

A unique characteristic of the family firm, over the non-family firm, is the long-term focus on wealth generation and focus on leaving a legacy (Baker & Wiseman, 1998). Habbershon and Williams (1999) developed “familiness” as a distinct resource and modelled the link between “familiness” and long-term wealth outcomes. However, family business scholars found the resource-based view (RBV) of the firm, established by Wernerfelt (1984), and developed by Barney (1991) lacked an ability to account for the “unique qualities inherent to family-owned firms” (Tokarczyk, Hansen, Green, & Down, 2007). Berrone et al. (2012) identified five dimensions of

⁶ Primary sources include the Macarthur letters assembled by Macarthur-Onslow (1914), colonial documents assembled by Crowley (1980) and colonial statistics assembled by Linge (1979). We triangulate Pemberton (1991), Craig and Jenkins (1996) and Ker (1961, 1962). We use contemporary biographies provided by Ellis (1973), H. King (1980, 1989), Bickel (1991) and Tucker (2018) and many well established secondary sources.

socioemotional wealth in family business. Firstly, the family control and the influence the family has on preservation of goals and the organisation of resources. Second, family identification with the business, enabling the family to see business activities as an extension of family wellbeing. Third, binding social ties that generate high relational trust and commitment to business activities. Fourth, emotional attachment to the values and emotions associated with the family business activities. Fifth, intention to perpetuate the family dynasty through succession.

In combination, the longer-term orientation of the family firm and the psychology of the business leader, provides a more relational focus to the operation of the family business, and as such provides access to resources external to the firm. The psychology of the family business leader focussed on leaving a legacy is described in the Bowen Systems Theory by Murray Bowen (1993). Contingent on leadership capability, the unique blend of internal and external resources can be orchestrated into a valuable, rare, imperfectly imitable and non-substitutable combination, such as a GVC (Pitelis & Teece, 2018).

In this work we describe how valuable, rare, imperfectly imitable and non-substitutable family resources are assembled into a producer-driven GVC for long-term competitive advantage (Gereffi, 1994; Habbershon & Williams, 1999). We respond to Debellis and Rondi (2021) to show empirically that relational governance is employed in the family business GVC (Gereffi et al., 2005). We show how the long-term focus of a family business includes investment in both business and institution which provides further long-term benefits to both the family business, broader community and to the family.

Background on the Australian Macarthur family

John Macarthur and Elizabeth Macarthur (née Veale) were largely unknown in England, prior to arrival in Australia. John was born in Plymouth in 1766 and Elizabeth was born in Bridgerule in 1767. Married in 1788, they had their first child, Edward, a year later. When John was offered a transfer as a lieutenant to New South Wales Corp, the family moved to Botany Bay in 1790 on the Second Fleet (Ellis, 1973; McIntyre, 2007; Tucker, 2018). The move is likely to have provided the motivation to seek opportunity not afforded to the young couple in England (Baker & Wiseman, 1998; Bowen, 1993).

John and Elizabeth Macarthur are said to have arrived in the colony “heavily in debt”, but were quickly afforded the young colony’s second free-settler land grant – named Elizabeth Farm – and subsequently became one of the

colony's largest landholders (Ellis, 1973, pp. 58-59; J. E. Steven, 1969a, p. 121).⁷ Son of an English tailor, John was an entrepreneurial salesman and the move to New South Wales provided him with new opportunities. It is likely John acquired his commercial background from his family's tailoring business, prior to joining the forces (J. E. Steven, 1969a, p. 121).⁸ His salesmanship is demonstrated in his promotion from his posting inland upon arrival in the colony to regimental paymaster in 1792 (M. Steven, 1967). The additional (unpaid) appointment of inspector of public works gave him extensive control of the colony's resources.

Officers in the early colony were paid on a ledger in England, as there was no local currency (Craig & Jenkins, 1996). John, like many officers, used his position to engage in opportunistic trade, that he invested in a portfolio of activities for self-sufficiency and to be less reliant on the colonial government (Ellis, 1973). By 1800, the Macarthurs had a varied pastoral portfolio, "experimenting" with olive trees, vines, cattle and sheep. Elizabeth Farm had the first olive trees in the country, oaks, oranges, mulberry trees and roses (Atkinson, 2016, p. 39). Origins of the Australian wine industry also date back to the Macarthurs (McIntyre, 2007). It was only from 1800 that John focussed more on wool and became a strong promoter of fine-wool across both Australia and England from 1803 (Ellis, 1973, pp. 73, 75-78; Ker, 1961, 1962; Macarthur-Onslow, 1914).

Elizabeth Macarthur was actively involved in the management of the Macarthur properties.⁹ Elizabeth lost her father early, was well educated and brought up in a pastoral family. Her pastoral heritage, led to the successful development of Elizabeth Farm and by 1798, Elizabeth recorded a flock of about 1000 sheep (Ellis, 1973, p. 223). These experiences likely provided her with resilience and expertise to manage the farm and convict labourers during the 12 years (1801-4; 1808-17) John Macarthur was exiled in England (Tucker, 2018).¹⁰

⁷ Elizabeth Farm was located in Parramatta, New South Wales, now a suburb outside of Sydney.

⁸ Critics of John Macarthur referred to him as a staymaker's apprentice.

⁹ Extent of Elizabeth Macarthur's role, based on the Macarthur letters, has been developed into a novel by Grenville, K. (2020), "A room made of leaves", Australia: Text Publishing

¹⁰ During the 24 years from 1797 to 1821, Macarthur spent half in England and half in New South Wales, so could not have been solely responsible at a pastoral level for successful sheep breeding - Elizabeth managed the properties. In 1801, Macarthur was sent to England to be court-marshalled following a duel in the colony. Macarthur spent four years in England, returning in 1805. Macarthur was exiled again in 1808, on alleged breach of the law relating to obligations incurred through his part ownership of a ship which was the catalyst for the Rum Rebellion. His second exile lasted eight years, returning in 1817 (M. Steven, 1967).

Table 1 The Macarthur family

Name	Born	Died	Profession	Resident of England
John	1766	1834	Entrepreneur	1801-04; 1808-17
Elizabeth	1767	1850	Pastoralist	
Edward	1789	1872	Lieutenant	1796-1851; 1860-72
Elizabeth	1792	1831	Unknown ¹¹	1801-04
John Jr. ¹²	1794	1831	Lawyer ¹³	1801-31
Mary	1795	1852	Unknown ¹⁴	
James	1798	1867	Accountant/Manager	1808-17
William	1800	1882	Botanist	1808-17
Emmeline	1808	1888	Artist & Poet ¹⁵	

Source. Ellis (1973), Tucker (2018), De Vries (1987)

Note. Resident of England includes only periods after Macarthurs' initial settlement in Australia in 1790. The Macarthurs also had an unnamed girl after Edward, who did not survive birth (Tucker, 2018).

All members of the Macarthur family (see Table 1 and Figure 1) contributed to value creation by the family GVC.¹⁶ John Macarthur was the entrepreneur, salesman and customer face. Elizabeth maintained the colonial social connections with governors. Elizabeth sent her boys and eldest daughter back to England to be educated, while the younger girls remained in the colony for home education and helped their mother with the business of running the family estate. Although the precise roles of the girls are unknown, each boy was engaged in specialised roles in supporting the Macarthur family business GVC (Feenstra, 1998).

¹¹ In the early 1800s, eldest daughters were expected to help their mothers, whereas there was no expectation on younger daughters. In 1810, daughter Elizabeth became unwell and spent her life "writing letters, gardening and painting" (De Vries, 1987, p. 40). Her precise role is lost to history (Lerner, 1975).

¹² The suffix Jr is used in this paper when referring to the son John of John and Elizabeth Macarthur.

¹³ John was one of the colonial committee for the board of the Australian Agricultural Company formed in 1824 by the Macarthurs (Atchison, 1970)

¹⁴ Mary married Dr James Bowman in 1823, with a dowry of 200 merino sheep and was granted land in 1824 (Gray, 1966). Her precise role is lost to history (Lerner, 1975).

¹⁵ Emmeline married Henry Parker in 1843 (Nairn, 1974). Her precise role is lost to history (Lerner, 1975).

¹⁶ History explicitly records the involvement of Elizabeth and John Macarthur and the Macarthur sons. Macarthur daughters involvement is inferred by the extensive nature of property holdings, breadth of sons involvement (hence, family culture) and John Macarthur's extended exile in England. Elizabeth managed properties for 8 years from 1808-1817 with only daughters Elizabeth, Mary and young Emmeline in the colony.

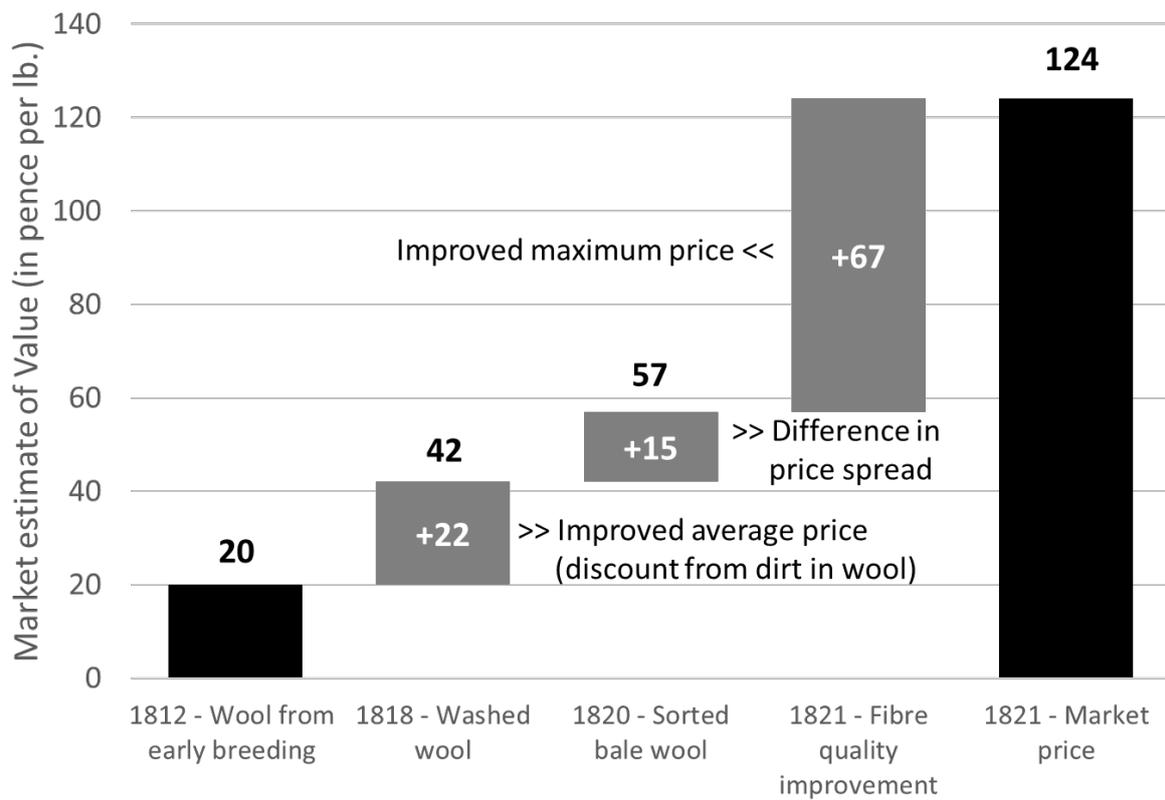


Figure 1 Value (measured in pence per pound) created by the Macarthur family in each stage of the colonial wool Global Value Chain

Edward, the oldest son, left home at age five for his English education and spent most of his time in London and across the Continent in service, ultimately entering the English parliament (Ellis, 1973, p. 480). Edward supported John Jr. and his father on visits to London.¹⁷

John Jr.,¹⁸ son of John and Elizabeth, went to England in 1801 at age seven for boarding school, had only three years back in the colony, from 1805 to 1808, before returning to England for schooling and his legal education in Cambridge. He was admitted to the bar in 1818 as Australia's first Barrister in London (Ellis, 1973, p. 481). John Jr.'s connections enabled changes in English tariffs, establishment of the AACo and was also the family's eyes and ears to understand the quality (value-added) needs of the English manufacturers.

James was educated in the counting houses of London and returned to the family farm in 1817 (Ellis, 1973, pp. 482, 518-519). James's English counting house education enabled him to manage the family business as well as help William on the value-added process innovations of washing and sorting wool (see Figure 1).

William attended school in England, and returned to the family farm at the same time as James in 1817, after which he led the continuous value improvement of sheep breeding (Ellis, 1973, pp. 481-483). William also worked with James on value-added process innovations to wash and class (sort) wool (see Figure 1).

The breadth of influence of the Macarthur family makes them Australia's first highly successful entrepreneurial family. Figure 2 summarises the timeline of the GVC value creation actions that were taken to achieve the value creation shown in Figure 1 and the creation of the early Australian wool GVC by the Macarthurs over the timeframe 1797 to 1827. Key actions by others over the same period are also shown in Figure 2.

¹⁷ Edward was a useful negotiator with influence who aided and abetted John Jr. (Ellis, 1973, p. 480).

¹⁸ The suffix Jr is used in this paper when referring to the son John of John and Elizabeth Macarthur.

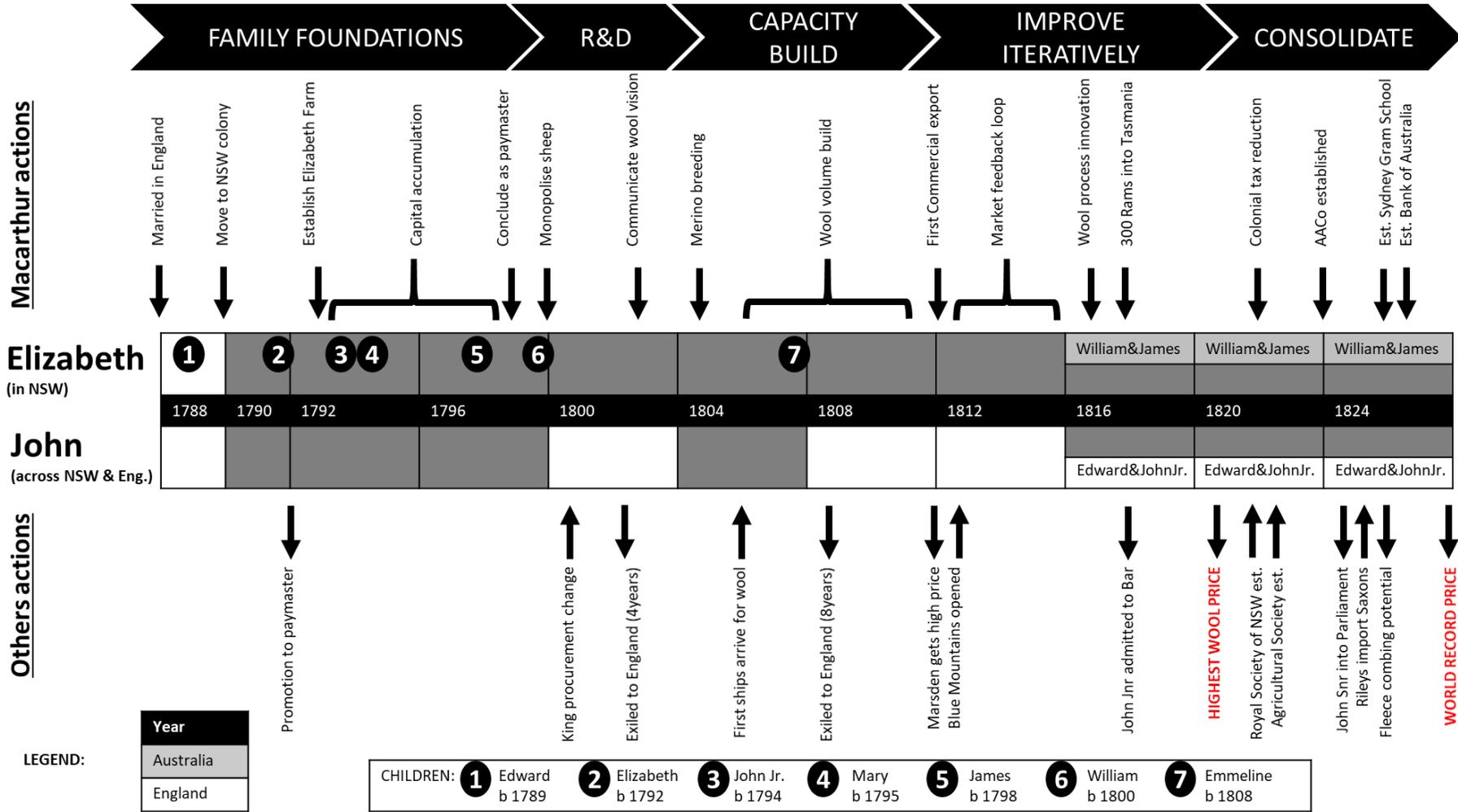


Figure 2 Timeline of events surround the Macarthur establishment of the Australian wool industry

Source: Author

Overview of the producer-driven wool GVC in Australia

Fine-wool production was not an obvious choice in Australia. There were no real precedents in Britain for Australia's extensive system of sheep production (Henzell, 2007, p. 54).¹⁹ The transition from the first Merino arriving in the New South Wales colony to becoming the predominant wool supplier in England took place over the first half of the 18th century (Table 2).^{20, 21} In the 1850s, Australia supplanted both the Spanish and Saxons as the primary supplier of fine long staple wool into England (Table 2). A quarter of a century later, Australian wool provided the majority of retained wool used by English manufacturing.

Table 2 Sources of imports of raw wool into the United Kingdom in millions of pounds

Year	Australasia	Germany	Spain	Retained*
1800	-	0.4	6.0	107
1810	-	0.8	5.9	113
1820	0.09	5.2	3.5	135
1830	1.9	26.7	1.6	163
1840	9.7	21.8	1.2	186
1850	39.0	9.1	0.4	223
1860	59.1	9.9	1.0	283
1870	175.0	4.2	-	350
1880	300.6	7.1	-	387
1890	418.7	6.7	-	497
1900	386.3	5.0	-	509

Source. Barnard (1958); Seward (1982)

Note. *Figures from Australasia include negligible exports from New Zealand. Figures from Germany include imports from Saxony. Both sources note their Figures are rough estimates.*

**Retained is defined as British domestic clippings plus imports, less exports.*

This period experienced substantial technological change for the wool industry.²² The industry began to mechanise, incorporating technologies developed in the cotton industry (Jenkins, 1972; Lemon, 1951). Mechanisation facilitated increased production volumes, consolidating production around the manufacturers, and resulting in larger quantities of raw wool being bought at market.

¹⁹ The quality of Britain's coarse wool would not yield the returns necessary to cover costs if produced within Australia. Furthermore, Britain's lush green pastures offered a clean environment for sheep, whereas Australia's harsh bush scrub resulted in fleeces full of dirt and seed.

²⁰ Merino wool is known for finer wool (i.e. smaller diameter fibres) relative to other breeds of sheep. Historically, Merino wool had a shorter staple compared to today.

²¹ Decline in English domestic wool production was attributed to the Corn Laws introduced in 1815 and the increased English consumption of mutton (Ker, 1961).

²² Brothers (1859) has a detailed history of the technology dating back to 1102.

At the same time, changes in the market structure increased the scale of the woollen market potential for Australia. The United States' clothing industry was increasingly incorporating woollen products, while supplies of Spanish raw wool were tightening due to the Anglo-Spanish war that began in 1796. While higher market prices appear to have allowed German Saxon wool producers to enter the English market, German Saxon wool producers did not have the capacity to completely supplant supply from Spain in the late 18th century (Brothers, 1859).

It was not clear that Australia would be able to successfully enter the market. Wool was traded in bales and prices were based on fibre quality (length and diameter), discounted by consistency of the wool quality sampled from the bale and wool cleanliness (Barker, 1925; Brothers, 1859, pp. 96, 140, 158-160; Cottle & Baxter, 2015; Ville, 2005). The conditions of the Australian bush were harsh compared to Europe, preparing clean wool and consistency across bales for the market proved to be a value creation challenge for Australian pastoralists.

Figure 3 shows the production process that cemented the success of Colonial wool production. It consisted of sourcing sheep (raw materials) from three different continents; creating value through breeding, washing, shearing and sorting wool within Australia, and distributing clean sorted wool to market on a different continent to meet the growing needs of the industrial revolution. Three sheep were cross-bred: the fat-tailed Cape breed, which provided a long hair; the Bengal breed; and the Spanish Merino, which had a fine crimp. The colonial wool producer-driven GVC was established from Australia by Australians, hence, is producer-driven.

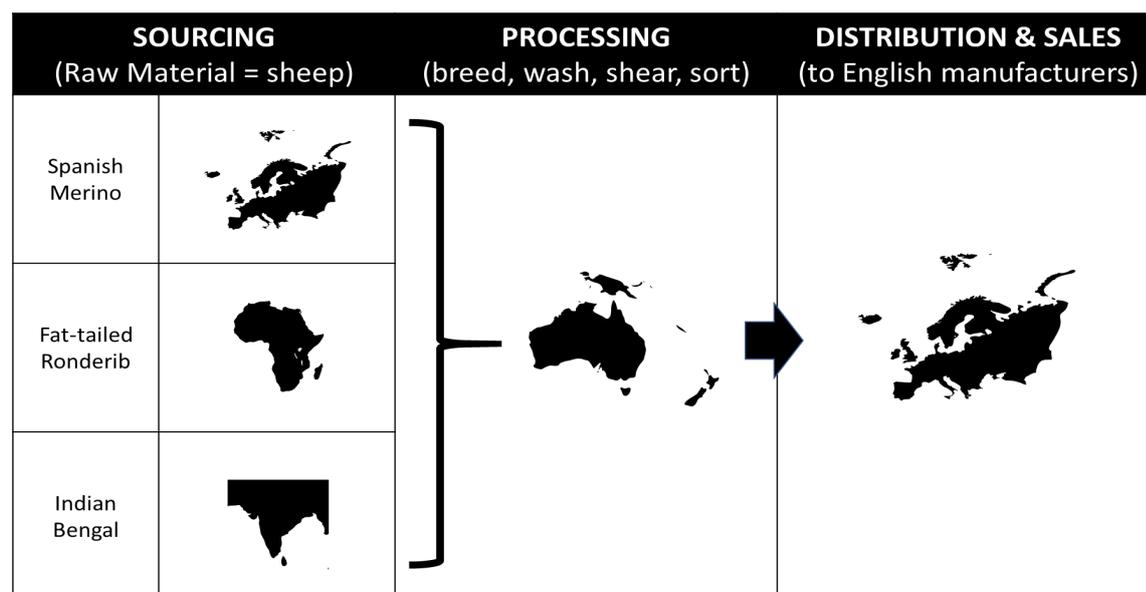


Figure 3 Illustration of colonial wool Global Value Chain across four continents

Key to the success of the Australian wool value chain, was initially value creation from improving staple (length) by breeding the other colony sheep with imported Spanish Merinos, while maintaining wool fibre diameter (AASMB, 2016; Collins and Collins, 2020; Couchman, 2009; International Wool Textile Organisation, 2020; Macpherson, 2012; McEwen, 2011; RBTA, 2020; Wilson, 1946; Vaidya and Bhatt, 1947; American_Wool, 2020).²³ Once wool quality met the needs of mechanised carding, success came from expanding production volume of the wool GVC to meet demand from the industrial revolution in England, requiring value creation well beyond product innovation. Over time, increased Australian wool fibre length and quality met the emerging needs of mechanised combing in England, further increasing volume requirements of Australian fine-wool. Figure 1 representatively shows the value creation from changes in wool fibre diameter and length of key Australian sheep breeds. The Macarthur family played a pivotal role in establishing this process within Australia.

Constraints breeding innovation (1788 to 1800)

The early colonial settlement lacked critical economic and political infrastructure to maintain a productive economy (N. G. Butlin, 1994, p. 174). The English Parliament established the first settlement in Australia in Botany Bay in 1788, to provide a base for trade ships to extend their Asian logistics network (Martin & Bolton, 1978). Most early settlers were victualled by government (Linge, 1979, p25). Early officers looked to supplement their income by trading with the vessels bunkering and arriving at the port.²⁴ Officers purchased cargoes of inbound ships on behalf of the colony with English Treasury Bills at wholesale prices.²⁵ As part of their benefits, in lieu of a colony cash salary, they retained a portion of the cargo which they subsequently resold at a premium (Craig & Jenkins, 1996).²⁶

Intermediating trade, in addition to officer pay being recorded by the Corps' London based agent, Cox and Greenwood ledger, allowed many of the "cash-poor" officers to build up considerable capital resources (Craig & Jenkins, 1996). Of particular relevance, was Waterhouse's trip to the Cape in search of food supplies, when he

²³ Only about 30 Merinos landed in the colony up to 1820 (Garran & White, 1985, p. 43)

²⁴ Bunker refers to the activity of breaking a journey in a safe harbour where vessels could anchor and top-up their food supplies for ongoing passage to the next port

²⁵ Bill of exchange drawn on the British Treasury used as the money system by the New South Wales Commissariat store for public and private external payments (S. J. Butlin, 2002, pp. 5, 21, 72)

²⁶ While the trade became profitable, it was not sustainable as it relied on the exploitation of resources owing to the lack of fertile land to grow cash crops (Linge, 1979).

took the opportunity to purchase Merino breeding stock (Evesson & Moor, 2000).²⁷ For John Macarthur, the benefits of being an officer resulted in the acquisition of Elizabeth Farm, extensive stock holdings, and construction of the one of the first houses in the colony (De Vries, 1987, p. 33; Macarthur-Onslow, 1914, pp. 45-46).

Early contributors to the development of the wool industry

The Australian fine-wool story begins with the first Spanish Merinos purchased in 1797 by Henry Waterhouse from the Cape of Good Hope (Cape). Returning to the colony, Waterhouse shared a portion of the first Merino flock with Captain Rowley²⁸, Reverend Samuel Marsden and John Macarthur. Although Macarthur offered to purchase the flock, there is no evidence that Macarthur initially regarded their purchase as any more than an extension of his varied portfolio of pastoral activities (Clark, 1996, pp. 28-29).²⁹ It took until 1812 for the Macarthurs to sufficiently value-add to the first colonial sheep to make their first commercial shipment of wool and nearly two decades for the Macarthurs to deliver on the 1803 vision of an Australian fine wool GVC (Ker, 1961, p. 36).

Family businesses, including the Macarthurs, played a significant role in the development of the Australian fine-wool industry, over and above the early colonial government.³⁰ Waterhouse imported the first Merinos in Australia (1797);³¹ Rileys made the largest import of pure-bred Saxon Merinos (1825);³² Peppin brothers imported hardier, long-stapled, broader Rambouillet, and Dalgety agents and merchants scaled the industry (1850s) (Atchinson, 1970; Evesson & Moor, 2000; Ker, 1961, p. 39; Ker, 1962, p. 29; Macarthur, 1803).³³

²⁷ Henry Waterhouse was sent to the Cape of Good Hope in search of food by Governor Philip Gidley King in 1797. While there, Waterhouse purchased five Merino rams and seven or eight ewes (Evesson & Moor, 2000; Henkel & Hoffmann, 2019, p. 55).

²⁸ Captain Rowley made no effort to breed the merinos from Henry Waterhouse for wool-growing – he was interested only in meat production (Fletcher, 1967)

²⁹ Early free settlers tended towards a varied portfolio of activities for self-sufficiency. Officers, like Macarthur, took the further opportunities including the purchase of entire cargos from incoming boats, and then on-selling at considerable profit, typically for colony government consumption.

³⁰ Governor King established the Woollen Factory at the Parramatta Women's Gaol to make rough woollen blankets in 1801 (Barker, 2015)

³¹ Refer footnote 24, on Waterhouse's purchase of Spanish Merinos.

³² Saxon Merinos are Spanish Merinos, bred in Saxony, Germany. The Riley family, split between England and New South Wales, replicated from 1825 with Saxon Merinos, much of what the Macarthurs did with Spanish Merinos from 1808 to 1821.

³³ Wool agent merchants provided financial, marketing, and technical services to support remote and inexperienced Australian pastoralists. They provided pastoralists with access to sources of short term trade finance, when the main wool market was in England (Ville, 2005).

Although many participants contributed in part to founding Australia’s fine-wool industry, what differentiates the Macarthur family from other participants is the Macarthurs’ early and sustained involvement across multiple stages of production.

Table 3 Prices paid for wool from New South Wales

Date of Sale	Vendor	Price (low)	Price (high)	Price (Avg)
1807	S. Marsden (sample)			n/a
1808	J. Macarthur			n/a
1812 early	S. Marsden			3s 9d
1812 November	S. Marsden			n/a
1812 December	E.Macarthur (“half dirt”)			20d <<<
1813	S.Lord & Hutchinson (merchants)			2s 6d
1814	Unknown			n/a
1815 February	A.Riley (merchant)		5s 9d	2s 6d
1817	W.Cox		3s 1¼d	
1818 February	J. Macarthur	3s 6d	5s 6d	3s 7d
1818 May	Oxley	2s 11d	3s 2d	3s 1d
	J. Macarthur	2s 9d	4s 0d	3s 6d
1818 September	J. Macarthur	3s 2d	4s 1d	3s 6d
1820 June	J. Macarthur	2s 7d	4s 9d	2s 8d
1820 August	J. Macarthur	1s 4d	3s 10d	2s 7d
1821 August	J. Macarthur	2s 5d	10s 4d <<<	3s 0d
	H. Macarthur	2s 5d	2s 11d	2s 10d
	Oxley, Wood, Howe	1s 7d	2s 6d	1s 11d
	Berry & Wollstonecraft	1s 2.5d	1s 10d	1s 4d
	Jones, Rile & Walker			
1827	Macarthur Family		16s 4d <<<	

Source. Abbott (1969c, p. 229) and Collins and Collins (2020)

Note: Abbott (1969c, p. 229) notes in his text early shipments were small and experimental, with first commercial shipments from 1812. Shipments from 1818 are from Abbott (1969c, p. 229) cited Macarthur Papers, vol.69. “n/a” in table refers known shipments where the price is unknown. 1827 wool sale and world record price until 1949 from Collins and Collins (2020). Shipments between 1821 and 1827 are outside the scope of this research and are thus not shown in table, and hence, break in table.

We quantify the value creation innovations by the Macarthurs over time in Figure 1 using the market price averages and price variation within shipments. In 1821, fleece from the Macarthurs delivered the highest price of the period of 10s. 4d. (124 pence) per pound of wool, five times that of their colonial peers (see Table 3). Macarthurs’ success was recognised with a gold medal by Royal Society of Arts as “superior to the best Spanish” wool, the principal supplier of wool to England at the time (shown in Table 2). We contend that 1821 defines the

moment in time when the Macarthurs established Australia's first foothold in England's imported wool market. This paper tells the Macarthur family business story of establishing Australia's first producer-driven GVC.

Establishing wool as the colonial export of choice (1800)

Assumption of colonial governorship by Philip King on 28 September 1800 heralded a change in course for the early colony. The English Parliament urged King to lower the colony's running costs. King accomplished this by requisitioning ship cargoes directly from Britain, bypassing speculative trade by officers in the colony (Craig & Jenkins, 1996). The efficiency drive reduced the available supply of Treasury Bills and restricted freedoms of officers, like Macarthur, who relied upon localized trade with the British government for their local income.

King's actions shifted the local opportunistic entrepreneurial activity of selling product to ships in port (cedar, fur seals and fish) to global trade (including Pacific Island sandalwood). Some officers began to purchase cargoes in advance directly from Britain using their Corps' ledger, instead of intermediating locally upon ship's arrival. Many were unsuccessful and subsequently went out of business (Abbott, 1969a, pp. 148-149; 1969b, p. 174; Craig & Jenkins, 1996).

John Macarthur's entrepreneurial endeavours were reflective of his fellow officers, an increasingly outward orientation. He purchased the second portion of Waterhouse's Cape Merinos upon Waterhouse's departure to England in March 1800, just prior to King's arrival. Seven months later, Joseph Foveaux signalled his intent to return to England. Macarthur made the decisive move to purchase Foveaux's entire sheep holdings, Australia's largest flock at the time (Ellis, 1973, p. 225).³⁴ Macarthur completed these transactions using his Corps' London ledger, as both officers were returning to England and could therefore liquidate their colonial acquisition. Macarthur's decision to take a majority stake in the colony's sheep herd, and a virtual monopoly on the Merino sheep stock, put the Macarthurs in a position of considerable influence within the colony and as the voice of colonial wool in England.

King showed an early interest in the woollens industry. Prior to leaving England, King engaged a master weaver, Thomas Wise, to establish a weaving industry in the colony. Unfortunately, Wise drowned on the outbound journey to the colony (Barker, 2015). Undeterred by the setback of losing Wise, King founded the first woollens workshop in 1801, later known as the Parramatta Women's Gaol and Woollen Factory with women manufacturing

³⁴ Just prior to Foveaux's departure to England, Foveaux had the largest flock of sheep in Australia – 1250 head. William Cox had 1000 head and the Macarthurs 970 head (Ellis, 1973, p. 224). Foveaux's sale to Macarthur assured reliable a payment using the Corps' London based agent upon his return to England (Craig & Jenkins, 1996).

rough woollen blankets (Barker, 2015). The woollen factory signalled local demand for wool (of low-quality) and may have provided a local customer for Macarthurs, but it is unclear whether Macarthurs' investment in breeding Merinos (for fine-wool) was influenced by the woollen factory.

The choice of wool as a staple commodity, unlike other agricultural products that were required at the time for food supply, provided a commercially viable product that was both light in weight and high in value, if sheep were bred for local conditions (see Figure 1). Significantly, wool could be cost-effectively transported to market over both land (via bullocks) and water (via clipper ship) (Blainey, 1966, pp. 119-146, 227).³⁵ However, early colonial sheep were suitable only for consumption as mutton. The Macarthurs understood the development of fine-wool would take considerable time, but as they were managing a portfolio of business interests, they had the capital resources to commit for the long haul (Karskens, 2013, p. 105).

As the Macarthurs began to focus efforts on wool, Macarthur's clashes with King provided an unexpected opportunity.³⁶ Macarthur's attempt to convince his commanding officer, Captain William Paterson to withdraw support for King resulted in an argument, ultimately escalating to a duel in September 1801 (M. Steven, 1967). As a consequence, King sent Macarthur to England in November 1801 for what became four years of exile (Abbott, 1969c, p. 225; Clark, 1996, p. 33). Two of Macarthur's children, Elizabeth and John, accompanied their father on the voyage to attend school in England. Macarthur arrived in England in 1801 to be court-martialled, however, different legal systems between the colony and England meant that the trial never eventuated.³⁷

Engaging the customer base and key stakeholders (1801 to 1804)

Macarthur arrived in England in 1801 with wool samples and took advantage of his free voyage to England to promote himself as the leading wool producer in the colony. He arrived amidst rapid change within the global wool industry (refer earlier section on the wool GVC).

Joseph Banks considered Macarthurs' "wool [as] a potential export" (Abbott, 1969c, p. 225). King, unbeknownst to Macarthur, had forwarded samples of Macarthur and Marsden wool to Banks in London. Although most

³⁵ Coupled with the absence of substantive inland waterways, logistical innovations played a key role in the success of the early colony (Blainey, 1966, p. 227; Lawrence & Davies, 2010, pp. 118-116). The use of bullocks in driving early Australian colonial success has been largely overlooked. Although their role is raised by Blainey (1966, pp. 119-146) and Hensell (2007, pp. 160-161) and noted in passing by a few (Barnard, 1958, p. 182; Panza & Williamson, 2019), no author has explicitly highlighted the link between bullocks and lack of inland river systems that biased the early Australian colony away from land-based, low-value bulk commodity agriculture to higher value, pastoral-based activities (Blainey, 1966, p. 227)

³⁶ Macarthur-Onslow (1914) suggests the argument involved a disagreement on the legal proceedings of a lieutenant who was charged with misappropriating a deceased officers' property.

³⁷ Refer footnote 11, Macarthur's periods of exile in England

samples were considered suitable only for the weft of coarse cloth and valued less than the costs of shipping to England, Banks highly regarded Macarthurs' wool (Abbott, 1969c, p. 224). Banks's comments reiterate the close inter-relationship between product selection and logistics necessary for successful GVC commerce from the early colony. Banks's report did not arrive in the colony until 1803, after Macarthur returned from England.

"Eminent manufacturers of woollen cloth" had seen "by accident" some of the Macarthur wool samples and "called upon" Macarthur for "interview" because it was "so highly important to the Manufacturing interest" (Macarthur-Onslow, 1914, pp. 64-65, 72). The Committee of Manufacturers "requested to show them the Samples" (Macarthur-Onslow, 1914, p. 72). Abbott (1969c, p. 225) refers to Macarthur's "reception", whereupon Macarthur was asked to estimate how long it would take the colony to develop the fine-wool value chain to produce the volumes required by the manufacturers. Based on past sheep numbers, Macarthur estimated it would take 20 years to replace current levels of Spanish imports into England, however, he based his numbers on the more hardy Cape and Bengal sheep, overlooking the delicate Merinos, that bred more slowly (Macarthur-Onslow, 1914, p. 73).

Banks downplayed Macarthur's projections, in response to follow-up enquiries from Whitehall's Office for Trade, having previously reported on the potential of colonial wool. Banks suggested there was "no reason to believe that the climate and soil of New South Wales was better fitted for growing wool" and that it would be found that "sheep did not prosper well there" (Macarthur-Onslow, 1914, pp. 74-75). In February 1804, Macarthur made a representation to the Lords of the Treasury, drawing upon the support of the manufacturers (Macarthur-Onslow, 1914, pp. 75-78). Five months later he presented to the Committee of the Privy Council (Ellis, 1973, p. 226)

Lord Camden (Secretary of State for the colonies) was impressed by Macarthur's twenty year vision that "New South Wales 'could produce as much fine-wool as is imported from Spain' " (Macarthur-Onslow, 1914, p. 98). Camden issued instructions to the New South Wales government to grant 10,000 acres of land in Cowpastures and 30 convicts for the Macarthurs, and every encouragement to grow fine-wool (Clark, 1996, p. 41). This was the largest land grant provided up to that time (Atkinson, 1988, p. 10).

Macarthur's salesmanship established political support and resources for his vision of a wool GVC. He identified changes taking place in industrial England and leveraged both his near monopoly stake of Merino sheep and leading colonial knowledge to his family's advantage (Abbott, 1969c, p. 225; Ellis, 1973, p. 225). He actively sought people with international commercial connections to access new markets abroad, including Walter

Davidson, related to the prominent Indian agency house (J. E. Steven, 1969a, p. 125). Macarthur also provided the seeds of opportunity for others, including the Blaxland Brothers³⁸, and Alexander Riley³⁹.

Macarthur recognised the need to invest in value creation, in support of the wool GVC (as shown in Figure 1 and Figure 3). Upon leaving England in 1804, John Macarthur sought and purchased Spanish Merinos (five rams and one ewe) to expand their breeding stock (Ellis, 1973, pp. 233-234; Hughes, 1987, p. 327).⁴⁰ John also brought wool classer Edward Woods back to the colony, in support of his vision.

The Macarthur family understood the importance of all relationships to support their business. The colony was principally a penal settlement with 99 percent victualled by government (Bessant, Blackmore, Caven, Cotter, & Waterson, 1978, p. 85; Linge, 1979, p. 25). So most colonialists didn't choose to move to the colony. Early free settler families, like the Macarthurs, were issued convicts as free sources of labour. Recognising the fragility of the colony, the family looked after their suppliers of labour, be it convicts, free-settlers or first people, by providing them with food, drink and clothing. James Macarthur explained: "where a man behaves well to make him forget that he is a convict" (Hughes, 1987, p. 313).⁴¹

Elizabeth Macarthur ran the family estate for the four years John and Elizabeth were apart. The 1802 muster showed Macarthur sheep numbers had grown to 2750, with Cox's holding increasing only half as much to 1100 (Ellis, 1973, p. 225). The progress in breeding demonstrated Elizabeth's pastoral management skills (Kociumbas, 1992, pp. 124-125).

Establishing fine-wool production (1805 to 1808)

John Macarthur returned to the colony in 1805, after four years in exile in England. He was accompanied by daughter, Elizabeth, having attended school in England. Macarthur found the pastoral industry had barely transitioned from breeding sheep for mutton to breeding for wool. Moreover, there was limited support within the colony to develop fine-wool (J. E. Steven, 1969b, p. 295). Although wool, of lower grades, could be sold to the colonial woollens factory, mutton provided a higher price in the colony than wool (Beever, 1965). Colonialists

³⁸ The Blaxland brothers sold their property in England and emigrated on account of the opportunity in wool. Arriving in April 1806, they crossed the Blue Mountains in 1813 in search of pasture for the expansion of pastoral activities which facilitated rapid growth of sheep production across the south-eastern Australian interior (Crowley, 1980, pp. 198-199; Kociumbas, 1992, p. 125).

³⁹ Alexander Riley moved to the colony in late October 1804 following Macarthur's promotion in England of the ambitious wool GVC. Riley, a merchant, proved to be one of the leading merchants who developed the Australian wool GVC in the 1830s, on the foundations laid by the Macarthurs.

⁴⁰ Upon purchase, Macarthur renamed it "Argo" after the story of Jason and the Golden Fleece.

⁴¹ These words were mirrored in first treatise on Australian farming (1926): "the belly is far more vulnerable and sensitive than the back"

needed more immediate income and did not possess capital required to cover the additional risk involved in multiple breeding cycles required to breed sheep for fine-wool export (Abbott, 1969b, p. 172).⁴²

Macarthur was also challenged by the length of time to breed wool. Returning to the colony, Macarthur continued to pursue other economic activities. In 1806 he proposed a triangular trade route to run between Canton, Calcutta and Botany Bay (Hainsworth, 1969, p. 276). Macarthur also had partial ownership in at least six vessels employed around the Pacific in fisheries, sandalwood and pork trade (J. E. Steven, 1969a, p. 123; 1969b, p. 295). The unannounced arrival of ships in late 1806 with orders to purchase wool, when the wool was yet of the required quality likely influenced the Macarthurs to continue with their vision (Abbott, 1969c, p. 227).

The Macarthurs had developed a rigorous breeding regime to improve wool fibre quality. Using “in-and-line-breeding”, the program was undertaken to breed an animal that provided the best blend of hair and wool (C. King, 1949, p. 151). The wool had a long staple that was suited to the Australian bush (Hughes, 1987, p. 327). The Macarthurs actively isolated the Spanish Merino flock at Elizabeth farm, to assure, in Macarthur’s words, ‘a pure blood Spanish Merino breeding partner’ (Ellis, 1973, p. 452).⁴³ Mixed bred sheep were despatched to their more distant Cow Pastures property.

To achieve the quality acknowledged by Joseph Banks in 1800, the number of crosses with Merino rams to deliver the equivalent fineness as the true bred Merino, was ten crosses and not the four Macarthur had anticipated (Abbott, 1969c, pp. 225, 226-227).⁴⁴ The delay did not surprise Banks, who assessed the 1803 proposition as “mere theoretical speculation” based on inexperience, acknowledging that with time “complete information on the subject will be known” (Abbott, 1969c, p. 226). The active management approach of separating pure from cross-bred ensured a quality Spanish Merino blood line and improved fibre quality delivered value (see Figure 1).

The Macarthurs were together in the colony for only four years between John’s two periods of exile in England. Elizabeth deserves the credit for the continued breeding process that followed in the colony, and developing the improved wool fibre quality and value (Hughes, 1987, p. 326). Based in England for eight years from 1808, John’s role was principally in laying the foundations for the family GVC business model for fine-wool.

⁴² Marsden calculated ewes year three times in two years and produce lambs at 18months (Ellis, 1973, p. 247). Sheep take about a year from birth to produce wool, thereafter grow fleece annually

⁴³ The crosses required combinations of the Fat-tailed Cape, Bengal and Spanish Merinos to produce the early Merino wool in Australia. Garran (1985) suggests that while Macarthur claimed to have maintained pure blooded Spanish Merino, his stock were not 100 percent pure.

⁴⁴ Refer footnote 39, on Marsden’s calculation on time required to breed sheep.

Creating the producer-driven GVC business model (1808-1816)

Macarthur arrived back in England in 1808, beginning what became an eight-year exile.⁴⁵ His second exile provided the opportunity for sons, James and William, to be educated, and the extended period facilitated the development of the producer-driven GVC business model for the Macarthur family fine-wool business⁴⁶. Elizabeth continued to manage the pastoral activities in the colony.

Macarthur learnt first-hand from buyers at wool auctions how Macarthur wool compared at market and provided constant feedback in letters to Elizabeth on wool quality and presentation:

“You will rejoice to hear that the value of the Wool is established beyond doubt, and that we may calculate as upon a certain thing that Wool of the quality of our most improved kind will sell for a Guinea a Fleece on with the other. I hope there will be a large quantity to send by the Isabella and that the Fleeces of the whole Flock are in a state of progressive improvement” Portsmouth, 4th March 1812
(Macarthur-Onslow, 1914, pp. 222-223)

However, the Macarthurs’ consignment from Elizabeth Farm in December 1812, was so “execrably dirty”⁴⁷ that John received no offers within the market and was “compelled to sacrifice it in Yorkshire” as it seemed “more than half dirt” (Ellis, 1973, p. 424). Table 3 shows the initial Macarthur price in 1812 was about half that of their peers and the subsequent Macarthur shipment in 1818 (Figure 2). Ellis (1973, p. 424) notes that Macarthur was so “enraged” that thereafter, every letter to Elizabeth made reference to wool. John established a clear customer feedback process, from the auctions in England to Elizabeth Farm in the colony. As he learnt more, he provided constructive feedback to Elizabeth on what needed to change in the breeding process, cleanliness of the wool and wool sorting to better present product at auction (Figure 1 shows value delivered doubled from improved cleanliness). Macarthur wrote: “one bale sometimes contained half a dozen qualities, making valuation difficult and handling at the selling end of the business expensive” (Ellis, 1973, p. 425).

The early commercial shipments from 1812 signalled the beginning of the colony’s producer-driven GVC.⁴⁸ Wool exports rose from 4,000 pounds in 1812 to 35,000 pounds in 1813 (Kociumbas, 1992, p. 125). The highest price

⁴⁵ Refer footnote 11, Macarthur’s periods of exile in England

⁴⁶ Macarthurs exported a small (sample) quantity of wool in a cask on the *Dart* in 1808, that was made into cloth, despite being “almost spoiled” (Crowley, 1980, p. 208; Macarthur-Onslow, 1914, p. 174).

⁴⁷ No known evidence exists to explain why the early Macarthur shipment of wool was dirtier than Riley’s and Marsden’s. Subsequent continuous feedback from England and emphasis on innovation in cleanliness by Macarthurs suggests this early failure provided significant motivation.

⁴⁸ The first commercial export quantity of wool was from Reverend Samuel Marsden in early 1812 - a quantity of 4,000 pounds (Beever, 1965; Kociumbas, 1992, p. 125). Marsden, had shifted his emphasis from mutton only or

in this period came from Riley's shipment in 1815,⁴⁹ who subsequently purchased six merino rams from Elizabeth Macarthur (Tucker, 2018). The Blue Mountains were crossed in 1813,⁵⁰ opening up grazing land - capacity to expand – and sheep numbers trebled over the period 1810 to 1820 (Clark, 1996, p. 78; Kociumbas, 1992, p. 125). By 1818, fine-wool from the colony had established a niche in the English market (Crowley, 1980, p. 208).

Although the Macarthurs were not the first to export at this time, nor achieved the highest price, the family learnt the importance of market feedback to improve product value and persisted (see Figure 2 and Figure 1). Prior to leaving England, John inducted his son John Jr. in wool auctions, so that after John's departure from London, John Jr. continued providing the England-based customer feedback to the Macarthurs back in the colony. The split locations of John and Elizabeth shifted the focus of Elizabeth Farm from a portfolio family business to a producer-driven GVC for fine-wool, which differentiated the Macarthurs from their peers.

The producer-driven value chain in operation (1817 to 1821)

The pastoral knowledge of Elizabeth and commercial know-how of John was strengthened by the skills they had imparted to their children. The return of James and William, with their father, was a turning point in aligning the quality of wool to the demands of the English manufacturers - wool value increased six-fold (see Figure 1).

The four sons worked together: James and William in the colony and John Jr. and Edward in England, each specializing within different facets of the family business GVC. Specialisation across different geographies to share customer feedback and drive innovation in product and process established the Macarthur family business as a producer-driven global value chain (Gereffi, 1994; Sturgeon, 2001). Customer feedback from wool auction sales in England was provided by John Jr. James managed the logistics of wool exports. William and James jointly innovated the process of cleaning wool prior to shipment. Edward's statesmanship provided connections in England and the colonial military. Collectively, the Macarthur family brought together a breadth of skills, level of cooperation and close communication over great distance that facilitated fine-wool to become the pivotal export industry for Australia.

mixed breeding approaches towards breeding for fine-wool, following 1803 news of Joseph Bank's assessment (Abbott, 1969c, pp. 224-225).⁴⁸ Marsden focussed on strong heavy-framed sheep such as the Suffolk breed of more immediate value in the colony than fine-fleeced Spanish merinos (Yarwood, 1967). He remained until 1809, where he focussed not on wool, but on the shortcomings of the colony's religious establishment and recruiting assistant chaplains (Yarwood, 1967).

⁴⁹ No evidence has been found that Alexander Riley's 1815 wool trade was of comparable significance in the development of the colonial wool industry as the subsequent importation of Saxon Merinos, for which he and brother Edward Riley are well known. (Conway, 1967a, 1967b).

⁵⁰ Refer footnote 35, on crossing the Blue Mountains

Quality and presentation of the wool fibre in the bale continued to impact price at market, following the sons return to the colony in 1817 (see Figure 1) (Macarthur-Onslow, 1914, p. 427). Leveraging their father's initial feedback and then feedback from John Jr. in England, the two brothers innovated the wool production process (Ellis, 1973, pp. 486-489). William worked with his mother Elizabeth on continuing the cross-breeding process to improve the fibre quality and with James on the process of washing sheep (see Figure 2 and Figure 1). There were two other key process innovations by the Macarthurs: wool cleaning and sorting.

Wool cleaning was required for sheep in the Australian bush as conditions were dirtier and seedier than in England, Spain and Saxony. John first identified differences in cleanliness of the Australian wool while attending wool auctions in England (Macarthur-Onslow, 1914, pp. 240-242). Simply washing sheep in cold water, as in Europe, was insufficient to remove the Australian dirt from the fleece. Without suitable infrastructure, James and William worked together to iteratively develop an improved cleaning process, leveraging ongoing feedback from John Jr. (Ellis, 1973, pp. 486-489). Letters from John Jr. "were forever chiding them at Camden about the dirt in the fleece" (Ellis, 1973, p. 487).

Cleaning wool in Australia was a difficult process, new-to-world, and consisted of many steps. Dirt, grit and seeds collected in the sheep's fleece while roaming in the bush was not a problem experienced in other sheep growing regions. Sheep were first oiled with olive oil, from Macarthur grown olive trees, and then the sheep was washed in the river before shearing. Sheep were then left to dry under a veranda to avoid frost while the dirt and grit migrated to the outside of the fleece. Sheep were shorn the following day when the sheep's wool had dried. This "new to the world" process innovation considerably improved wool quality and presentation (see value delivered from improved cleanliness in Figure 1), bringing the Australian wool up to comparable cleanliness to wool from the other regions (Ellis, 1973, pp. 217-218).

Sorting was the second process innovation, undertaken by the Macarthurs, which was new-to-colony. Wool quality varied widely amongst the early flock, as breeding progressively improved fibre quality. James improved the process of sorting wool and organised logistics for getting wool bales to port.⁵¹ Although innovation in breeding improved both quality and staple and wool washing improved presentation, wool classing (sorting) was required to maximise price. In this way, the high-quality long-staple fibres could be despatched in one bale, of

⁵¹ Complicated due to lack of inland river systems - refer footnote 32 on logistics of using bullocks

consistent quality, and deliver a higher price at auction (see value delivered from separating the best, highest priced fibres from lower grades in Figure 1).

Wool quantity to build the colonial export industry required resources beyond one family. Macarthur's expansive 1803 vision, and acquisition of the early sheep stock, was clearly industry building, typical of a family business focussed on leaving a legacy and not monopolistic. The Macarthurs shared their breeding stock with other colonists. In 1818, the Macarthurs had sold less than ten breeding sheep in the year (J. E. Steven, 1969a, p. 131). However, in 1820, Macarthur devised and executed a plan to develop fine-wool in Van Diemen's Land by securing a government purchase of 300 Merino rams, paid for in land from the crown (Crowley, 1980, pp. 280-281; Ellis, 1973, pp. 458-459). Van Diemen's Land exports began in 1823 (Australian Bureau of Statistics, 2013). The sharing of breeding stock provided two sources of colonial fine wool exports to England.⁵²

The Macarthurs were rewarded for their value-added innovations, achieving a significantly higher price than their peers in 1821 (see Table 3). On 17 August 1821, the Royal Factory acquired Macarthur wool for 10s.4d., more than five times the price paid for wool from other sources in the colony (see Table 3) (Ellis, 1973, p. 488). Recognition by the wool buyers at this time signalled both a confidence in the colony's capability to produce fine-wool and a change in sourcing away from Spain and Saxony for English woollen mills (see Table 2). From the early seeds of optimism communicated from John to Elizabeth in 1812, the 1821 wool sale confirmed the colony's capability as a wool producer (Macarthur-Onslow, 1914, pp. 222-223). The price paid for the Macarthur wool sent a strong signal across both England and the colony, Australian wool was of quality to meet the growing needs of English manufacturers.

Extending the 1803 vision and leaving a legacy (1821 to 1824)

The 1821 market success in England spurred both widespread recognition and further innovation, both commercially and politically. Leveraging their family business model for influence across the colony and England, the Macarthurs helped open trade for wool and worsted products and put in place education, access to capital and distribution for the growth of the Australian wool industry. Political influence in both the colony and in England, enabled the Macarthurs and the early wool industry participants to grow the industry (see also Speier et al., 1998).

A review of the colony undertaken by Commissioner Bigge in 1819 and published in 1822 and 1823 was influenced by Macarthur. Macarthur emphasised the future importance of the wool industry and the employment

⁵² Van Diemens Land (now known as Tasmania) and New South Wales were the first two settlements in Australia, founded in 1804 and 1788 respectively.

of convicts in the management of sheep, to assure a continued supply of free convict labour (Clark, 1996, pp. 79-81, 89; Kociumbas, 1992, pp. 134-135; Macintyre, 2016, pp. 57-58). The 1821 success is also likely to have played a significant role in the establishment of the Royal Society of New South Wales in 1821 and the Agricultural Society of New South Wales in 1822 (Crowley, 1980, pp. 273, 291-292).

In England, John Jr, played a major role in facilitating the rapid expansion of the industry, leveraging both his legal training and political connections. He influenced the English Parliament to preferentially source wool from Australia, by lowering import duties on colonial wool from 6d to 1d in 1823. Furthermore, duties on worsted cloth exported from England to Continental Europe was lifted from 1825, driving increased demand for finished product and, hence, raw material. The 1823 reduction in tariffs led to wool exports more than doubling, from 1820 to 1830, as shown in Table 2 (Ford & Roberts, 2013, p. 128). The export boom led to a geographical expansion of the colony that the colonial government struggled to control (Ford & Roberts, 2013, pp. 128-129).

Macarthur's 1803 vision of colonial production and large-scale distribution was facilitated in 1824 by John Jr., with the establishment of the Australian Agricultural Company (AACo). Both father and son understood that efficient passage of wool from the colony to English manufacturers required investment. John Jr. initiated the Act of Parliament that facilitated the company's establishment, its board of directors and raising one million pounds of seed capital, large even in today's terms. Ellis (1973, pp. 492-495) quotes John Jr.:

AACo was intended "to advance the great plan which was founded by my father to make the growth and export of Merino wool so large and important as to attract the public attention as an object of the highest national importance ... The Company will purchase all good flocks that are for sale in the colony... [providing] demand for all you can raise for ten years to come"

Establishment of AACo was "the first use of the London capital market to finance pastoral and mining developments in Australia" (Pemberton, 1991, p.9 cited Atchinson 1987, p.20). Wentworth argued that "investment in wool growing in New South Wales...was the most inviting opportunity anywhere in the world at that time" (Shaw, 1967).⁵³ The company's floatation was well timed during the boom of 1823-25 (Pemberton, 1991).

The Macarthurs (John Jr. and James) were on the board of directors, as was brother-in-law Dr James Bowman and representatives from the Bank of England, Parliament, Solicitor General's Office, British East India Company

⁵³ Macarthur and Wentworth spent time together in Paris in 1817-1818 (Pemberton, 1991, p. 45)

as well as eminent English bankers and merchants, reflecting the level of influence of the Macarthur family. Although AACo issued no dividends until the 1830s, the vision and establishment early in the colony's history demonstrates a turning point for England's interest in the colony's wool industry, (Ellis, 1973, pp. 492-495; Pemberton, 1991). Promotion alone, afforded by the establishment of AACo., directed one million pounds of investment into the young colony for the development of the wool industry. AACo. continues to operate today as Australia's oldest business, a Macarthur family legacy.

The Macarthurs also played a significant public role in development of the colony. John was appointed as Member of the first NSW Legislative Council in 1825, in recognition of his work in establishing the wool industry (M. Steven, 1967).⁵⁴ In the same period, the Macarthurs also established the Sydney Public Free Grammar School and the Bank of Australia (Atkinson, 2016, p. 44).⁵⁵

In 1827, the Macarthurs set another record. They sold a bale of wool for 196 pence per pound (16s 4d), which remained a world record price until 1949 (Collins & Collins, 2020). At the 1828 Auction, "some of the fine fleeces were nearly long enough to comb, and that if they could be bought to do so... It might be the means of introducing a new manufacture". (Macarthur-Onslow, 1914). In the late 1820s, mechanised wool combing enabled higher quality worsteds in increasingly higher volume.⁵⁶ Colonial Australia had the fibre quality and industry foundations to meet the accelerating demand (see Table 2).

The Macarthurs served as demonstrators for other colonists. In 1823, Macarthur arranged for 300 of his Merino rams to go to Van Diemen's Land. Furthermore, following acceptance of colonial wool in England, the Rileys shipped Saxon Merinos to the colony and then exported wool of longer staple, yielding a higher price than the earlier cross-bred Macarthur Merinos. The Riley merchant family, like the Macarthur family, benefited from the family business GVC model with family members in both the colony and in England (Conway, 1967a, 1967b). As sheep breeding, washing and sorting practices were well established by this time the Rileys' focused on their core expertise as merchants. Hence, the early pioneering days of long staple wool breeding gave way to a new

⁵⁴ He served for eight years until removed in 1832 at the request of Governor Bourke due to ill health (New South Wales Parliament, 2020).

⁵⁵ The bank was also known as the "merino bank". Given Macarthur's earlier efforts to fund his own pastoral activities with colony government contracts, it is the authors opinion, the "merino bank" was established to provide new pastoralists with finance to purchase Macarthur Merinos to breed their flock such as those beyond the Blue Mountains.

⁵⁶ Mechanised combing required long staple length fine fibre.

generation of wool merchants. The wool merchants built on the sound foundations of an industry developed by the entrepreneurial Macarthur family.

Conclusion

The value creation activities of the Macarthur family from 1797 to 1827 have been re-analysed in this paper. The Macarthur family demonstrated long-term focus (25years) on wealth generation and focus on leaving a legacy, with investment in industry, schools and parliament. The five dimensions of socioemotional wealth are demonstrated. Firstly, John Macarthur provided the leadership and control over the preservation of the family goals and the organisation of resources. Second, all family members were involved with and identified with the business as an extension of their family's wellbeing. Third, family ties were binding, despite significant geographic separation, which generated high relational trust and commitment to business of wool. Fourth, led by John Macarthur, there was strong emotional attachment to the business of wool. Fifth, the Macarthur family perpetuated the family dynasty through education of family members, wool distribution directorship and institutions.

The retrospective reinterpretation of the Macarthur family's role in the establishment of the Australian wool industry as Australia's first producer-driven relational GVC has more clearly articulated the breadth of roles and depth of contribution by all family members that has been overlooked in previous work. The success of Australian wool required long-term investment in innovation and value creation, tuned to overcoming the Australia's "tyranny of distance". In addition to the value adding stages of breeding sheep to improve fibre quality, washing and sorting wool was required to take this pastoral product from one country and successfully transplant it to the new colony on the other side of the world. We show that a relational approach was required to manage resources for marketing, capital and political processes to achieve the successful family business producer-driven GVC (Debellis & Rondi, 2021). The Macarthur family have left a legacy, as is characteristics of family businesses, that today, 200 years on, wool is Australia's longest successfully exported elaboratively transformed product (Baker & Wiseman, 1998).

The limitation in this work is the sole focus on the Macarthur family in the period 1797 to 1827. However, during the period studied, the Macarthur family worked closely together, leveraging their individual expertise, to create a valuable, rare, imperfectly imitable and non-substitutable combination of resources, across four continents for fine-wool production and continuous product improvement, known today as a family business producer-driven relational GVC (Barney, 1991; Gereffi, 1994; Habbershon & Williams, 1999).

Success of the early Australian GVC in fine-wool extends beyond colonial times and warrants examination. Wool was not only a successfully delivered product into England's manufacturers. The pursuit of wool led Australian shepherds, key workers in the wool GVC, to many of the major minerals that Australia is well-known for exporting today: alluvial gold in New South Wales and Victoria, silver and lead in New South Wales and Copper in South Australia. Further research into the activities of early GVCs and the extrinsic benefits created, especially the copper GVC from the 1840s, would extend our understanding of the connections between early GVCs, institutional development and economic growth in Australia.

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