From the Andes to the Outback: Acclimatising Alpacas in the British Empire

Helen Cowie

University of York

April 2016

Copyright © Helen Cowie, 2016

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means without the prior permission in writing of the publisher nor be issued to the public or circulated in any form other than that in which it is published.

Requests for permission to reproduce any part of this Working Paper should be sent to: The Editor, Commodities of Empire Working Papers, Institute of Latin American Studies, University of London, Senate House, Malet St., London WC1H 0XG

INSTITUTE OF LATIN AMERICAN STUDIES
SCHOOL OF ADVANCED STUDY UNIVERSITY OF LONDON

SOAS University of London

Commodities of Empire Working Paper No.24

ISSN: 1756-0098

From the Andes to the Outback: Acclimatising Alpacas in the British Empire

Helen Cowie
(University of York)

In 1811 the first alpaca to be exhibited in Britain was put on show at Edward Cross's menagerie in London. The animal, which had been a pet in its native Lima, was "remarkably tame" and had "perforations in its ears in which ornamental rings had been placed". It soon proved a great favourite with the British public, who admired its "graceful attitudes, gentle disposition and playful manners" and expressed particular interest in its wool, which was thick, glossy and "about eighteen inches long". One admirer, Lady Liverpool, was:

> so much…delighted with [the alpaca's] beauty, the softness and brilliancy of its coat and its animated and beaming features that she kissed it as if it had been a child, and had it turned loose on her lawn, in order that she might witness its movements free from restraint'.[1]

The arrival of the alpaca in the aftermath of Spanish American independence sparked interest in Britain in the possibility of naturalising the species and using its wool for textile manufacture. Over the next four decades these plans were put into effect as increasing numbers of alpaca were imported into Europe. Several treatises were published on the subject of alpaca acclimatisation, some advising their naturalisation in Britain, where the Scottish Highlands and Ireland were identified as the most promising regions for the experiment, others suggesting their introduction to the colonies, particularly Australia. A daring operation to smuggle alpacas out of Peru (which banned their exportation) was conducted in 1858 by Charles Ledger, who succeeded in transporting 276 of the animals to New South Wales.

This paper examines attempts to naturalise the alpaca in the British Empire and situates these within the wider contexts of animal acclimatisation, commercial exchange and national identity. In the eighteenth and nineteenth centuries, imperial powers made concerted efforts to appropriate useful plants and animals and acclimatise them within their own colonies. In France, a special acclimatisation society was founded in 1854, with branches across the nation and, from 1860, an acclimatisation garden in the Bois de Boulogne.[2] In Spain, the naturalist Mariano de la Paz Graells experimented with acclimatising camels, angora goats, gazelles and kangaroos; and in Britain, acclimatisation was part of the original remit of the Zoological Society of London, whose founder, Sir Stamford Raffles, prioritised "the introduction of new varieties, breeds and races of animals, for the purpose of domestication, or for stocking our farmyards, woods, pleasure gardens and wastes".[3] The animals selected for naturalisation were those considered useful because they could be ridden, shorn or eaten; Paz Graells reported that camels were being used to plough fields, pull carriages and power olive-oil mills in Huelva, while British acclimatisers took an interest in

---

[1] William Walton, *The Alpaca: Its Naturalisation in the British Isles Considered as a National Benefit, and as an Object of Immediate Utility to the Farmer and Manufacturer*, New York: Office of the New York Farmer & Mechanic, 1845, p.15; Extraordinary Living Rarities, Exhibiting for a Few Days Longer at 236, Piccadilly, John Johnson Collection of Printed Ephemera (Animals on Show 2 (52)).

[2] Michael Osborne, *Nature, the Exotic and the Science of French Colonialism*, Bloomington: Indiana University Press, 1994, p.11.

[3] Museo Nacional de Ciencias Naturales, Madrid, Fondo Zoológico, Sección Sociedad de Aclimatación (MNCN) 329/007; Thomas Allen, *A Guide to the Zoological Gardens and Museum; with a Brief Account of the Rise and Progress of the Zoological Society*, London: Cowie & Strange, 1829, p.5.

the South African eland, said to taste like veal with "a soupçon of the pheasant flavour".[4] The alpaca, prized for its luxuriant wool, was a prime candidate for acclimatisation, attracting the interest of both agricultural reformers and textile manufacturers.

Historians have recently paid increasing attention to the relationship between botany and empire, studying the introduction of tea, rubber and cinchona trees (the source of the febrifuge, quinine) to British colonies and highlighting the complex networks involved in botanical exchange.[5] To date, however, less consideration has been given to animal acclimatisation, and relatively little is known about the individuals and societies that promoted it.[6] Focusing on one particularly notable example of zoological imperialism, the case of the alpaca, this paper studies the networks of knowledge that facilitated the transfer of alpacas across the Atlantic (and also, in this case, the Pacific) and considers how British subjects in places as diverse as Bradford, Liverpool, Sydney and Arequipa assisted and benefited from the naturalisation programme. I emphasise the interaction between global and local concerns in shaping acclimatisation campaigns and the different meanings alpaca acclimatisation held for Yorkshire manufacturers, Australian livestock farmers and Peruvian herders. I position alpaca appropriation within a wider discourse of animal 'improvement', bio-piracy and imperial adventure.

Acclimatisation in Britain

The alpaca (*Vicugna pacos*) originates from the Peruvian Andes. It is one of four South American members of the camel family, alongside the llama (*Lama glama*), the guanaco (*Lama guanicoe*) and the vicuña (*Vicugna vicugna*) and is believed to be a domesticated variant of the latter (the llama is a domesticated guanaco).[7] First domesticated around 6,000 to 7,000 years ago, the alpaca was extensively farmed by the Incas, who used its fleece to weave colourful textiles.[8] In the nineteenth century alpaca wool was one of Peru's main exports, together with sugar, cotton and guano, [9] rising in value from £122,000 per year in 1845-49 to

[4] MNCN 329/007; *Essex Standard*, 2 February 1859; Peter Lund Simmonds, *The Curiosities of Food, or The Dainties and Delicacies of Different Nations Obtained from the Animal Kingdom*, Berkeley: Ten Speed Press, 2001, p.114.

[5] Important studies of 'economic botany' include Lucille Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens*, New Haven: Yale University Press, 2002 [1979]; Richard Drayton, *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World*, New Haven: Yale University Press, 2000; Emma Spary, *Utopia's Garden: French Natural History from Old Regime to Revolution*, Chicago: University of Chicago Press, 2000; and Londa Schiebinger, *Plants and Empire: Colonial Bio-Prospecting in the Atlantic World*, Cambridge: Harvard University Press, 2004.

[6] Exceptions include Osborne (1994); and Michael Osborne, *'Illusionary Empire' in Takashi Ito, London Zoo and the Victorians, 1828-1859*, Woodbridge: Boydell and Brewer, 2014, pp.138-61.

[7] Miranda Kadwell, Jane Wheeler et al, 'Genetic analysis reveals the wild ancestors of the llama and the alpaca', *Proceedings of the Royal Society, London* 268 (2001), pp.2575-2585.

[8] Luis Mengoni Goñalons, 'Camelids in ancient Andean societies: A review of the zooarcheological evidence', *Quaternary International* 185 (2008), pp.59-68.

[9] The guano boom was particularly profitable to Peru. It lasted from c.1841-1870, the same period in which alpaca naturalisation was attempted. See Rory Miller & Robert Greenhill, 'The Fertiliser Commodity Chains: Guano and Nitrate, 1840-1930', in Stephen Topik, Carlos Marichal & Frank Zephyr (eds), *From Silver to Cocaine: Latin American Commodity Chains and the Building of the World Economy, 1500-2000*, Durham: Duke University Press, 2006, pp.228-270.

a peak of £489,000 per year in 1870-74.[10] A total of 8,249,600 lbs of wool was imported into Britain in the years 1834-43.[11]

The first living alpacas appeared in Britain in the 1810s, during the Spanish American Wars of Independence, and were exhibited as exotic curiosities. One of the animals was displayed at Edward Cross's menagerie in Exeter 'Change from 1811. Another featured in Ducrow's circus, where it was "taught to gambol, kneel and lay down at the word of command" (Figure 1).[12] A third appeared in the Gardens of the Zoological Society in the 1820s.[13] Alpacas were on show in regional zoological gardens by the 1830s and visited provincial towns regularly in travelling menageries.[14] In 1814 the *Ipswich Journal* reported the exhibition of "a new and beautiful race of animals from the snowy mountains of South America" at Norwich fair.[15]

Figure 1: Alpacas even appeared on the stage. This image shows Ducrow's alpaca performing in 'the popular pantomime of the Red Dwarf' with the famous clown, Grimaldi. (Source: R. Norman, 11 January 1813)

While living alpacas initially functioned as sources of entertainment, alpaca wool was making important inroads into British commerce. Highly prized for its quality and softness,

[10] Peter Flindell-Klarén, *Peru: Society and Nationhood in the Andes* (New York, 2000), p.166.
[11] William Danson, *Alpaca, the Original Peruvian Sheep before the Spaniards Invaded South America, for Naturalisation in other Countries*, Liverpool: M. Rourke, 1852, p.6.
[12] William Walton, *A Memoir addressed to Proprietors of Mountain and other Waste Lands and Agriculturalists of the United Kingdom, on the Naturalisation of the Alpaca*, London: Smith, Elder & Co., 1841, p.22.
[13] John Miller, *The Memoirs of General Miller*, New York: AMS Press, 1973, Vol. I, p.234.
[14] In 1839 an 'Al pacha [sic]' was exhibited at Liverpool Zoological Gardens, along with two llamas. *List of Animals in the Liverpool Zoological Gardens*, Liverpool: Ross and Nightingale, 1839, p.26.
[15] *Ipswich Journal*, 30 April 1814.

alpaca was used to make a variety of garments, mostly fashionable, high-end produce. Dresses, shawls and umbrellas were all made from alpaca as were coat linings, cravats and the occasional Scottish tartan.[16] Alpaca clothing was also valued in 'tropical climates' such as India, Jamaica and Africa, where British ex-patriots were "thankful to possess a black coat which, while it has the appearance of broad cloth, is not a fourth of its weight".[17] Sourced from Indian communities in the southern highlands of Peru, alpaca wool was purchased by itinerant British merchants and shipped to Liverpool and (to a much lesser extent) London from trade houses in Arequipa. Bradford, already a key player in the worsted trade, became Britain's primary site for spinning and weaving alpaca fabric, producing ever increasing quantities of the material from the mid-1830s.

Though alpaca wool was originally imported from Peru, plans arose in the 1840s to introduce the alpaca into Britain and thereby gain direct control over the trade. Advocates of the scheme anticipated multiple benefits: firstly, the naturalisation of the alpaca would ensure a sufficient and continuous supply of its wool, at a time when demand was outstripping supply; secondly, the project would permit British farmers to make better use of their land, since alpacas would be able to survive in inhospitable mountain terrain unsuitable for cattle or sheep (of which 30 million acres were believed to exist in the United Kingdom);[18] thirdly, alpacas could be easily looked after, their thick coats keeping them warm in the harshest winter and making it unnecessary "to smear [them] with tar and butter as the farmers are obliged to do with the flocks in Scotland";[19] fourthly, the introduction of the alpaca would provide employment for labourers and artisans, maintaining individuals who would otherwise be "dependent on their parishes for support"; and fifthly, the alpaca might fulfil additional economic functions, its meat forming "an excellent ingredient for a pie" and its "strong and pliant" skin offering a suitable material for bookbinding.[20] The naturalisation of the alpaca was presented as an important boost to the British textiles industry, a boon to agriculture and an antidote to social problems. Enthusiasts identified the Scottish Highlands, Shetland, Wales, the Cheviot Hills, Dartmoor and the mountains of Kerry and Wicklow as the most promising regions for alpaca introduction, the terrain and climate of these locations most closely resembling that of the Andes.[21]

During the early 1840s, these ideas began to gain momentum, receiving increasing publicity and attracting the attention of some important local and national institutions. In 1840, the Tenth Annual Meeting of the British Association for the Advancement of Science featured a lecture by William Danson on the alpaca and its wool, during which samples of the wool and 'living specimens' were exhibited.[22] In 1841, William Walton published an important article on the subject in the *Polytechnic Journal*, which he later revised and extended into a short book; and in 1844 the Highland and Agricultural Society awarded "a premium of Five Sovereigns and an honorary silver medal" to A. Gartshore Stirling of Craigbarnet for "the best pair [of alpacas] born in the kingdom".[23] By the mid-1840s a number of improving landowners were rearing alpacas on their estates, some from mere

[16] Danson (1852), p.7.
[17] George Ledger, *The Alpaca: Its Introduction into Australia and the Probabilities of its Acclimatisation There, A Paper read before the Society of Arts, London. Republished by the Acclimatisation Society of Victoria*, Melbourne: Mason & Firth, 1861, p.5.
[18] Walton (1845), p.12.
[19] Walton (1841), p.19.
[20] Walton (1845), pp.11 & 7-8.
[21] Walton (1845), p.13; Danson (1852), p.19.
[22] *Morning Chronicle*, 30 September 1840.
[23] *Caledonian Mercury*, 12 August 1844.

curiosity but others with the intention of establishing a new line of business. Thomas Stevenson of Oban received several shipments of alpacas from his son in Peru. Joseph Hegan Charles Tayleure and the Earl of Derby farmed small flocks of alpacas in Cheshire, while Robert Bell of Listowel, Kerry, introduced alpacas to Ireland. The Queen's consort, Prince Albert, was another high-profile alpaca fancier, keeping two of the animals on the royal estate at Windsor.[24]

While the early signs were promising, the actual results of alpaca acclimatisation were rather mixed, falling short of initial expectations. On the positive side, many owners did report success in keeping their animals alive, raising hopes that British alpacas, with superior care and nourishment, would produce a better grade of wool than that imported from Peru. Menagerist Edward Cross claimed that:

> he noticed a visible improvement in the fleece of his alpaca, which he had shorn more than once, although the animal was kept under restraint and subjected to an unsuitable regimen, besides breathing the impure air of a populous town.[25]

Robert Bell contended, similarly, that the wool of his Irish alpacas was "very much finer than any alpaca wool I have yet seen imported into England".[26] This prompted alpaca enthusiast Walton to suggest that careful British husbandry would facilitate an improvement of the species, the "dirty and scurfy state" of imported wool being due to "the deciduous habits of the Indian", who allowed his animals to become diseased "through the want of seasonable shearing and the timely application of salve".[27] Such ideas were very much in keeping with contemporary livestock breeding practices, which sought to raise the quality of animals through selective breeding and diet.[28]

Despite such upbeat testimonies, however, the overall picture was much less rosy, and a large number of alpacas succumbed to mismanagement and accident. Thomas Stevenson reported that of the dozen alpacas shipped to him by his son, only two, a male and a female, survived, despite an agreement made with the ship's captain that "he was to receive a payment of freight one half of whatever number might arrive safe in England". Another flock owned by Charles Tayleure was administered "too strong medicine" by a shepherd, killing "the greater part of them", while one of Bell's alpacas perished from eating a poisonous weed.[29] Most disastrously, what should have been the largest single importation of alpacas into Britain ended in tragedy in 1842 when the captain of the *Sir Charles Napier* injudiciously stowed 274 of the animals above a cargo of guano, the "effluvia" from the manure suffocating all but four of them.[30] Negligent servants and ignorant sailors were blamed for these mistakes, reflecting ingrained class prejudices. As Walton remarked:

> the treatment which they [alpacas] have experienced from some owners has been cruel, if not murderous in the extreme…for all depends upon the whim of a servant – often with a wet and filthy bed under them, and not infrequently eating the offals of a green-grocer's shop.

---

[24] Walton (1845), pp.14-19.
[25] Walton (1841), p.23.
[26] Walton (1845), p.19.
[27] Walton (1841), p.23.
[28] On the tradition of animal husbandry and the fashion for fat cattle in nineteenth-century Britain, see 'Barons of Beef' in Harriet Ritvo, *The Animal Estate: The English and Other Creatures in the Victorian Age*, Cambridge: Harvard University Press, 1987, pp.45-81.
[29] Walton (1845), pp.16, 17 & 21.
[30] Walton (1845), p.15.

Peruvian Indians were also accused of cheating British merchants by selling them old or diseased stock; according to General John O'Brien, the Indians were reluctant to part with their animals, so the ones they offered to merchants were "almost always picked out of inferior, if not refuse stock, and, by an intelligent person, would scarcely have been deemed worth the shipping risk".[31] Such setbacks highlighted the practical difficulties of animal acclimatisation and pointed to the need for careful supervision and local knowledge.[32] They did not, however, extinguish the hope that, with better planning and faster transportation, alpacas might be successfully introduced to the moors and highlands.

Alpacas in Australia

While early efforts to acclimatise the alpaca focused on Britain, attention shifted in the 1850s to British possessions overseas. This was in part a response to the limited success of programmes like Walton's to rear the alpaca in Britain itself. It also reflected the growing importance of the colonies in this period, and an increasing desire to ensure their economic viability. Both Cape Colony and the Indian province of Scinde were contemplated as suitable sites for the experiment,[33] but it was in Australia that the project came to fruition. Already a major exporter of wool, thanks to John McArthur's successful introduction of the merino sheep, Australia was seen as a prime location for the rearing of alpacas, which in turn could inhabit land unsuitable for other cattle. Two individuals played a key role in bringing the animals to the continent: Edward Wilson and Charles Ledger.

Edward Wilson was a native of Victoria and editor of the *Melbourne Argus*. Together with a fellow colonist, Thomas Embling, Wilson promoted the introduction of new and useful animals to Australia, including camels, salmon and songbirds.[34] The journalist quickly identified the alpaca as a promising candidate for naturalisation and presented papers on the animal at the Philosophical Institute of Victoria. He expatiated at length on the potential benefits of alpaca acclimatisation in the pages of the *Argus*, lobbying the colonial government for financial support.[35]

Early attempts to import alpacas directly to Victoria proved abortive, partly because of local scepticism, and partly because the Peruvian Government passed a decree in 1845 banning the export of llamas and alpacas from its territory.[36] In July 1858, however, when Wilson, then resident in London, heard that a flock of alpacas was up for auction in the British capital, he organised a campaign to raise funds for their purchase, requesting donations from fellow ex-patriot Australians and British manufacturers and using the letters pages of *The Times* to publicise his cause.[37] By November sufficient money had been collected to buy ten of the alpacas and send them to Melbourne, where they were temporarily housed in the city's

---

[31] Walton (1845), pp.24 -5 & 27.
[32] Walton advised sending agents to Peru with a good knowledge of the language and people of the country – "a man of address, intelligence and observation…who has some reputation at stake, and who from patriotic motives would feel disposed to devote his attention exclusively to the undertaking" (Walton 1845, p.28).
[33] *Leeds Mercury*, 22 March 1859.
[34] Freeman's Journal, 13 August 1858.
[35] Linden Gillbank, 'A paradox of purposes: acclimatization origins of the Melbourne Zoo', in R.J. Hoage & William A. Deiss, *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*, Baltimore: John Hopkins University Press, 1996, pp.76-79.
[36] *El Comercio*, 13 August 1845.
[37] *The Times*, 17 July 1858.

Botanical Gardens.[38] The Bradford industrialist Titus Salt donated a further two male alpacas from his private flock, raising the total number of animals to twelve, and providing two pure-bred males for breeding purposes.[39] In 1863 a Birmingham gentleman, A. J. Duffield, set sail for Melbourne with a further 1,500 alpacas, collected in Bolivia in defiance of the export ban.[40]

At the same time as Wilson was sourcing alpacas from Britain, another budding entrepreneur, Charles Ledger, was nearing the end of a decade-long project to introduce the species into New South Wales. A British merchant based in Tacna, Peru, Ledger had become interested in the alpaca business while employed by the firm Naylor's, who entrusted him with "the purchase of alpaca's and sheep's wool". His job consisted of:

> receiving from the Indians the different lots as they arrived from the interior…sorting the qualities and colours previous to packing…and finally shipping them, principally for account of Messrs. Christopher and James Rawdon, of Liverpool.[41]

Knowing how popular alpaca wool was in Europe, Ledger conceived the idea of introducing the Peruvian animal to Britain or one of its colonies. In 1852 he visited Sydney to assess the feasibility of the scheme and returned convinced that "the country was most admirably adapted for the alpaca".[42] Before he could test his alpacas on Australian soil, however, he had to circumvent the Peruvian government's ban on camelid exports, which condemned convicted alpaca smugglers to "ten years in chains on the Chincha or Guano Islands". To overcome this obstacle, Ledger assembled a large flock of alpacas and llamas at his estate near Peru's southern border and smuggled the animals across the Andes into the Argentine Confederation (Figures 2 and 3). He spent several months in Laguna Blanca accustoming them to their shipboard "rations of dry alfalfa", then re-crossed the Andes in perilous conditions to ship them from the Chilean port of Copiapo. The alpacas were stowed aboard the *Salvadora* in July 1858 and reached Sydney four months later.[43]

[38] *Daily News*, 8 November 1858.
[39] *Lloyd's Weekly Newspaper*, 22 August 1858.
[40] *Birmingham Daily Post*, 20 August 1863. Bolivia also banned the exportation of alpacas in 1846.
[41] Paper read by Charles Ledger to the Australian Agricultural Society, reprinted in *Bradford Observer*, 29 September 1859.
[42] Ledger (1861), p.11.
[43] Ledger (1861), pp.12-13.

Figure 2: 'Passage of Cordillera into Chile'

(Source: Annotated watercolour sketches by Santiago Savage, 1857-1858, being a record of Charles Ledger's journeys in Peru and Chile. State Library of New South Wales MLMSS 630/1)

Figure 3: Ledger also experimented with rearing tame vicuñas in the Andes. He paid local llama hunters to supply him with the animals and assigned mother llamas to suckle them. This sketch 'represents the four llama nurses 'Burra', 'Sarea', 'Cacho' and 'Chucara', each with two 'vicuñitas'.

(Source: Annotated watercolour sketches by Santiago Savage, 1857-1858, being a record of Charles Ledger's journeys in Peru and Chile. State Library of New South Wales MLMSS 630/1)

The story of Ledger's quest to naturalise the alpaca reads like a classic Victorian adventure, replete with heroism, tragedy and adversity. At one point, two hundred of his flock perished from drinking the water of a lake "infested with leeches".[44] On another occasion he lost half of his animals in a violent storm in the Andes; on a third two hundred alpacas died due to "the negligence of one of the Indians".[45] As well as enduring "the hardships, personal danger and exhaustion suffered from cold, fatigue and privation" in the sierra, Ledger was repeatedly hounded by the Peruvian and Bolivian authorities, who arrested him on two occasions and threatened to destroy his flock. With the courage and guile typical of the plucky Victorian explorer, he managed, on both occasions, to outwit his captors, the first time by "exercising his medical skills in the cure of the wife of the detaining prefect" and the second by slipping a dose of laudanum into his gaoler's "grog".[46] The setbacks, however, cost him seven years of his life and the entirety of his £7,000 fortune and though he eventually reached Sydney in November 1858 with 276 living alpacas he never fully recouped the money he had spent on the venture. Indeed, the farmers who had six years earlier expressed interest in

[44] *The Era*, 20 February 1859.
[45] *The Era*, 25 September 1859.
[46] *Bradford Observer*, 29 September 1859.

Ledger's scheme now proved cautious about the experiment, declining to buy the alpacas at auction. The colonial government was forced to step in and purchase the animals, paying Ledger an annual salary of £1,300 to superintend their continued care.[47] Ledger thus benefited little from the introduction of the alpaca to Australia, and, despite early successes in cross-breeding his animals, soon found their numbers declining. By July 1864, all of the original alpacas had died, and their progeny were "suffering from the scab", leading the colonial government to terminate its funding of the project.[48] As in Britain, alpaca acclimatisation had fallen short of expectations, an outcome blamed, by turns, on inappropriate terrain, a severe drought in 1862-3, poor management and excessive government interference. It was a similar story in Victoria, where all of Wilson's original alpacas were dead and the only survivor of Duffield's 1,500-strong flock was "a solitary white lamb – a very pretty and lively specimen of alpaca juvenility".[49]

Networks of Knowledge

Recent work in the history of science has emphasised the communal and collaborative nature of natural knowledge and the crucial role played by go-betweens or intermediaries.[50] Though often portrayed as the product of individual genius and heroism, the collation, analysis and transmission of information and objects often relied on a complex set of relationships and networks which facilitated their transfer. Friendship, sociability and personal contacts were vital to this process of exchange, the latter often created and sustained through letters of introduction and written correspondence.[51] Context and place were also important in explaining how specific forms of knowledge arose and how they were communicated to other localities.[52]

The alpaca naturalisation scheme clearly reflects the social and spatial dimensions of nineteenth-century science. Contemporary reports of the project may have played down its communal character, focusing instead on the sacrifices and accomplishments of individuals such as Ledger, but a closer examination of the evidence reveals that it was heavily reliant upon pre-existing diplomatic, commercial and scholarly networks. Though not part of Britain's formal empire, the newly independent states of South America were closely integrated into British trade routes and were soon staffed with a regiment of British consular officials, many of whom furthered the study of natural history by shipping native plants and

---

[47] *The Era*, 12 February 1860.
[48] *Bradford Observer*, 28 July 1864.
[49] *Bradford Observer*, 28 July 1864.
[50] Important contributions in this area include Simon Schaffer et al. (eds), *The Brokered World: Go-Betweens and Global Intelligence, 1770-1820*, Sagamore Beach, 2009, which explores the role of intermediaries in the creation, translation and transmission of scientific knowledge; Jane Camerini, 'Wallace in the Field', *Osiris* 2nd Series, 11 (1996), pp.44-65, which examines the range of friendships and personal connections that enabled the naturalist Alfred Russell Wallace to conduct research in the Malay peninsula in the 1850s; and Fa Ti Fan, 'Victorian Naturalists in China: Science and Informal Empire', *British Journal for the History of Science* 36:1 (2003), pp.1-26, which highlights the role of diplomatic, commercial and religious networks in the study of natural history in nineteenth-century China, a region, like South America, which remained outside of Britain's formal empire.
[51] On the importance of friendships and correspondence in science, see Patience Schell, *The Sociable Sciences: Darwin and his Contemporaries in Chile*, Basingstoke: Palgrave Macmillan, 2013.
[52] See, for instance, David Livingstone, *Putting Science in its Place: Geographies of Scientific Knowledge*, Chicago, 2003; and Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900*, Basingstoke: Palgrave Macmillan, 2007.

animals to British institutions.[53] Former soldiers who had gone to Spanish America to fight in the wars of independence often remained in the region for some time, establishing important connections with local people and sometimes marrying into creole families.[54] A host of naturalists also descended upon the continent in the aftermath of independence, some taking up positions at local museums and universities, others conducting research on behalf of scientific institutions back in Europe. Individuals from all of these backgrounds played a role in the alpaca naturalisation project, offering up their zoological, social and technological expertise on both sides of the Atlantic (and indeed Pacific). The growth and importance of print culture in this period further contributed to the widespread interest in alpacas, as texts like Walton's were circulated and read, not only in Britain, but also in Australia, and responses printed in the letters pages of contemporary newspapers.[55] The drive to naturalise alpacas in Britain and its colonies thus elucidates the complexity of British connections with South America in the post-independence period, and the varieties of knowledge necessary to transport a valuable zoological commodity across the globe.

Firstly, alpaca importers relied heavily on the knowledge and experience of Peruvian Indians, whose long contact with the animals made them experts on their needs and behaviour. Though Indians were often accused of failing to exploit the full potential of the alpaca and of duping gullible foreigners into buying old or diseased beasts, their expertise in farming alpacas was grudgingly acknowledged. They were believed – as was often the case with native peoples – to have "a peculiar and visible sympathy" with their camelids, evidenced by their "mild conduct towards them".[56] This affinity was exploited by Europeans who observed their farming practices and sought to recruit them as assistants. Charles Ledger thus hired thirteen Native American shepherds to accompany him to Australia as carers for his flock,[57] while William Walton advocated enlisting Indian keepers to bring alpacas to Britain, on the grounds that they knew best how to handle them.

> I should…advise that each shipment, if large, be accompanied by a Peruvian llanero, or shepherd, one accustomed to manage these animals, acquainted with their tempers and experienced in the cure of their diseases. Young men of this class might easily be had at a trifling expense; and, if Indians, a little tuition and intercourse with Europeans would change their disposition and induce them to improve their habits. They would be the most proper persons to feed and nurse the animals on the voyage; and on their arrival they might besides serve as valuable instructors to our people.[58]

---

[53] Henry Southern, HM Minister at Rio, presented the Zoological Society of London with a tapir in 1853. W.D. Christie, HM Minister to the Argentine Confederation, presented "a pair of pumas" in 1857. See *Report of the Council and Auditors of the Zoological Gardens of London*, London: Taylor and Francis, 1853, p.18; and 1857, p.19.

[54] For a detailed study of British and Irish ex-soldiers in Colombia, Venezuela and Ecuador, see Matthew Brown, *Adventuring through Spanish Colonies: Simón Bolívar, Foreign Mercenaries and the Birth of New Nations*, Liverpool: Liverpool University Press, 2006.

[55] *The Courier* and the *Launceston Examiner*, for instance, two Tasmanian papers, both printed extracts from Walton's works. See *The Courier*, 2 February 1841 and *Launceston Examiner*, 16 September 1843.

[56] Walton (1845), p.27.

[57] 'Paper read by Charles Ledger at the Acclimatisation Society of New South Wales on 26 January 1864', in George Bennett, *The Third Annual Report of the Acclimatisation Society of New South Wales*, Sydney: Joseph Cook, 1864, p.98.

[58] Walton (1845), p.28.

As these reflections suggest, Walton also felt that the Peruvians would benefit from their employment, which would Europeanise them and introduce them to 'civilised' life. The Indians, as well as the alpacas, would be 'improved' by absorption into British culture.

In addition to relying on the practical knowledge of modern day Indians, students of the alpaca also turned to past commentators to learn more about the beasts. Walton, for instance, cited the eighteenth-century Peruvian physician Hipólito Unanue on the natural climatic conditions of his country and the Spanish solider-naturalist Félix de Azara on the use of cochineal to dye white alpaca yarn. He also cited the French naturalist-explorer Alcides Dessalines d'Orbigny on the presence of alpaca fabric in the "huacas or sepulchral monuments of the ancient Peruvians; a proof not only of their advancement in the art of weaving, but also of the durability of the materials used by them". Despite a tendency in the post-independence era to trivialise the achievements of Spanish colonial science, both the Hispanic writers cited above were quoted with respect, suggesting some recognition of Spanish and creole expertise in the area – Unanue was described as "an estimable writer on the climate of Lima" and Azara as "one of the best and most modern authorities on the natural history of the central parts of South America".[59] Nineteenth-century writers also turned to early colonial commentators such as José de Acosta and Garcilaso de la Vega to learn more about Inca herding techniques and wool-production processes, again relying on the testimony of Spanish and creole chroniclers. These borrowings from earlier works of natural history illustrate the transfer of knowledge across ages and cultures, as well as the importance of textual sources in guiding an agricultural project.

While colonial authors and indigenous people supplied valuable knowledge about the uses and specific needs of the alpaca, the physical relocation of the animals depended on the presence and commitment of British subjects based in Spanish America. Commercial links were particularly important. Charles Ledger, as we have seen, was introduced to the alpaca through his job as a wool merchant, working first as a clerk for the house of Naylor's and later operating his own business. He formed close relationships with Indian farmers, and in this way became aware of the potential value of alpaca wool. Living in Peru for twenty-two years, Ledger developed an intimate knowledge of how alpaca were farmed and how their fleece was processed by the Indians. The Briton further ensconced himself in Peruvian society by "marrying into an influential family in Tacna", forging important links with the local community.[60] These connections, part social, part economic, enabled Ledger to carry out his alpaca smuggling scheme.

The contribution of another alpaca advocate, General John O'Brien, illustrates even more clearly the role of itinerant Britons in appropriating the alpaca. An Irishman by birth, from Baltinglass, County Wicklow, O'Brien travelled to South America in 1812 to open a merchant house in Buenos Aires, but ended up fighting at the battles of Chacabuco, Cancha Rayada and Maípo as General José de San Martín's aide de camp. After the conflict concluded, O'Brien settled in Peru, engaged in mining ventures, and later in Argentina, where he worked to encourage Irish immigration.[61] Upon returning to Britain some years later he became increasingly enthusiastic about the prospect of naturalising the alpaca in his native Ireland and initiated a correspondence with both Danson and Walton. Possessing not only direct personal knowledge of the alpaca, but also many useful contacts in Peru, O'Brien

[59] Walton (1845), pp.6 & 23; Walton (1841), p.17.
[60] *Bradford Observer*, 29 September 1859.
[61] Clements Markham, *Travels in Peru while superintending the collection of cinchona plants and seeds in South America, and their introduction into India*, London: John Murray, 1862, p.527.

assisted the alpaca acclimatisation drive by writing a series of letters to his Peruvian friends, urging them to cooperate with Danson's naturalisation scheme. One of O'Brien's correspondents, Peter Murphy, HM Consul at Arica, was entreated to offer his "aid and assistance" to "whatever person [Danson] may send out to this country" to collect alpacas, with a view to conferring "a national gift" upon "your dear old mountains of Wicklow". Another correspondent, Michael Crawley, Prefect of the Department of Lampa, was requested, for the sake of "old friendship", to help with selecting good quality alpacas and "conducting them to the coast"; a third, Don Mariano Toledo, was asked, in dubious Spanish, to give Danson's agent "todo servicio en procurer los mejores animals" and to do "cuento puede en facilitar sus proyectos". The content of these letters, with its emphasis on friendship and service to one's country, highlights the importance of social and professional networks in the study and exchange of zoological specimens and the value of personal contacts in furthering scientific and economic plans.[62]

Sailors in the British navy and merchant marine also played a crucial role in the physical transportation of the alpaca. Walton, conscious that a shorter crossing would improve the odds of keeping the alpacas alive, advised transporting the animals to Panama on a new line about to be set up by the Pacific Steam Navigation Company, allowing them to recuperate on the isthmus for six weeks and then shipping them to England from the Caribbean port of Chagre.[63] Another alpaca enthusiast, in this case from Tasmania, suggested that:

> it might be possible for some of the vessels trading to San Francisco to procure a few [alpacas], by means of vessels from Chili, there being a considerable communication between San Francisco and Valparaiso.[64]

The extension of British shipping to the Pacific in the wake of Spanish American independence and the increasing sophistication of steam-powered vessels in the mid-nineteenth century cut down journey times across the world's oceans, making it more likely that animals would survive the long crossing to new lands. Some sailors also went the extra mile to look after their live cargo, further improving survival rates. In 1841, for example, Captain Bottomley of the *Highlander* took great care to convey nine alpacas from Valparaíso to Liverpool, feeding them on a diet of lucern and even "washing the mouths of the animals before eating and drinking" to keep them healthy.[65]

Back in Britain, the successful rearing and exploitation of the alpaca depended on input from three other communities of 'experts': men of science, engineers and zoo professionals. Like the British botanists at Kew who used their knowledge of plants to classify, acclimatise and 'improve' the species earmarked for naturalisation in the colonies, nineteenth century zoologists studied the anatomy and physiology of the alpaca and offered advice on how best to farm them. The famous comparative anatomist Richard Owen delivered a lecture on the "peculiar properties" of alpaca wool at the Society of Arts in 1851, in which he noted its "glossy…silky" quality.[66] Another scientist, Alfred Higginson of the Natural History Society of Liverpool, dissected two alpacas, observing that "the water cells" in their stomachs "were either empty or partly filled with masticated food in a semi-fluid state".[67]

---

[62] Danson (1852), pp.12-14.
[63] Walton (1845), p.6.
[64] *Maitland Mercury*, 20 March 1850.
[65] *Liverpool Mercury*, 1 October 1841.
[66] Danson (1852), p.20.
[67] Walton (1841), p.20.

Anatomical findings helped acclimatisers to better understand the needs of the animal and the potential uses to which it might be put.

While zoologists debated the pros and cons of transporting and farming the alpaca, the use of alpaca wool for textile production was made possible by a series of technological developments, most of them the work of enterprising Yorkshire artisans. Since it was finer and longer than sheep's wool, the fleece of the alpaca could not be spun using traditional machinery, but required specially adapted spinning apparatus. Initially, no such apparatus was available. In the 1830s, however, Benjamin Outram, "a scientific manufacturer of Gretland near Halifax", designed a machine that could spin alpaca wool economically and effectively, giving rise to a new industry.[68] Titus Salt installed Outram's machinery in his worsted factories in Bradford in 1836, and was soon producing alpaca goods on an industrial scale. Further technological breakthroughs in subsequent years increased the quality and speed of the output, making the business yet more profitable; in 1847, for instance, Edward Waud "of Bradford, Yorkshire, spinner", received a patent for "certain improvements in the construction of machinery for preparing and spinning alpaca, mohair, wool, flax and other fibrous materials".[69] The technical expertise of British artisans, who had perhaps never seen a living alpaca, thus played a crucial role in stimulating the demand for their wool, and, in time, the desire for their naturalisation.

Finally, in highlighting the communities that facilitated alpaca introduction, we ought to mention one last group: menagerists and zoo directors. When seeking advice on alpaca acclimatisation, alpaca advocates frequently invoked the practical knowledge of these individuals, whose direct experience of rearing alpacas in Britain made them the next best thing to native Peruvians when it came to learning about the animals' diet and habits. Danson, for instance, collaborated with Thomas Atkins of Liverpool Zoological Gardens, compiling a circular to be issued to ships' captains "for their guide in treatment of the animals during the voyage", while the Australian Edward Wilson employed "a competent man from the Zoological Gardens Regent's Park" to care for his flock on their voyage to Australia.[70] Walton, quizzed Edward Cross, director of the menagerie at Exeter 'Change, about the alpaca, citing the latter's testimony that the animal in his possession subsisted on "dry food, such as hay, beans and oats", that "it never drank anything the whole time I had it", and that he cured it of a skin complaint (the "itch") by "rubbing a little mercurial ointment on the spine".[71] Though Cross was a showman, and not a professional naturalist, Walton seems to have valued his opinions highly and was happy to rely on his expertise; "few men", he remarked, "could be found more intelligent or more observant than Mr Cross".[72]

Even travelling menageries, usually perceived as mere sources of entertainment, could assist the alpaca acclimatisation project. When showmistress Mrs Wombwell exhibited a 'jet black' alpaca in Liverpool in 1853 the animal attracted considerable attention from local farmers, generating a series of letters to the *Liverpool Mercury*. The *Mercury* initiated the conversation, observing that the animal was:

---

[68] Walton (1845), p.11.
[69] *Liverpool Mercury*, 3 December 1847.
[70] Danson (1852), p.19; *Daily News*, 8 November 1858.
[71] Walton (1845), p.15; Walton (1841), pp.21-23.
[72] Walton (1841), p.23.

> entitled to much attention, not merely from motives of curiosity, but from the immense mercantile advantages which would accrue to the agriculturalist as well as the manufacturer by its naturalisation in this country.[73]

In the following weeks, letters appeared from readers concurring with this view. One correspondent, 'G.G.', who had seen the menagerie specimen, noted that the alpaca's fleece typically weighed "from 12 to 14 lbs", though "on the one before us at Wombwell's (which, however, is singularly fine), we should imagine upwards of 20 lbs". He went on to express his hope that the *Mercury's* article would "induce the owners or holders of hilly or mountainous districts at once to consider" the "practicability" of domesticating the alpaca there.[74] A second correspondent, 'T.F.', broadly agreed with these sentiments, requesting information on "where the breed may be obtained at a price commensurate with the great risk which must be run before any return can be expected", and where he might find an "able treatise" explaining how to avoid "accidents arising from ignorance of the habits of the animal".[75] While sailors, merchants and naturalists thus brought the first alpacas back to British shores, it was often travelling entertainers who introduced them to people in the provinces, and who, through long experience, understood best how to manage them.

Alpacas and Empire

If alpaca naturalisation illustrated the complex networks of exchange and expertise at work within and beyond the British Empire, it also exposed certain tensions in these relationships. Alpacas, it turned out, meant different things to different people. The British, the Australians the Peruvians and the Bolivians all invested these valuable animals with their own specific hopes and expectations. Even within Britain and its antipodean possessions there were varying regional and local interests at stake. These different aspirations were not necessarily mutually exclusive; what was good for New South Wales might also be beneficial to textile workers in Bradford. They do, nonetheless, betray different priorities and emphases, and, in the case of the Peruvians and Bolivians, opposing views as to where alpacas should be farmed.

Viewed from a British perspective, alpacas were intended to promote the nation's commerce and revitalise its agriculture by transforming barren and uncultivated regions into useful pastures. Their introduction would permit more effective use of Britain's farmland, already exploited as far as possible by native species, and would enable the British to produce a fine and delicate fabric capable of competing with the best French silks. It would reduce Britain's dependence on Peruvian wool imports, which contemporaries considered unreliable, expensive and insufficient to meet demand. It would also, perhaps, facilitate British expansion overseas by providing a material suitable for clothing colonists in the tropics; a British plantation owner in Jamaica, for instance, mentioned in a letter to his father, Sir William Fitzherbert, that he was wearing an 'alpaca jacket' during the Morant Bay rebellion of 1865.[76] To this extent, the acclimatisation project was a tangible reflection of Britain's naval dominance and imperial reach, a demonstration of its technological and agricultural expertise and a testament to its commercial penetration of post-independence South America. By the same token, however, the desire to naturalise the alpaca was also an expression of British

[73] *Liverpool Mercury*, 2 February 1853.
[74] *Liverpool Mercury*, 11 February 1853.
[75] *Liverpool Mercury*, 22 March 1853.
[76] *Morning Post*, 2 December, 1865.

anxieties and economic vulnerability, at a time when contemporaries were worrying about foreign competition (Germany and the USA were beginning to industrialise) and the prospect of Civil War in the USA threatened cotton supplies.[77] Britons feared that if they did not acclimatise the alpaca, European rivals would take the initiative, threatening the country's dominance in the woollen trade and putting manufacturers out of work.[78] As Walton expressed it:

> In the stirring age in which we live, nations, like individuals, must compete with those who seek to outstrip them; and…in order to keep his ground in the foreign market, the manufacturer must vary his goods and adapt them to the prevailing taste, besides increasing the number of articles which he sends thither for sale.[79]

British writers thus perceived alpaca naturalisation as an antidote to actual and potential national problems, as well as a marker (and facilitator) of imperial dominance. A 'llama' even appeared at the London International Exhibition of 1871, underlining the importance of the animal to the nation's industrial prospects (Figure 4).

Figure.4: 'Sketches in the International Exhibition'

(Source: *Illustrated London News*, 9 September 1871)

[77] William Haines, chairing the meeting at which George Ledger advocated alpaca introduction into Australia, emphasised "the importance of promoting increased production of wool when our supply of cotton might be in danger" (Ledger 1861, p.24).

[78] The French were, in fact, taking steps to acclimatise the alpaca, which they hoped would thrive in the mountains of the Pyrenees, the Alps, the Vosges, the Jura and the Auvergne, as well as in their new colony of Algeria. The Spanish also succeeded in bringing a flock of nine llamas and alpacas to the Jardín de Aclimatación in Madrid via Cuba, four of which subsequently gave birth to young. See M. E. Deville, *Considérations sur les Avantages de la Naturalisation en France de l'Alpaca*, Paris: Imprimerie de L. Martinet, 1851, p.15; and Museo Nacional de Ciencias Naturales, Madrid, Fondo Zoológico, Sección Sociedad de Aclimatación 328/019.

[79] Walton (1845), p.12.

It is equally instructive to disaggregate the broader 'British' perspective and view the alpaca project through a narrower, local lens, for at the same time as supporting the national drive to naturalise the alpaca in Britain, specific regions and cities were often pursuing distinctive local agendas. The Irishman General O'Brien, for example, though happy to collaborate with British colleagues in bringing alpacas to the British Isles, appears to have been particularly interested in the benefits the scheme would confer upon his native Ireland. He certainly emphasised the latter in correspondence with fellow ex-patriot Irishman Peter Murphy, HM Consul at Arica, referring to the animals as "a national gift to your own dear mountains of Wicklow".[80] Similar sentiments were at work in Liverpool, where Danson and Atkins seem to have perceived alpaca importation as a source of local pride for one of Britain's main trading hubs with South America, and another way of advertising the port city's global reach and entrepreneurial spirit. In Bradford, meanwhile, the alpaca was regarded as essential to the city's textile prosperity, earning the West Yorkshire town royal patronage in 1845 after local artisans converted the fleece of one of the Queen's alpacas into an apron and "a striped and figured dress".[81] In April of that year a public dinner was held at the Bradford Exchange Rooms at which "a painted representation of the Alpaca" was displayed alongside Bradford's coat of arms, and in 1851, when Salt constructed a special village for his employees, alpaca emblems were chiselled into several of the buildings, including the schoolhouse (Figure 5).[82] By 1859 Bradford even boasted an 'Alpaca Beer-house' – further testimony of the animal's local significance and its incorporation into popular culture.[83] These cases suggest that there was a regional as well as a national dimension to the introduction of the South American camelid as different counties and cities sought specific benefits as farmers, importers and manufacturers of alpaca produce.

Figure 5: Alpaca motif on the schoolhouse in Saltaire, Bradford.

[80] Danson(1852), pp.12-14.
[81] *Morning Chronicle*, 14 December 1844.
[82] *Morning Chronicle*, 14 December 1844; *Leeds Mercury*, 12 April 1845.
[83] *Leeds Mercury*, 21 May 1859.

Shifting our focus to Australia, we find a further difference in emphasis, though also an awareness of the wider imperial and local circumstances noted above. On the one hand, rearing the animals in the outback was considered good for the British Empire as a whole and beneficial in particular to textile-producing cities like Bradford. Wilson therefore appealed specifically to the manufacturers of Bradford to assist in raising money to purchase alpacas for shipping to Victoria, convinced that "the enormous advantages already derived by your town from alpaca wool will doubtless induce nearly the whole of your manufacturers and spinners to contribute to this interesting experiment".[84] On the other hand, the Australian alpaca programme had a specifically colonial dimension, and was deeply inflected with elements of local pride – sometimes broadly 'Australian', but in other instances confined more narrowly to a single Australian state. Seeking contributions to his alpaca fund in *The Times*, Wilson expressed his hope that "Australians now in England" would supply the money to buy the animals and recommended that the flock be sent to "Victoria, if possible", thus benefiting his native Melbourne.[85] Commenting on Ledger's achievements, meanwhile, the *Era* concluded that:

> if there is a man who has *done well* for Australia it is Charles Ledger, and we trust the colony will mark its sense of his merit in a manner befitting a Government to bestow, and a public benefactor to receive.[86]

When the Australians let Ledger down by failing to reimburse him adequately for his services, the same paper published a further article warning that:

> It would indeed be a disgrace to the country if Mr C. Ledger, after so far completing his hazardous and arduous enterprise, commenced on the faith of promises of handsome remuneration, should be allowed to depart to South America, and relate there…that an enterprise which had been highly extolled in England as likely to open a new era in British commerce, has been unrequited by the country which would chiefly benefit by it.

This prompted the opening of a public subscription in New South Wales, partly to reward Ledger for his efforts, partly to redeem the inhabitants of Sydney in British eyes by proving that "the high merit of Mr C. Ledger in opening up a new source of productive industry" had been "properly appreciated".[87] Colonial and imperial pride were thus at stake in the alpaca exchange project, as British papers upbraided Australian subjects for failing to show due gratitude towards a metropolitan benefactor and the inhabitants of rival settlements competed for regional pride and economic advantage – all within the wider context of the British Empire. At the 1862 International Exhibition the Government of New South Wales received a medal for "the first alpaca wool grown in the colony", while Ledger himself "obtained honourable mention for excellence of quality of alpaca tallow and pomade" – a source of pride for the nascent colony.

Finally, viewed through Peruvian and Bolivian eyes, alpaca acclimatisation had a very different complexion, though one still heavily imbued with national significance. For these two countries, the alpaca and the llama were an intrinsic part of the landscape and also, of course, an important national export. Alpaca wool earned Peru and Bolivia significant sums of money in the post-independence period. Llamas were traditional beasts of burden, used extensively in mining and other pursuits. Both animals were also part of the region's Pre-

[84] *Bradford Observer*, 29 July 1858.
[85] *The Times*, 17 July 1858.
[86] *The Era*, 25 September 1859.
[87] *The Era*, 12 February 1860.

Columbian heritage, serving as emblems of national identity; the Bolivian flag of 1826 featured an alpaca "to represent the animal kingdom", while llamas and alpacas appeared on contemporary coins and stamps (Figure 6). Indigenous people also maintained a close spiritual relationship with camelids, stretching back to before the Spanish conquest. According to Ledger (not, admittedly, an impartial witness), when news arrived in Peru of the death of the alpacas on the *Sir Charles Napier*, "the Indians flocked from all parts of the country to the capital of the department, the city of Puno, and from thence petitioned the Government to prohibit the exportation of Alpacas from the country", attributing "every misfortune that had happened in the district for the year past" to the animals' "untimely death".[88] For both cultural and economic reasons, therefore, the Peruvian and Bolivian governments opposed the naturalisation of llamas and alpacas in other countries and issued legislation to protect this part of their national patrimony. The export of llamas and alpacas was banned in 1845 and further decrees in 1851 and 1868 reinforced the export ban, outlawing "the removal from Peruvian territory of alpacas and vicuñas, and of any species of animal that proceeds from the crossing of the two races".[89] British critics, frustrated by these impediments to free trade, repeatedly condemned this policy, referring disparagingly to the "intense jealousy" and "absurd decrees" of the Peruvian and Bolivian states.[90] Ledger's brother, George, accused Peru of supreme selfishness, noting that the country had benefited from the introduction of Old World animals like the horse and the pig, and repaid "these gifts by the positive prohibition of its most valuable animal product…appropriating exclusively to itself a…blessing intended for the common benefit of mankind".[91] To those who enacted these restrictions, however, the measures made eminent sense in the face of what we might see as a nineteenth-century form of bio-piracy. Moreover, as Peruvian legislators were quick to point out in relation to the 1851 decree, "this prohibition cannot be considered in the present case as an odious restriction of trade, side the export of alpaca and llama wool is free".[92] The export bans paralleled similar South American legislation outlawing the removal of antiquities and prized natural history specimens from American soil.[93]

---

[88] Bennett (1864), p.95.

[89] *El Comercio*, 8 April 1851; *Decreto* Estableciendo la prohibición de extraer del territorio peruano las alpacas, vicuñas y animales que proceden del cruzamiento de ambas razas, 8 October 1868, Archivo Digital de la Legislación del Perú.

[90] *The Times*, 17 July 1858; *The Era*, 20 February 1859. On the continued importance of camelids in Andean folklore and culture, see Jorge Flores Ochoa, *Pastoralists of the Andes: The Alpaca Herds of Paratía*, Philadelphia: Institute for the Study of Human Issues, 1979, pp.71-85.

[91] Ledger (1861), p.14. This is a reference to what historian Alfred Crosby has called "The Columbian Exchange" – the transcontinental interchange of plants, animals and microbes that occurred in the sixteenth century following the Spanish conquest of America (Alfred Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, Westport: Greenwood Press, 1972).

[92] *El Comercio*, 8 April 1851.

[93] In the 1860s, for instance, the Argentine Government banned the export of fossil bones, hoping that the prized skeletons of antediluvian beasts like the giant ground sloth would now appear in national museums rather than European ones. Peru and Mexico also issued decrees prohibiting the export of Pre-Columbian antiquities, though these proved largely ineffectual until the 1880s. See Herman Burmeister, 'Sumario sobre la fundación y los progresos del Museo Público de Buenos Aires', *Anales del Museo Público de Buenos Aires*, Buenos Aires: Imprenta de 'La Tribuna', 1864, p.7; Robert Aguirre, *Informal Empire: Mexico and Central America in Victorian Culture*, Minneapolis: University of Minnesota Press, 2005, pp.31 & 98; and Rebecca Earle, *The Return of the Native: Indians and Myth-Making in Spanish America, 1810-1930*, Durham: Duke University Press, 2007, pp.134-8.

Figure 6: Bolivian coin featuring an alpaca, 1852.

Conclusion

The nineteenth century witnessed a surge of interest in the alpaca. The first imports of the animal's wool started to arrive in Britain during the Spanish American Wars of Independence. New technological developments facilitated its use in high quality clothing, and alpaca dresses, jackets and umbrellas were soon rolling off the production lines. As the alpaca industry took off, 'improving' agriculturalists conceived the idea of naturalising the animal in the British dominions, initially in the mountainous regions of Britain itself, later in the Australian colonies. This was achieved through the activation of multiple networks of exchange and expertise, with contributions from former soldiers, expatriate merchants, naturalists and travelling showmen. It was also achieved in direct contravention of Peruvian law, which from 1845 prohibited the export of this precious natural resource.

Attempts to naturalise the alpaca formed part of a much wider programme of bio-piracy. The British wanted to control valuable natural resources, such as cinchona (quinine), rubber and tea. They believed that the best way to do so was to extract them from their native lands (Peru, Brazil, China) and cultivate them in suitable regions of the Empire.[94] They justified their actions on the grounds that the current owners of these resources were not exploiting them to their fullest potential – a process that Fa Ti Fan refers to as "paternal imperialism".[95] In the case of the alpaca, it was alleged that Peruvian Indians wasted much of the wool through slovenly collecting practices, and that they could not meet growing foreign demand for the product. Naturalising the animal in Britain and Australia promised to remedy a potential shortage of raw material and would, through superior animal husbandry, improve the quality of the wool produced. The Acclimatisation Society of Melbourne, for example, accused "the South American Indian, one of the most un-improving of all the races of mankind", of having failed to maximise the alpaca's potential and anticipated great improvements in the species now that the animal was "subjected for the first time to the same treatment that has effected such wonders with the Leicester, Lincoln or South Down sheep, the short-horn ox [and] the thorough-bred horse".[96] Such claims were in fact untrue; the

[94] See Brockway (2002).
[95] Fan (2003), p.25.
[96] Ledger (1861), p.ii.

Peruvian Government was interested in the improvement of its camelid stock and took active measures in the nineteenth century to extend the geographical range of the alpaca and to protect and domesticate the wild vicuña. In 1845, for instance, the Government offered a reward of 250 pesos was anyone who introduced alpacas to the department of Junín, with a further 25 pesos for every 50 crias (baby alpacas) bred in the region.[97] In 1846, meanwhile, it extended formal recognition to Juan Cabrera, priest of Macusani, who, after twenty years of experiments, succeeded in breeding a male alpaca with several female vicuñas, producing fourteen mixed-race offspring.[98] The British, however, ignored these efforts, and continued to perceive themselves as the only ones capable of effecting agricultural improvement. There are notable parallels here with the case of Clements Markham, who, having smuggled seeds of the coveted cinchona tree (the source of the anti-malarial, quinine) out of Bolivia, offered to use the 'experience of cultivators in India' to educate Bolivians in the best techniques for growing a plant which they had hitherto 'so foolishly neglected'.[99]

Though it shared many features with contemporary botanical acclimatisation programmes, alpaca naturalisation differed slightly from many of these in three key respects. Firstly – and most obviously – it involved an animal rather than a plant, which added to the difficulties of relocation. Secondly, it was not managed centrally from a single scientific institution, such as Kew, but promoted independently by a number of private individuals (the Zoological Society of London, though involved in the scheme, did not assume a comparable leading role). Thirdly the alpacas were relocated, not to a tropical colony, like most botanical seizures, but to Britain's Celtic fringe and a white settler colony in the southern hemisphere, where they were to be farmed by British expatriates, not coerced indigenous labour. These factors gave the alpaca project a somewhat de-centred complexion and meant that it was actively encouraged – rather than passively accepted – in the receiving countries, which anticipated concrete local benefits as well as wider imperial ones. In this way, British subjects in places as diverse as Bradford, Liverpool, Sydney and Hobart took a keen interest in the scheme, publishing articles on the subject, meeting locally to discuss it and often undertaking private initiatives to bring it to fruition. Such reliance upon private interests was, however, also the Achilles' heel of the project, for if enthusiasm waned – as happened in both Britain and Australia – or if individuals declined to risk their own money in the enterprise, its success was thrown into doubt.

For all its complexity, however, alpaca appropriation remained a consciously imperial project, and was couched in the language of the military crusade or romantic adventure. One contemporary paper characterised Ledger's quest as a "pilgrimage", the details of which "would compile a romance of the most extraordinary adventure".[100] Henry Swinglehurst, a Briton resident in Valparaíso, was even more effusive. Writing to a friend in Britain in 1858, shortly after he had dined with Ledger, Swinglehurst eulogised the merchant's achievements and likened him to the most famous explorer of his generation:

> He is Livingstone No. 2, and in other times will be looked upon as a hero of trials that few have known and hardly any equalled…Sometimes all but buried in

[97] *Suplemento al Peruano*, 7 October 1845

[98] *El Peruano*, 9 September 1846. The Government awarded Cabrera a medal for his services to the nation and had his portrait 'placed in the National Museum' of Lima. It also decreed that prizes – in the form of exemption from the 'contribution' (a tax levied on the indigenous population) - be offered to "any Indian who presents to the Governor of his District with ten perfectly tame female vicuñas, along with either a male of the same species or a male alpaca".

[99] Markham, *Travels in Peru and India*, p.338.

[100] The Era 25 September 1859.

> mountain snows, with hungry men and flocks to protect; now chased by the police and again hunted by the angry natives in pursuit of the flock, and with all the privations of six years' absence from his home and family and over a journey of 6,000 leagues with animals and men.[101]

This was very much the stereotype of the courageous Victorian explorer, assailed by hazards on all sides but emerging triumphant through ingenuity and perseverance. It was also the reincarnation of the sixteenth-century privateer who raided South American ports in defiance of the Spanish Government and exemplified British pluck and daring. Three hundred years after Francis Drake preyed on Spanish ships in the Pacific, British merchants and naturalists were committing another, more modern form of piracy on Peruvian coasts, with camelids taking the place of silver as stolen treasure.

By way of an epilogue, we may note that alpacas have, in recent years, acquired a global presence. Ledger's exploits may have ended in failure, but the past two decades have seen the successful exportation of alpacas to multiple countries, including the UK and Australia. In 1993 Peru lifted the ban of alpaca exportation, and a number of the animals were legally shipped to the USA, Britain and Australia (among other destinations). They have since multiplied in number, emerging as popular hobby farm animals and, to a lesser extent, sources of wool and meat. Today (2016), there are thought to be around 300,000 alpacas in the USA, 300,000 in Australia, 35,000 in the UK and 23,00 in New Zealand, though this remains only a fraction of the 3.5 million alpacas thought to exist globally.[102]

---

[101] The Era, 31 October 1858.

[102] Inca Alpaca, 'FAQ', www.incaalpaca.co.uk, accessed 7 December 2015; 'Meat the alpacas: fluffy, cute, but tasty', www.abc.net.au, 28 July 2013; New Zealand Alpaca, *How Many Alpaca are there in NZ?*, August 2012, pp.26-7.

References

Allen, Thomas, *A Guide to the Zoological Gardens and Museum; with a Brief Account of the Rise and Progress of the Zoological Society*, London: Cowie & Strange, 1829

Aguirre, Robert, *Informal Empire: Mexico and Central America in Victorian Culture*, Minneapolis: University of Minnesota Press, 2005

Bennett, George, *The Third Annual Report of the Acclimatisation Society of New South Wales*, Sydney: Joseph Cook, 1864

Brockway, Lucille, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens*, New Haven: Yale University Press, 2002 [1979]

Brown, Matthew, *Adventuring through Spanish Colonies: Simón Bolívar, Foreign Mercenaries and the Birth of New Nations*, Liverpool: Liverpool University Press, 2006

Burmeister, Herman, 'Sumario sobre la fundación y los progresos del Museo Público de Buenos Aires', *Anales del Museo Público de Buenos Aires*, Buenos Aires: Imprenta de 'La Tribuna', 1864, p.7

Camerini, Jane, 'Wallace in the Field', *Osiris* 2nd Series, 11 (1996), pp.44-65

Crosby, Alfred, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, Westport: Greenwood Press, 1972

Danson, William, *Alpaca, the Original Peruvian Sheep before the Spaniards Invaded South America, for Naturalisation in other Countries*, Liverpool: M. Rourke, 1852

Deville, M. E., *Considérations sur les Avantages de la Naturalisation en France de l'Alpaca*, Paris: Imprimerie de L. Martinet, 1851

Drayton, Richard, *Nature's Government: Science, Imperial Britain and the 'Improvement' of the World*, New Haven: Yale University Press, 2000

Earle, Rebecca, *The Return of the Native: Indians and Myth-Making in Spanish America, 1810-1930*, Durham: Duke University Press, 2007

Fan, Fa Ti, 'Victorian Naturalists in China: Science and Informal Empire', *British Journal for the History of Science* 36:1 (2003), pp.1-26

Gillbank, Linden, 'A paradox of purposes: acclimatization origins of the Melbourne Zoo', in R.J. Hoage & William A. Deiss, *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century*, Baltimore: John Hopkins University Press, 1996, pp.76-79

Kadwell, Miranda, Wheeler, Jane, et al, 'Genetic analysis reveals the wild ancestors of the llama and the alpaca', *Proceedings of the Royal Society, London* 268 (2001), pp.2575-2585.

Ledger, George, *The Alpaca: Its Introduction into Australia and the Probabilities of its Acclimatisation There, A Paper read before the Society of Arts, London. Republished by the Acclimatisation Society of Victoria*, Melbourne: Mason & Firth, 1861

List of Animals in the Liverpool Zoological Gardens, Liverpool: Ross and Nightingale, 1839

Livingstone, David, *Putting Science in its Place: Geographies of Scientific Knowledge*, Chicago, 2003

Markham, Clements, *Travels in Peru while superintending the collection of cinchona plants and seeds in South America, and their introduction into India*, London: John Murray, 1862

Mengoni Goñalons, Luis, 'Camelids in ancient Andean societies: A review of the zooarcheological evidence', *Quaternary International* 185 (2008), pp.59-68

Miller, John, *The Memoirs of General Miller*, New York: AMS Press, 1973

Miller, Rory and Greenhill, Robert, 'The Fertiliser Commodity Chains: Guano and Nitrate, 1840-1930', in Stephen Topik, Carlos Marichal and Frank Zephyr (eds), *From Silver to Cocaine: Latin American Commodity Chains and the Building of the World Economy, 1500-2000*, Durham: Duke University Press, 2006, pp.228-270

Ochoa, Jorge Flores, *Pastoralists of the Andes: The Alpaca Herds of Paratía*, Philadelphia: Institute for the Study of Human Issues, 1979

Osborne, Michael, *Nature, the Exotic and the Science of French Colonialism*, Bloomington: Indiana University Press, 1994

Osborne, Michael, *'Illusionary Empire' in Takashi Ito, London Zoo and the Victorians, 1828-1859*, Woodbridge: Boydell and Brewer, 2014

Raj, Kapil, *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650-1900*, Basingstoke: Palgrave Macmillan, 2007

Report of the Council and Auditors of the Zoological Gardens of London, London: Taylor and Francis, 1853 and 1857

Ritvo, Harriet, *The Animal Estate: The English and Other Creatures in the Victorian Age*, Cambridge: Harvard University Press, 1987

Schaffer, Simon; Roberts, Lissa; Raj, Kapil and Delbourgo, James (eds), *The Brokered World: Go-Betweens and Global Intelligence, 1770-1820*, Sagamore Beach, 2009

Schell, Patience, *The Sociable Sciences: Darwin and his Contemporaries in Chile*, Basingstoke: Palgrave Macmillan, 2013

Schiebinger, Londa, *Plants and Empire: Colonial Bio-Prospecting in the Atlantic World*, Cambridge: Harvard University Press, 2004

Simmonds, Peter Lund, *The Curiosities of Food, or The Dainties and Delicacies of Different Nations Obtained from the Animal Kingdom*, Berkeley: Ten Speed Press, 2001

Spary, Emma, *Utopia's Garden: French Natural History from Old Regime to Revolution*, Chicago: University of Chicago Press, 2000

Walton, William, *A Memoir addressed to Proprietors of Mountain and other Waste Lands and Agriculturalists of the United Kingdom, on the Naturalisation of the Alpaca*, London: Smith, Elder & Co., 1841

Walton, William, *The Alpaca: Its Naturalisation in the British Isles Considered as a National Benefit, and as an Object of Immediate Utility to the Farmer and Manufacturer*, New York: Office of the New York Farmer & Mechanic, 1845

Other Commodities of Empire Working Papers

WP01: Sandip Hazareesingh, '"Chasing commodities over the surface of the globe": shipping, port development and the making of networks between Glasgow and Bombay, c.1850–1880' (October 2007)

WP02: Jonathan Curry–Machado, 'Sub–imperial globalisation and the phoenix of empire: sugar, engineering and commerce in nineteenth century Cuba' (October 2007)

WP03: Jean Stubbs, 'Reinventing mecca: tobacco in the Dominican Republic, 1763–2007' (October 2007)

WP04: Miguel Suárez Bosa, 'The role of the Canary Islands in the Atlantic coal route from the end of the nineteenth century to the beginning of the twentieth century: corporate strategies' (January 2008)

WP05: Ayodeji Olukoju, 'The United Kingdom and the political economy of the global oil–producing nuts and seeds during the 1930s' (January 2008)

WP06: Roberto Davini, 'A global commodity within a rising empire: the history of Bengali raw silk as connective interplay between the Company *Bahadur*, the Bengali local economy and society, and the universal Italian model, c.1750–c.1830' (February 2008)

WP07: Deana Heath, 'Obscenity, empire and global networks' (April 2008)

WP08: David Hyde, 'Global coffee and decolonisation in Kenya: overproduction, quotas and rural restructuring' (July 2008)

WP09: Vibha Arora, 'Routing the commodities of empire through Sikkim (1817–1906)' (July 2008)

WP10: Kaori O'Connor, 'Beyond 'exotic groceries': tapioca–cassava, a hidden commodity of empire' (January 2009)

WP11: Jonathan Robins, '"The Black Man's Crop": cotton, imperialism and public–private development in Britain's African colonies, 1900–1918' (September 2009)

WP12: Jelmer Vos, 'Of stocks and barter: John Holt and the Kongo rubber trade, 1906–1910' (September 2009)

WP13: Alan Pryor, 'Indian Pale Ale: an icon of empire' (November 2009)

WP14: William G. Clarence Smith, 'The battle for rubber in the Second World War: cooperation and resistance' (November 2009)

WP15: Steve Cushion, 'Cuban Popular Resistance to the 1953 London Sugar Agreement' (March 2010)

WP16: Jonathan Curry–Machado, 'In cane's shadow: the impact of commodity plantations on local subsistence agriculture on Cuba's mid–nineteenth century sugar frontier' (October 2010)

WP17: Teresita A. Levy, 'Tobacco growers and resistance to American domination in Puerto Rico, 1899–1940' (October 2010)

WP18: Patrick Neveling, 'A periodisation of globalisation according to the Mauritian integration into the international sugar commodity chain (1825–2005)' (May 2012)

WP19: Bruce Mouser, Edwin Nuitjen, Florent Okry & Paul Richards, 'Commodity and Anti–commodity: Linked histories of slavery, emancipation and red and white rice at Sierra Leone' (June 2012)

WP20: Jean Stubbs, 'El Habano: The Global Luxury Smoke' (July 2012)

WP21: Marc W. Herold, 'The Black Diamonds of Bahia (*Carbonados*) and the Building of Euro–America: A Half–century Supply Monopoly (1880–1930s)' (April 2013)

WP22: G. Roger Knight, 'A Scots Émigré, Imperial Systems and Global Commodities: Gillian Maclaine and his Mercantile Network, 1816-1840' (May 2015)

WP23: Marc W. Herold, 'Nineteenth-Century Bahia's Passion for British Salted Cod: From the Seas of Newfoundland to the Portuguese Shops of Salvador's Cidade Baixa, 1822-1914' (June 2015)

All Commodities of Empire Working Papers can be downloaded from the Commodities of Empire website, at http://commoditiesofempire.blogs.sas.ac.uk/publications/working-papers/

Commodities of Empire is a joint research collaboration between the University of London's **Institute of Latin American Studies (ILAS)** and **School of Oriental and African Studies (SOAS)**. These two institutions form the nucleus of a growing international network of researchers and research centres. Commodities of Empire is a British Academy Research Project

The mutually reinforcing relationship between 'commodities' and 'empires' has long been recognised. Over the last six centuries the quest for profits has driven imperial expansion, with the global trade in commodities fuelling the ongoing industrial revolution. These 'commodities of empire', which became transnationally mobilised in ever larger quantities, included foodstuffs (wheat, rice, bananas); industrial crops (cotton, rubber, linseed and palm oils); stimulants (sugar, tea, coffee, cocoa, tobacco and opium); and ores (tin, copper, gold, diamonds). Their expanded production and global movements brought vast spatial, social, economic and cultural changes to both metropoles and colonies.

In the Commodities of Empire project we explore the networks through which such commodities circulated within, and in the spaces between, empires. We are particularly attentive to local processes – originating in Africa, Asia, the Caribbean and Latin America – which significantly influenced the outcome of the encounter between the world economy and regional societies, doing so through a comparative approach that explores the experiences of peoples subjected to different imperial hegemonies.

The following key research questions inform the work of project:

1) The networks through which commodities were produced and circulated within, between and beyond empires;
2) The interlinking 'systems' (political-military, agricultural labour, commercial, maritime, industrial production, social communication, technological knowledge) that were themselves evolving during the colonial period, and through which these commodity networks functioned;
3) The impact of agents in the periphery on the establishment and development of commodity networks: as instigators and promoters; through their social, cultural and technological resistance; or through the production of anti-commodities;
4) The impact of commodity circulation both on the periphery, and on the economic, social and cultural life of the metropoles;
5) The interrogation of the concept of 'globalisation' through the study of the historical movement and impact of commodities.

http://commoditiesofempire.blogs.sas.ac.uk/

Series Editor: Dr Jonathan Curry-Machado (ILAS)
Project Directors: Prof. Jean Stubbs (ILAS) and Prof. William Clarence-Smith (SOAS)

SOAS University of London

School of Oriental and African Studies
Thornhaugh Street
Russell Square
London WC1H 0XG

Institute of Latin American Studies,
Senate House (South),
University of London,
Malet Street,
London WC1E 7HU

ILAS INSTITUTE OF LATIN AMERICAN STUDIES
SCHOOL OF ADVANCED STUDY UNIVERSITY OF LONDON