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ARTICLE

In the weft of words: Mapping global and local connectivity in the Chinese terminology for American cochineal

Niping Yan

Department of History, University of Macau, Taipa, Macao
Email: nipingyan@um.edu.mo

Abstract

This article explores the evolution of Chinese terminology for American cochineal to study global material culture in its local and trans-regional contexts. As the most highly valued insect-derived source of red colourant, American cochineal was introduced to China in the sixteenth century, with trade reaching its peak between the 1820s and mid-1870s. Since the early eighteenth century, various Chinese names emerged for cochineal; different terms were applied by different socioeconomic groups, though most were eventually forgotten. This article examines the emergence, spread, and persistence of predominant terms, alongside the obsolescence of others, within the context of Sino-European and regional knowledge exchange, trade dynamics, and scientific understanding of cochineal. The analysis demonstrates the evolution of Chinese terminology for cochineal was intricately linked to shifts within the intertwined spheres of global, regional, and local histories. It also reveals the coexistence and disconnection among various forms of global-local 'connectivity' through the linguistic dimensions concerning cochineal's presence in China.

Keywords: cochineal; China; linguistic approach; global material history

The global dissemination of local material objects or commodities has led to the creation of names for them in various languages. In the English names for New World species, while some terms derived from indigenous languages,[1] others were rooted in physical characteristics, perceived qualities, or people's misunderstandings.[2] Europeans also applied familiar Old World names to similar species they encountered in the New World.[3] These diverse patterns of naming strategies not only reflect immediate linguistic adaptations but also have evolved over time as objects have circulated within local societies.

From a long-term perspective, various terms for the same object have coexisted and evolved within a local society. Some have stemmed from linguistic borrowings, while others have been coined by different social classes; some terms have gained widespread acceptance, whereas others have remained known only within niche groups or eventually have been forgotten. The meanings

[1]For instance, 'avocado' (*ahuacatl*), 'chocolate' (*xocoatl*), and 'tomato' (*tomatl*) are derived from Nahuatl, the language of the Aztecs. See Fermin Herrera, *Nahuatl-English/English-Nahuatl Concise Dictionary* (New York: Hippocrene Books, 2004), 48, 68, 196.

[2]For instance, in the case of 'passion fruit', see Juan Pimentel, 'Flores de la Pasión. Dos alegorías del Nuevo Mundo', in *Alegorías. Imagen y discurso en la España Moderna*, ed. María Tausiet (Consejo Superior de Investigaciones Científicas, 2014), 109–23.

[3]For instance, in the Spanish name of 'turkey', see Mackenzie Cooley, *The Perfection of Nature: Animals, Breeding, and Race in the Renaissance* (University of Chicago, 2022), 10–1.

of specific terms can also change or be lost as the contexts that shaped them undergo transformation. For example, the Treaty of Nanking (1842), signed between China and Britain, significantly increased China's interaction with the external world, leading to more foreign trade and linguistic borrowings. Linguists' research on the naming of New World crops in Chinese dialects has illustrated this evolution.[4] Although linguists often have focused on identifying 'what' linguistic phenomena occur, historians should pay closer attention to 'why' and 'how' historical terms have been replaced, disappeared, or undergone shifts in meaning over time.

Many historians have utilised linguistic evidence to reconstruct the complex routes of botany and medicine across Eurasia, as well as their specific uses and associated knowledge.[5] Linguistic borrowings often indicated the supply chains through which items were introduced to new regions.[6] Other terms, however, embodied local knowledge and reflected the dynamics of knowledge and power within societies. For example, 'China root' (*Radicis Chynae*), once a popular wonder drug ('holy wood') in sixteenth-century Europe, was the term Europeans used to describe *Tu Fu Ling*, a traditional Chinese medicinal herb derived from the root of the Smilax glabra plant.[7] This example demonstrates how local society could inform the naming, perception, and popularisation of a specific material object.

This article advocates for a linguistic approach to studying global material culture, which also serves as a response to some critiques of global history. Studies of global material culture have revealed how the mobility of material goods, such as Indian cotton, Chinese porcelain, and other global commodities and luxuries, has fostered the global connectivity of disparate corners of the world and shaped their relationships.[8] While these studies have enriched our understanding of global connectivity, in recent years, global history has faced criticism for its overemphasis on networks, movement, and circulation. This focus has led to the oversight of disintegration and disconnection, as well as a neglect of local contexts and place-based research and perspectives.[9] There also has been a growing concern about the danger of homogenising regional, national, or local histories under broad, global trends. In response to these critiques, recent publications have adopted the perspective of people who did not move to understand the integrated global world.[10] Yet the problem of scale in global history studies has continued to be debated. Richard Drayton and David Motadel have argued for 'a new sensitivity to the historical agents, forces, and factors at scales above and below those of the nation or region'.[11] Some historians, such as John-Paul

[4]See Zhijia Ni and Mengbing Xiang, 'Fanshu de cihui dilixue yanjiu', *Modern Linguistics* 2, no. 1 (2014): 44–67; Yingxue Zhang and Mengbing Xiang, 'Hanyu fangyan li de xihongshi', *Modern Linguistics* 4, no. 3 (2016): 56–80; Mengbing Xiang and Yipei Zhou, 'Hanyu fangyan li de malingshu', *Modern Linguistics* 6, no. 2 (2018): 290–322.

[5]See Angela Ki Che Leung and Ming Chen, 'The Itinerary of *Hing*/*Awei*/Asafetida across Eurasia, 400–1800', in *Entangled Itineraries: Materials, Practices, and Knowledges across Eurasia*, ed. Pamela H. Smith (University of Pittsburgh Press, 2019), 141–65.

[6]Ibid., 142.

[7]See Gao Xi, 'Wenyi fuxing shiqi Ouzhou yisheng yanzhong de yiyu xinyao: Zhongguo gen', *Huadong shifan daxue xuebao*, no. 1 (2023): 22–32.

[8]See Kazuo Kobayashi, *Indian Cotton Textiles in West Africa: African Agency, Consumer Demand, and the Making of the Global Economy, 1750–1850* (Palgrave, 2019); Meha Priyadarshini, *Chinese Porcelain in Colonial Mexico: The Material Worlds of an Early Modern Trade* (Springer, 2018).

[9]See David A. Bell, 'This Is What Happens When Historians Overuse the Idea of the Network', *The New Republic*, 26 October 2013; David A. Bell, 'Questioning the Global Turn: The Case of the French Revolution', *French Historical Studies* 37, no. 1 (2014): 1–24; Sebastian Conrad, *What is Global History*? (Princeton University Press, 2016), 15–16; Jeremy Adelman, 'What is Global History Now?', *Aeon*, 2 March 2017; Stefanie Gänger, 'Circulation: Reflections on Circularity, Entity, and Liquidity in the Language of Global History', *Journal of Global History* 12, no. 3 (2017): 303–18; Lara Putnam, 'Daily Life and Digital Reach: Place-based Research and History's Transnational Turn', in *Theorizing Fieldwork in the Humanities: Methods, Reflections, and Approaches to the Global South*, eds. Debra Castillo and Shalini Puri (Palgrave Macmillan, 2017), 167–81.

[10]See, for example, Dominic Sachsenmaier, *Global Entanglements of a Man Who Never Traveled: A Seventeenth-Century Chinese Christian and His Conflicted Worlds* (Columbia University Press, 2018).

[11]Richard Drayton and David Motadel, 'Discussion: The Futures of Global History', *Journal of Global History* 13, no. 1 (2018): 1–21.

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A. Ghobrial, have cited global microhistory as a means of establishing 'a more rigorous, reflexive and critical form'.[12]

Beyond these methodological concerns, global history's ambition to counter Eurocentrism has remained a challenge. In his reflection on the material turn in global history, Giorgio Riello has observed that studies of early modern material culture often rely heavily on European documentation, inevitably emphasising Europe's central role in global connectivity.[13] To decentre the European records of foreign things, we should engage more closely with non-European languages. Riello also has suggested scholars adopt a more nuanced spatial understanding of global interactions that goes beyond privileged maritime connections and the horizontal movement between east and west.[14]

This article responds to the above critiques and suggestions by employing a micro-historical approach to examine the long-term terminological shifts of American cochineal in China, aiming to reconsider connectivity across global, regional, and local dimensions through material culture. Specifically, the article treats local terms for American cochineal as historical artefacts, reflecting the transformative meanings and impacts of this dyestuff within intertwined local and global contexts. The study approaches terminology as part of the 'cultural biography' or 'global life' of an object, interrogating the lifecycle of key terms: their emergence, dissemination, disappearance, and persistence, as well as the new meanings, uses, and perceptions it acquired in each stage.[15]

As one of history's most valuable trade commodities, cochineal is an insect-based red dye, extracted from the cochineal insect (*Dactylopius coccus*) which thrives on prickly pear cactus in Mexico and South America.[16] It had been used by indigenous people of the Americas before the arrival of Spaniards.[17] Following the Spanish conquest in the 1520s, cochineal was gradually introduced to Europe and beyond.[18] The Spanish friar, Bernardino de Sahagún, observed in the late sixteenth century that cochineal was highly esteemed in China, Turkey, and other parts of the world.[19] Cochineal became the most desired and exceptionally prized source of red colour worldwide until it was replaced by synthetic dyes in the late nineteenth century.[20] Indeed, for the Spanish Empire, it was one of the most lucrative global commodities, second only to silver, and remained under Spanish monopoly until Mexican independence.[21]

Current scholarship on cochineal has greatly developed our understanding of its nature as a dyestuff, its economic importance, and material usage. Scholars have analysed cochineal in comparison with other insect-based red dyes across the world, particularly kermes (*Kermes*

[12]For instance, see Tonio Andrade, 'A Chinese Farmer, Two African Boys, and a Warlord: Toward a Global Microhistory', *Journal of World History* 21, no. 4 (2010): 573–91; Francesca Trivellato, 'Is There a Future for Italian Microhistory in the Age of Global History?', *California Italian Studies* 2, no. 1 (2011); John-Paul A. Ghobrial, 'Introduction: Seeing the World Like a Microhistorian', *Past & Present* 242, Supplement 14 (2019): 1–22. Maxine Berg, 'Introduction: Global Microhistory of the Local and the Global', *Journal of Early Modern History* 27, no. 1–2 (2023): 1–5.

[13]Giorgio Riello, 'The "Material Turn" in World and Global History', *Journal of World History* 33, no. 2 (2022): 205.

[14]Ibid., 215.

[15]On the concept of 'cultural biography' or 'social life' of things, see Igor Kopytoff, 'The Cultural Biography of Things: Commoditization as Process', in *The Social life of Things: Commodities in Cultural Perspective*, ed. Arjun Appadurai (Cambridge University Press, 1986), 64–109. On the 'global life of things', see *The Global Lives of Things: The Material Culture of Connections in the Early Modern World*, eds. Anne Gerritsen and Giorgio Riello (Routledge, 2015).

[16]The bodies of female cochineal insects contain a high level of the dye content carminic acid, which enables them to produce a vivid, deep, and long-lasting scarlet colour. It took approximately 70,000 female cochineal insects to yield 500 grams of the colourant, so the dye-making process is labour-intensive, which contributed to the high cost of the red dye.

[17]Robin Arthur Donkin, 'Spanish Red: An Ethnogeographical Study of Cochineal and the Opuntia Cactus', *Transactions of the American Philosophical Society* 67, no. 5 (1977): 5–36.

[18]Ibid., 37–50.

[19]Bernardino de Sahagún, *Historia General de las Cosas de Nueva España* (Editorial Porrua, 1956), 341.

[20]Alexander Engel, 'Colouring Markets: The Industrial Transformation of the Dyestuff Business Revisited', *Business History* 54, no. 1 (2012): 10–29.

[21]Donkin, 'Spanish Red', 3.

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vermilio) in the Mediterranean world and lac dye (*Kerria lacca*) in Southeast and South Asia.[22] They have also extensively explored cochineal production in Mexico and its demand in Europe, analysing its economic impacts as well as its role in scientific debates and the production of indigenous knowledge.[23] Yet in most research, the focus has remained predominantly on the Atlantic world, while the cochineal trade in Asia is mentioned in passing.[24] Beyond textual investigation, however, art historians have detected use of cochineal in fabrics and artworks, including Chinese textiles and paintings.[25]

The gap between research on the cochineal trade in China and its use in Chinese art works has partially resulted from an unclear understanding of historical terminology. A recent ground-breaking study by May Bo Ching has unearthed an unusual vocabulary, '*yalan*' 芽蘭, in an old Cantonese song and, upon further textual investigation, has identified it as a once-popular but long-forgotten Chinese term for cochineal, indicative of Sino-foreign trade in the nineteenth century.[26] Building on this discovery, this article further identifies a plethora of historical Chinese terms for cochineal across diverse sources and social groups: court documents, painting treatises, local gazetteers, commercial guidebooks, and newspapers that were utilised by the imperial family, officials, painters, traders, missionaries, translators, and scientific writers.

These terms and their evolution enable us to explore the commercial, social, and cultural histories associated with cochineal in China. This analysis examines how different socioeconomic groups perceived cochineal, the geographical patterns of term usage, the persistence or disappearance of particular terms, and the contexts in which various linguistic shifts occurred. Since American cochineal was a global commodity, the evolution of major Chinese terms should be contextualised within patterns of global production, consumption, trade, and naming practices for cochineal. Finally, as the development of terminology in China was closely connected to

[22]Ibid., 1–84; Robin Arthur Donkin, 'The Insect Dyes of Western and West-Central Asia', *Anthropos H*, no. 5/6 (1977): 847–80.

[23]Raymond L. Lee, 'Cochineal Production and Trade in New Spain to 1600', *The Americas* 4, no. 4 (1948): 449–73; Raymond L. Lee, 'American Cochineal in European Commerce, 1526–1625', *The Journal of Modern History* 23, no. 3 (1951): 205–24; Carlos Marichal Salinas, 'Mexican Cochineal and European Demand for a Luxury Dyes, 1550–1850', in *Global Goods and the Spanish Empire, 1492–1824*, eds. Bethany Aram and Bartolomé Yun-Casalilla (Palgrave Macmillan, 2014), 197–215; Carlos Marichal Salinas, 'Mexican Cochineal, Local Technologies and the Rise of Global Trade from the Sixteenth to the Nineteenth Centuries', in *Global History and New Polycentric Approaches*, eds. M. Perez Garcia and L. De Sousa (Palgrave Macmillan, 2018), 255–73; Jeremy Baskes, *Indians, Merchants, and Markets: A Reinterpretation of the Repartimiento and Spanish-Indian Economic Relations in Colonial Oaxaca, 1750–1821* (Stanford University Press, 2000); Jeremy Baskes, 'Colonial Institutions and Cross-Cultural Trade: Repartimiento Credit and Indigenous Production of Cochineal in Eighteenth-Century Oaxaca, Mexico', *The Journal of Economic History* 65, no. 1 (2005): 186–210; Ana Filipa Albano Serrano, 'The Red Road of the Iberian Expansion: Cochineal and the Global Dye Trade' (PhD diss., Universidade Nova de Lisboa, 2017); Jordan Kellman, 'Nature, Networks, and Expert Testimony in the Colonial Atlantic: The Case of Cochineal', *Atlantic Studies* 7, no. 4 (2010): 373–95; Deirdre Moore, 'The Heart of Red: Cochineal in Colonial Mexico and India' (PhD diss., Harvard University, 2021).

[24]Elena Phipps, *Cochineal Red: The Art History of a Colour* (Metropolitan Museum of Art; Yale University Press, 2010), 40–5; Bin Wang, 'Trade in Artists' Materials in Eighteenth-and Nineteenth-Century Canton', *Studies in Conservation* (2023): 1–10.

[25]See Phipps, *Cochineal Red*; Barbara C. Anderson, 'Evidence of Cochineal's Use in Painting', *Journal of Interdisciplinary History* 45, no. 3 (2014): 337–66. On the usage of cochineal in China, see Jing Han, 'The Historical and Chemical Investigation of Dyes in High Status Chinese Costume and Textiles of the Ming and Qing Dynasties (1368–1911)' (PhD diss., University of Glasgow, 2016); Jian Liu and Jianmei Jin, 'Dyes and Colours of Textiles in Europe and Asia from the Seventeenth to the Nineteenth century', in *Textiles and Clothing Along Silk Roads*, eds. Feng Zhao and Marie Louise Nosch (UNESCO; Hangzhou: China National Silk Museum: 2022), 347–60; Christina Bisulca and John Winter, 'Red Insect Dyes in Paintings from the Ming and Qing Dynasties', in *Scientific Studies of Pigments in Chinese Paintings*, eds. Blythe McCarthy and Jennifer Giaccai (Archetype Publications Ltd, 2021), 19–36.

[26]May Bo Ching, 'Shi shi "yalan dai": Cancun zai difang geyao li de qingdai zhongwai maoyi xinxi', *Xueshu yanjiu* 11 (2017): 122–9.

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broader East Asian linguistic networks, this study also places the cochineal-related linguistic changes in China within the formation of a modern Chinese lexicon.[27]

By tracing the evolving Chinese terminology for American cochineal, this article reveals the complex connectivity between local and global histories. The various Chinese terms developed for American cochineal over time and across different regions demonstrate how multiple forms of connectivity, established by different socioeconomic groups of people, had coexisted independently for a long period before eventually converging in the twentieth century. The changing predominant Chinese term for cochineal uncovers the dynamic nature of these connections, where linguistic shifts usually signalled gradual ruptures in previous connections and the emergence of new patterns of exchange. Significantly, this article highlights 'localisation' as a driving force in the spread of vocabulary for cochineal in China. Among the Chinese terminologies for cochineal, the standard terminology that gained popularity in the twentieth century ultimately came from Japan, revealing shared regional cultural traditions in forming and popularising localised words. Therefore, this article suggests understanding 'localisation' within the cultural realm instead of the geographical boundaries of a particular society.

Cochineal and its names

Cochineal became a global commodity in the sixteenth century. It was first introduced to Spain by 1526, whence it was re-exported to major European cities, Turkey, Persia, Egypt, and further east.[28] With the establishment of the trans-Pacific Spanish galleon system in the 1570s, cochineal from Acapulco, Mexico, reached Manila in the Spanish Philippines by 1580; from there, it was disseminated to East Asia.[29] In Europe, the vivid colour and the superior dyeing quality of American cochineal made it an immediately desirable commodity in the textile industry.[30] It also gradually gained traction in Renaissance painting, although its use as a pigment was a by-product of the textile industry.[31]

The vocabularies for cochineal across various cultures shed light on its local perceptions and the distinct routes through which it travelled. The Aztecs referred to the red dye as *nocheztli*, a combination of the words *nochtli* (prickly pear) and *eztli* (blood), demonstrating the Aztecs' knowledge of its production and their perception of its intense colour.[32] However, Spanish terms had little to do with Nahuatl. When the Spaniards first encountered the red dye in Mexico, they referred to it as *grana* (grain) in a report to Charles V.[33] In other Spanish records, American cochineal was documented as *grana cochinilla*, the latter half of which may have derived from the Latin word *coccum* or *coccinus*, meaning 'scarlet-coloured'.[34] The Spanish decision to name the American red dye *grana* instead of borrowing the Aztec term revealed their unclear understanding of how this New World dye was derived in comparison to its Old World counterparts, particularly

[27]See Lydia H. Liu, *Translingual Practice: Literature, National Culture, and Translated Modernity* (Stanford University Press, 1995).

[28]See Serrano, 'The Red Road of the Iberian Expansion'.

[29]Francisco de Florencia, *Historia de la provincia de la compañia de Jesus de Nueva-España* (Institutum Historicum S. J., 1956), tomo. 1, 262.

[30]See Anderson, 'Evidence of Cochineal's Use in Painting', 338.

[31]Jo Kirby and Raymond White, 'The Identification of Red Lake Pigment Dyestuffs and a Discussion of Their Use', *National Gallery Technical Bulletin* 17 (1996): 66.

[32]Élodie Dupey García, 'Aztec Reds: Investigating the Materiality of Color and Meaning in a Pre-Columbian Society', in *Essays in Global Color History*, ed. Rachael B. Goldman (Gorgias Press, 2016), 245–64.

[33]Hernán Cortés, *Cartas de relacion de la conquista de Mexico* (Espasa Calpe, 1940), 96–100. See Lee, 'Cochineal Production and Trade in New Spain to 1600', 454.

[34]Donkin, 'Spanish Red', 14.

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kermes—a similar insect-based dye native to the Mediterranean.[35] To prepare kermes for market, kermes insects were immersed in vinegar for several days, dried under the sun, turned into powder, and then sold in a grain-like form. Consequently, Italian sources from the fourteenth to sixteenth centuries also referred to kermes as '*grana*'.[36]

In other European languages, the terms for American cochineal predominantly derived from *cochinilla*. It was known as *cochenilha* in Portuguese, *cocciniglia* in Italian, *cochenille* in French, cochineal in English, *conchenilje* in Dutch, *koschenilje* in German, and *konssenel* in Russian. This linguistic phenomenon reflected the Spanish monopoly over cochineal supply in the European market before Mexican independence. During the colonial period, production of cochineal was concentrated in Oaxaca, Mexico, and the export of live cochineal insects was strictly prohibited. As a result, European traders primarily procured cochineal that was already ground into silvery powder and wrapped in leather packaging with a royal seal at Spanish ports.[37]

As European merchants traded cochineal further abroad, the complexity of supply chains resulted in a greater variety of terminologies. In the 1610s, when the English East India Company (EIC) re-exported cochineal to India, it faced competition from Persian merchants who had sourced cochineal from Turkey and Barbary.[38] In turn, the terms for cochineal in India also diverged: it is called *kermij* in Hindi (northern India) and *cochineel poochie* in Tamil (southern India).[39] It is likely that cochineal was introduced to China via the Spanish Philippines or Portuguese Macao, the two main European controlled entrepôts that had established relationships with China by the late sixteenth century.[40] No later than the early eighteenth century, a variety of European merchants—including Spanish, Portuguese, English, French, and Dutch—had transported cochineal to the Chinese port of Canton. This led to the creation of more Chinese terms for the imported red dye, some of which were transliterations of *cochinilla* and *grana*, while others were locally developed.

Cochineal in early modern Chinese artisanry: from *xiyang dahong* to *yanghong*

Although no Chinese textual accounts have been identified, cochineal is evident in sixteenth-century Chinese material culture. Yu Fei'an has posited that the earliest usage of cochineal in China can be seen in the portrait painting of a Ming painter, Zeng Jing.[41] Zeng Jing was famous for his incorporation of the illusionistic concave and convex methods of Western oil painting, a skillset likely learned from the Jesuits in China. Given the small quantity of cochineal pigment that initially came to Asia, Zeng Jing mainly utilised the scarce red cochineal for minute details, such as the lips of portrait subjects.[42] Meanwhile, fabrics dyed with cochineal likely entered China by the late sixteenth century. In diplomatic interactions, European monarchs frequently selected

[35]Among the established red-insect dyes used in the sixteenth century across Eurasia, there were Polish cochineal (*Porphyrophora polonica*) from Eastern Europe, Armenian cochineal (*Porphyrophora hamelii*) from West Asia, and the lac insect (*Laccifer lacca*) from India and Southeast Asia. See Donkin, 'The Insect Dyes', 847–80.

[36]Kirby and White, 'The Identification of Red Lake Pigment', 66.

[37]See Oliver Cussen, 'Capital and Critique: The Commercial Imperialism of Old Regime France' (PhD diss., The University of Chicago, 2020), 145–59.

[38]Donkin, 'The Insect Dyes', 866.

[39]The terminology referring to cochineal in different regions was important commercial knowledge. See Alexander Faulkner, *A Dictionary of Commercial Terms: With Their Synonyms in Various Languages* (L. M. D. Souza's Press, 1856), 33.

[40]See Paulo Jorge de Sousa Pinto, 'Manila, Macao and Chinese Networks in South China Sea: Adaptive Strategies of Cooperation and Survival (Sixteenth-to-Seventeenth Centuries)', *Anais de História de Além-Mar* 15 (2014): 79–100.

[41]Yu Fei'an, *Zhongguohua yanse de yanjiu* (Beijing lianhe chuban gongsi, 1955), 44.

[42]The lips of the figure in Zeng's *Portrait of Wang Shimin* (1616) are identified as having been painted with cochineal red. See Yu, *Zhongguohua yanse*, 45.

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luxurious textiles as gifts for Asian rulers.[43] In 1580 and 1581, when King Philip II of Spain dispatched an embassy to the court of the Ming Emperor Wanli, the diplomatic gifts selected for the Chinese emperor included six pieces of fine textiles dyed with American cochineal.[44] Likewise, surviving sixteenth-century Japanese military surcoats (*jinbaori*) made with cochineal-dyed Spanish velvet serve as indirect evidence that Ming elites likely had access to similar dyed cloth.[45]

By the start of the eighteenth century, Chinese painters had coined the term *xiyang dahong* (deep red from the western ocean) for cochineal pigment. This indicated that the Chinese understood cochineal by its origin—from the 'western ocean', a specific geographical indicator of Europe or Portugal—and valued its ability to render a strong red shade.[46] However, this term was gradually replaced by an abbreviated form, *yanghong* (western red, or generally foreign red). This linguistic change corresponded to the red colourant's increasingly versatile applications in Chinese artisanry later in the century.

European painters had served the Qing emperor in Beijing since the late seventeenth century, bringing European pigments to the Qing court.[47] Cochineal was not only used among European painters, but also by Chinese court painters, such as Jiang Tingxi, who employed cochineal to achieve purplish-red hues on the bodies of birds in an early eighteenth-century painting.[48] While most textual records of cochineal in the court of Emperor Kangxi are untraceable, it is clear that various foreign items, cochineal likely among them, were either brought by missionaries or sent by Qing officials who acquired foreign commodities from Portuguese merchants in Macao.[49] During the Yongzheng era (1723–35), court accounts regarding cochineal became more detailed, as the *Neiwufu* (Imperial Household), a specialised agency responsible for producing various items for imperial use, was further developed.[50] In the court of Yongzheng, *xiyang dahong* was sporadically received as a tribute from Qing officials. For instance, in 1723, the court received three small bottles, each weighing about 15 grams, of *xiyang dahong* from an anonymous sender.[51] In 1732, Yongzheng instructed artisans to incorporate *xiyang dahong* to deepen the shade of red glaze on a newly crafted enamel plate, which may indicate the use of cochineal in Qing porcelain making.[52]

By the mid-eighteenth century, *xiyang dahong* had been fully replaced by *yanghong* (foreign red) or *xiyanghong* (western ocean red) in records. This linguistic abbreviation reflected two changes: the particular geographical reference of Europe gave way to more generic terms like 'foreign', and the specific implication of the 'deep' shade it produced was lost, leaving only 'red' to represent everything from light to deep shades. The increased supply and new applications of cochineal in Chinese artistic practice, particularly its use in mixtures with other colours, might explain the linguistic change. In mid-eighteenth-century Macao, *yanghong* pigment was renowned

[43]See Marianna Shreve Simpton, 'Five Barrels of Cochineal: A Gift from King Philip III of Spain to Shah 'Abbas I of Iran', in *A Red Like No Other*, 72–5. How Cochineal Colored the World: An Epic Story of Art, Culture, Science, and Trade, eds. Carmella Padilla and Barbara Anderson (Skira Rizzoli, 2015), 72–5.

[44]'Lista de cosas que debían enviarse al rey de Taibín', 1583. Patronato 25, R. 3, fol. 3. Archivo General de Indias, Sevilla.

[45]See Monica Bethe and Yoshiko Sasaki, 'Reds in the Land of the Rising Sun: Cochineal and Traditional Red Dyes in Japan', in *A Red Like No*, 76–81.

[46]The indication of the Chinese concept, '*xiyang*' (western ocean), changed from the sixteenth to the eighteenth centuries. See Pang Naiming, 'Mingqing Zhongguo "da xiyang" gainian de shengcheng yu yanbian', *Xueshu yanjiu*, no. 11 (2019): 127–36.

[47]On the history of European painters in the Qing court, see Marco Musillo, *The Shining Inheritance: Italian Painters at the Qing Court, 1699–1812* (Getty Publications, 2016).

[48]Bisulca and Winter, 'Red Insect Dyes in Paintings', 27.

[49]See *Kangxichao hanwen zhupi zouzhe huibian*, ed. Zhongguo diyi lishi danganguan (Dangan chubanshe, 1985), vol. 2, 300.

[50]See *Qinggong neiwufu zaobanchu dang'an zonghui*, eds. The First Historical Archives of China and Hong Kong Chinese University Art Museum (Renmin chubanshe, 2005), vol. 1, 1–4.

[51]Ibid., vol. 1, 240–1.

[52]Ibid., vol. 5, 481. Further scientific examination of porcelains and enamels from the Yongzheng period is necessary to confirm the possible spread of cochineal in the new production.

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for its fresh, vibrant, long-lasting red hue and its exorbitant price (priced at four times the weight of silver).[53] Despite its high cost, the Qing court demanded this luxurious pigment, and *yanghong* was sent annually from Macao to Beijing.[54] For instance, in 1749, the Qianlong Emperor instructed Chinese court painters to use both the superior *saoqing* (a blue pigment) and *xiyanghong* for a painting.[55] Modern detection also reveals that in the *Portrait of the Qianlong Emperor as the Bodhisattva Manjushri*, the Jesuit painter Giuseppe Castiglione applied cochineal to depict the emperor's lips.[56] However, cochineal was not the only pigment used to achieve deep red colours during the era, as larger areas of deeper red in this painting were achieved with lac dye.[57] Cochineal was frequently mixed with other pigments, such as lac red, indigo blue, Prussian blue, and lead white to produce shades of pink, purple, and red-brown in Qing court paintings.[58]

In the second half of the eighteenth century, recorded consumption of cochineal extended beyond the court. In the context of high-quality seal paste produced in Fujian Province in southeast China, *yanghong* appeared in a list of ingredients. Chen Keshu recorded in 1781 that 'recently, there is a kind of *yanghong* that is employed to mix with ink paste, exhibiting an even brighter colour than coral. This substance was unknown in ancient times, but its significance should not be overlooked in the present day.'[59] Seal paste used among elite Chinese was typically made from cinnabar. However, in the late eighteenth century, the high-quality *babao yinni* (eight treasure seal paste, invented in 1763 in the port city, Zhangzhou) utilised powdered *yanghong*.[60] The use of cochineal in this paste is unsurprising given the role of Zhangzhou in China's foreign trade and the close trading relationship between Fujian and the Spanish Philippines since the sixteenth century.[61]

By the late eighteenth century, *yanghong* became even more widely recognised among painters. In 1797, the scholar-painter Ze Lang discussed *yanghong* in a treatise on painting.[62] He noted that this red pigment, introduced to China by foreign ships, had been recently incorporated into Chinese painting to depict flower petals and the faces of beauties. The colour it rendered, he observed, was pink red instead of deep red. Ze Lang lamented that *yanghong* was only sparingly available in the Guangdong and Fujian regions, and painters in North China had no access to it; consequently, painters' curiosity and desire resulted in the proliferation of counterfeit cochineal across China.[63] Outside of China, *yanghong* or *xiyanghong* was introduced to Japanese painters. Notably, Kinoshita Itsuun, a famous Japanese literati-painter active in Nagasaki, frequently mentioned the *yanghong* pigment in his correspondence with a Chinese friend who supplied him with various pigments.[64]

In the eighteenth century, the increasing supply of cochineal to China via Macao, Guangdong, and Fujian led to its use in Chinese paintings, porcelain, seal paste, and possibly other artefacts for Chinese elites that remain unidentified. Consequently, the terminology for this luxurious

[53]Yin Guangren and Zhang Rulin, *Aomen ji lue* (1751) (Siku edition, 1801), *xia juan*, fol. 42a. The pigment '*xiyang dahong*' is absent from Qianlong-era Imperial Household records, yet the court documents show a yearly rise in Western pigments, suggesting cochineal's commonplace use may have precluded specific mention.

[54]Yin and Zhang, *Aomen ji lue*, fol. 42a.

[55]*Qinggong neiwufu zaobanchu*, vol. 16, 611–12.

[56]Jennifer Giaccai *et al.*, 'Colorants and Painting Techniques in Portraits from the Arthur M. Sackler Gallery', in *Scientific Studies of Pigments in Chinese Paintings*, eds. Blythe McCarthy and Jennifer Giaccai (Archetype Publications Ltd, 2021), 64.

[57]Ibid.

[58]Bisulca and Winter, 'Red Insect Dyes in Paintings', 27.

[59]Chen Keshu, *Zhuanke zhendu* (1781) (Zhongguo shudian, 1984), *juan* 7, fol. 7b.

[60]See 'Eight Treasure Seal Paste of Zhangzhou', Chinese Intangible Cultural Heritage https://www.ihchina.cn/project_details/14565 (accessed 5 May 2023).

[61]See Lucille Chia, 'The Butcher, the Baker, and the Carpenter: Chinese Sojourners in the Spanish Philippines and Their Impact on Southern Fujian (Sixteenth-Eighteenth Centuries)', *Journal of the Economic and Social History of the Orient* 49, no. 4 (2006): 509–34.

[62]Ze Lang, *Huishi suoyan* (Yujintang, 1797), *juan* 4, fol. 5a.

[63]Ibid.

[64]Thanks to Prof. Shiuh-Feng Liu for this information about *yanghong* in Kinoshita Itsuun's correspondence.

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imported red pigment evolved from *xiyang dahong*, emphasising its deep red shade and European origin, to *yanghong*, which merely denoted its colour and foreign supply channel. However, terminology used among painters and artisans only reveals one aspect of cochineal's uses in eighteenth-century China. To fully explore the understanding and usage of cochineal in China, we must turn to terms that coexisted with *yanghong*.

Gezuonila and knowledge exchange in the Qing Court

In Emperor Kangxi's private notes, he recorded *gezuonila*, a Chinese phonetic rendering of the Portuguese word *cochenilha*, to discuss an exotic insect that produced red dye. Discussions of *gezuonila*—the source of cochineal—benefited from the dissemination of knowledge about this rare colourant in the Qing court, particularly between Kangxi and Jesuit missionaries. Similar to the practice of mixing cochineal with other dyes in court paintings, discussion of *gezuonila* not only demonstrates how the Chinese perceived the materiality of cochineal but also how they constructed new 'knowledge' about insect-based red dyes by linking American cochineal with lac dye from Southeast Asia.

As a Manchu ruler interested in European mathematics, science, and technology, Kangxi frequently engaged in discussions with missionaries at his court and recorded his opinions.[65] Ten years after his death, Kangxi's private notes on scientific and natural knowledge, titled *Jixia gewu bian* (*Collection of the Investigation of Things in Times of Leisure*, 1732), were printed and circulated in the Qing court. Among the ninety-three entries in the book, one entry on *xiyang dahong* was titled 'Gezuonila', and the first part of the entry stated the following: '*Xiyang dahong* is native to *Amoliga* [America]. There are specific trees in this region, upon which insects grow. When these insects fall from the trees, locals collect them by placing cloth underneath. This deep red colour is derived from these insects, known as *gezuonila*.'[66] Through interactions with the Jesuits at his court, Emperor Kangxi learned two facts about this red colourant that were absent from its discussion as a pigment. First, the colourant was originally from America, not Europe. Second, its ingredient was a kind of insect named *gezuonila*.

While America remained largely unfamiliar to most Chinese in the early eighteenth century, Emperor Kangxi was likely well informed about the location of *Amoliga*. In 1674, the Jesuit missionary Ferdinand Verbiest had produced the *Kunyu Quantu* (A Map of the Whole World) for Kangxi, a detailed map that featured two hemispheres and the five continents known at that time.[67] The western hemisphere was divided into *Bei Yamolijia* (North America) and *Nan Yamolijia* (South America), with careful marking of major regions such as *Xin Yixibaniya* (New Spain) and *Bailu* (Peru) as well as major islands, mountains, rivers, and cities. Therefore, when Kangxi wrote down the native place of cochineal, he would have realised that the red-dye insect originated from a region far beyond Europe.

Kangxi's account also reveals that the European missionaries who delivered the information to the Manchu ruler understood cochineal was sourced from insects, not a grain. Since the 1670s, with the development of microscopic observation, scientists in London, Paris, and Amsterdam debated the nature of cochineal, a puzzle stemming from the Spanish prohibition of exporting live cochineal insects.[68] However, as Jordan Kellman points out, the determination of the 'matter of fact' did not rely solely on microscopy because optical technology remained limited.[69] Instead, the

[65]See Catherine Jami, 'Imperial Control and Western Learning: The Kangxi Emperor's Performance', *Late Imperial China* 23, no. 1 (2002): 28–49.

[66]Kangxi, *Jixia gewu bian* (Shanghai guji chubanshe, 2007), 14.

[67]See H. Creasy *et al.*, 'History and Conservation of *Kunyu Quantu* (A Map of the Whole World) by Ferdinand Verbiest, 1674', in *Printed on Paper: The Techniques, History, and Conservation of Printed Media*, eds. J. Colbourne and R. F. Snyder (Arts and Social Sciences Academic Press, 2009), 33–41.

[68]Marc J. Ratcliff, *The Quest for the Invisible: Microscopy in the Enlightenment* (Routledge, 2009), 58–63.

[69]Kellman, 'Nature, Networks, and Expert Testimony', 373–95.

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cochineal debate in Europe was ultimately settled based on information derived from local knowledge and expertise from farmers in Oaxaca's nopal plantations, and subsequently disseminated through Melchior de Ruusscher's 1729 *Natuerlyke historie van de couchenille* (Natural History of Cochineal).[70] However, even before this treatise, according to an article from 1719, the prevailing belief was already leaning towards cochineal being from an animal rather than a plant.[71] Kangxi's record suggests that cochineal as an insect-based dye may have already been widely accepted, at least by the Jesuits, before the publication of Ruusscher's *Naturelyke Historie* in 1729.

In the second part of the note on *gezuonila*, Kangxi conducted textual investigations into previous Chinese records and understanding of red-insect dye. Kangxi first consulted a famous Chinese *materia medica*, *Bencao gangmu* (*Compendium of Materia Medica*, 1596) by Li Shizhen.[72] Although there were no records of American species in this famous Chinese *materia medica*, Kangxi still identified a potential bug producing red colour, named *zikuang* (literally 'purple mineral'). *Zikuang* produced lac dye, imported into China from Chenla (in Southeast Asia).[73] This *zikuang* was also historically referred to as *chijiao* (red glue) and *zigeng* (purple peduncle) in earlier records, highlighting that the Chinese had been uncertain about whether the colourant derived from plant, mineral, or animal, though it had been confirmed as an insect during Li Shizhen's era.[74] Kangxi also consulted a Chinese traveller's account of Chenla and examined ancient Chinese paintings from his own collection.[75] At last, the emperor concluded that the imported *xiyang dahong* was, in fact, the *zikuang*.[76]

It is indeed easy to conflate the two insect dyes without the assistance of modern scientific tools. Although the organic components of the two dyes differ, the hues they produce are both deep red. Moreover, they often were blended in Chinese paintings to achieve this shade. Kangxi was not alone in making this mistake. In the late eighteenth century, Ze Lang also considered lac to be the most likely ingredient for *xiyang dahong*, based on his own experiences of pigment making.[77]

Because Kangxi's *Jixia gewu bian* was printed by the court, the term *gezuonila* initially only circulated in elite circles. The term was also found in the *Yuchao zazhi* (*Miscellaneous Knowledge of Yuchao*) by Zhao Shenzhen, a courtier of Emperor Jiajing (r. 1796–1820).[78] Zhao copied the first part of Kangxi's *gezuonila* entry, omitting his textual investigation. However, a re-transcription of Chinese *gezuonila*, 'ko-tcha-ni-la', is found in French sources. In 1779, the French Jesuit missionary Pierre-Martial Cibot selected some entries from Kangxi's *Jixia gewu bian* and translated them into French in a treatise, *Observations de Physique et d'Histoire naturelle de l'empereur K'ang-Hi* (Observations on Physics and Natural History by Emperor Kangxi).[79] The entry, 'Gezuonila', was selected, with the title rendered as 'De la Cochenille' and *xiyang dahong* translated as 'le beau rouge que nous apportent les Européens' ('the beautiful red Europeans bring to us'). It seems that Cibot did not fully understand what *zikuang*/*zigeng* (lac) or *zigengchong* (the lac insect) were, simply transcribing them as 'Te-kin', 'Tsée-y', and 'Tsee-pien-che'.[80] Kangxi's textual investigation and proposed linkage with insect dye from Southeast Asia might have

[70]Ibid., 383–5.

[71]John Quincy, *Pharmacopoeia Officinalis Extemporanea* (A. Bell, 1719), 171.

[72]Kangxi did not mention the *Bencao gangmu* specifically in his note, but the contents show that his reference was to this *materia medica*.

[73]Li Shizhen, *Bencao gangmu* (Jinling: Hu Chenglong Press, 1596), *juan* 39, '*zikuang*', fols. 11b–12a.

[74]Ibid., fol. 11b.

[75]Kangxi, *Jixia gewu bian*, 14.

[76]Ibid.

[77]Ze Lang, *Huishi suoyan* (1797), *juan* 4, fol. 5b.

[78]Zhao Shenzhen, *Yuchao zazhi*, in *Qingdai shiliao biji congkan* (Beijing: Zhonghua shuju, 2001), 87.

[79]Pierre-Martial Cibot, 'Observations de Physique et d'Histoire naturelle de l'empereur K'ang-Hi', in *Mémoires concernant l'histoire, les sciences, les arts, les mœurs, les usages & c. des Chinois, par les missionnaires de Pékin* (Nyon, 1779), vol. 4, 477–8.

[80]Ibid.

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inspired Cibot to choose this entry for translation, introducing new 'knowledge' about the cochineal insect to French audiences. Later, in *De la Chine ou description générale de cet empire* (*A General Description of China*, 1819), Jean-Baptiste Grosier also included 'Observation de Kan-hi sur la cochenille' ('Observations by Kangxi on cochineal') in his chapter about 'Chinese dyes'.[81]

Gezuonila represented the earliest Chinese engagement with the cochineal insect and the beginning of its conceptual association with lac dye. Despite its identification as a crucial component in producing the esteemed red pigment *xiyang dahong*, the circulation of the term alongside Kangxi's personal notes meant its usage was largely restricted to an elite knowledge group within the Qing court. Although the term *gezuonila* reached as far as France, illustrating connectivity between the Qing court knowledge and European intellectuals, it remained an isolated term in China, removed from its material essence and disconnected from other terms referring to cochineal in the eighteenth century.

Yalanmi and China's foreign trade

Cochineal was also known as a dye in eighteenth-century China, particularly among merchants and maritime officials in Fujian and Guangdong, where it was termed *yalanmi*. Customs duties for *yalanmi* appear in the *Changshui zeli* (*Regulations on Duties Collected by Regional Customs*, 1720s–30s for Fujian ports) and the *Yue haiguan zhi* (*Gazetteer of Guangdong Maritime Customs*, 1648–1836).[82] The increasing references to *yalanmi* indicate a growing supply of cochineal in China, particularly via Canton, the only legal port for foreign trade in Qing China between 1757 and 1842.[83]

It is worth noting that *yalanmi* is not simply a transliteration of *grana*. The first part of the term '*yalan*' transcribes from the Spanish word '*grana*', but the last character '*mi*' (grain) repeats the Spanish meaning of '*grana*'.[84] This suggests that *yalanmi* was likely coined by an interpreter proficient in both Chinese and Spanish, most likely from Fujian and speaking Hokkien.[85] However, *yalanmi* was not the sole term for red dyes in Chinese ending with 'mi', as *zigeng* (lac) was also written as *zigengmi* in the *Yue haiguan zhi*.[86] Therefore, it is uncertain whether this Chinese ascription was influenced by Spanish and further informed the naming of other foreign dyes, or vice versa. *Yalanmi* (cochineal) and *zigengmi* (lac) were also categorised as 'medicinal material' (*yaoliao*) in *Yue haiguan zhi*.[87] *Zigeng* was recognised as both a dye and a medicine, as revealed in Li Shenzhen's *materia medica* in 1596.[88] Although *yalanmi* was not recorded as a medicine in Qing medical works, customs records suggest that Chinese doctors may have explored its medicinal uses, similar to other commonly used natural dyes.[89]

Qing taxation on *yalanmi*, which was based on the weight of a picul (133 pounds), also indicated that, by the mid-eighteenth century, the quantity of cochineal carried by each foreign ship was substantial. According to the Indian Office Record, English ships destined for Canton were already

[81]Jean-Baptiste Grosier, *De la Chine ou description générale de cet empire* (Pillet, 1819), 436–8.

[82]See Anonymous, *Changshui zeli*, vol. 2, fol. 20b, in *Xuxiu siku quanshu* (Shanghai guji chubanshe, 2002), *shibu*, vol. 834; Liang Tingnan, annotated by Yuan Zhongren, *Yue haiguan zhi* (1839) (Guangdong renmin chubanshe, 2014), vol. 9, 183; Ching, 'Shi shi "yalan dai"', 123.

[83]See Paul A. Van Dyke, *The Canton Trade: Life and Enterprise on the China Coast, 1700–1845* (Hong Kong University Press, 2005).

[84]See Thomas Watters, *Essays on Chinese Language* (Presbyterian Mission Press, 1889), 333; Ching, 'Shi shi "yalan dai"', 125.

[85]Most Chinese to the Philippines were from Fujian, see Chia, 'The Butcher'.

[86]Liang, *Yue haiguan zhi*, vol. 9, 190.

[87]Ibid., 183.

[88]Li, *Bencao gangmu*, fols. 11b–12a.

[89]See B. Chengaiah *et al*., 'Medicinal Importance of Natural Dyes—A Review', *International Journal of PharmTech Research* 2, no. 1 (2010): 144–54.

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carrying cochineal in the 1730s, with records of such shipments increasing after 1764.[90] In 1765, a Spanish report from the Philippines lamented that between twenty-four and thirty English, French, Dutch, Swedish, and Danish vessels had transported American cochineal to Canton that year.[91] Notably, *yalanmi* was primarily used as a dyestuff rather than a pigment; the taxation on the pigment *yanghong* was based on catty (1/100 of a picul) and carried a much higher tax rate.[92]

European records show shifts occurred in the cochineal supply to the Chinese market in the late eighteenth century, including changes in the quantity of goods and the primary supplier. Previously, the Spanish had served as the main transporter of cochineal from Acapulco across the Pacific via Manila, meeting an annual Chinese demand of approximately 10–12 piculs.[93] However, the diaries of a Spanish supercargo in Canton demonstrate that British merchants gradually became the primary suppliers during the 1790s.[94] In 1788–89, only one British ship carried two piculs of cochineal to Whampoa, a port 20 kilometres away from Canton where all foreign ships anchored to unload their cargos.[95] In the following year, a French ship delivered 19 piculs of cochineal to Whampoa, surpassing the 13 piculs from the Spanish and the 8 piculs from the English.[96] Subsequently, the English export of cochineal to China increased steadily, including via re-export from India. The quantities amounted to 18 piculs in 1791–92, 53 piculs in 1792–93, 45 piculs in 1793–94, and reached a peak of 97.8 piculs in 1794–95.[97] In contrast, the Spanish only delivered 18 piculs of cochineal in 1791–92 and 19 piculs in 1792–93.[98] Britain exported up to 100 piculs of cochineal to China annually and transported a larger amount to Bombay in colonial India.[99] Cochineal prices in Canton, however, still remained high. Between 1781–1816, the price per catty of 'cochineal very fine' (*grana fina*) fluctuated between 3 and 6 taels (also recorded as 8 to 10 Spanish dollars).[100] Prices in Canton were four times higher than those in Acapulco.[101]

The increased supply of cochineal in China coincided with a nadir in Europe's cochineal imports from 1784–1803.[102] Carlos Marichal's research suggests that this depression was a result of various factors, including changes in available labour and administrative issues, which led to a slump in cochineal production in Oaxaca.[103] The Atlantic wars between Spain and Britain (1779–83, 1796–1805) further exacerbated the situation. On the demand side, the French Revolution and the Industrial Revolution instigated shifts in consumer patterns in Europe. While

[90]Thanks to Professor Paul A. Van Dyke for data on cochineal from the Indian Office Record. British ships exported cochineal to China no later than the 1730s, with records appearing in the years 1732, 1735, 1737, and 1738. Records from the 1740s and 1750s are relatively scarce, but starting from 1764, there was an increase in archival data, particularly from the 1770s onwards. Data before the 1790s can be found in the British Library, IOR G/12/33, 35, 38, 42, 43, 44, 45, 54, 58, 61, 62, 63, 64, 67, 80, 83, 94; R/10/4, 5, 6, 9.

[91]Francisco Leandro de Viana, 'Memorial of 1765', in *The Philippine Islands, 1493–1898*, eds. Emma Helen Blair and James Alexander Robertson (The Arthur H. Clark Company, 1907), vol. 48, 275.

[92]In the *Yue haiguan zhi*, *yanghong* was taxed at 1 tael and 2 mace per catty, while *yalanmi* was taxed at 1 tael per picul. Unfortunately, it is not clear to which period these recorded taxation rates apply. See Liang, *Yue haiguan zhi*, vol. 9, 183.

[93]Hosea Ballou Morse, *The Chronicles of the East India Company Trading to China 1635–1834* (The Clarendon Press, 1926–9), vol. 2, 390.

[94]See Manuel de Agote, *Diarios de Canton* (1788–95), Euskal Itsas Museoa, San Sebastian, Spain. https://itsasmuseoa.eus/coleccion/diarios-de-manuel-de-agote (accessed 9 June 2023).

[95]Agote, R-632, 30.

[96]Agote, R-633, 27, 31, 35, 39.

[97]Agote, R-634, 22–5; R-635, 39, 42–5, 50; R-636, 51, 54, 56; R-637, 61–9.

[98]Agote, R-634, 27; R-635, 49–50.

[99]See *Tables of the Revenue, Population, Commerce, Etc. of the United Kingdom and Its Dependencies* (William Clowes, 1833), 210–11.

[100]Eberhard August Wilhelm von Zimmermann, *Statistisch-historisches Archiv* (Erster Band, 1795), vol. 1, 148–9, 156, 160; *The Asiatic Annual Register* (Cadell and W. Davies, 1809), vol. 4, 44; *The Asiatic Journal and Monthly Miscellany* (Black, Parbury, & Allen, 1816), vol. 2, 319.

[101]Morse, *The Chronicles*, vol. 2, 390.

[102]Marichal, 'Mexican Cochineal and European Demand', 210–14.

[103]Ibid., 210–11.

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the power of the aristocracy and the church diminished, the rising middle class no longer craved the luxurious red dye.[104] The decline in European demand likely prompted European trading companies to explore opportunities in Asia.

As it became more readily available, *yalanmi* was employed to dye silks, crapes, and other fabrics. A recent scientific study reveals that a red dragon robe of the Qianlong Emperor was dyed with American cochineal, even though traditionally sappanwood, safflower, and madder were the primary red dyes used for textiles in the Qing court.[105] Cochineal saw greater usage in Macao and Canton, and the colour derived from cochineal was usually named *yalan*, derived from *yalanmi*. According to Ching's research, an inscription at the Lianfeng Temple in Macao, dating back to 1801 or 1802, documents eight pieces of divine canopies bearing the name '*yalan*' to indicate the deep red colour of the textiles.[106] By the 1810s, cochineal and its associated colour had become incorporated into the Cantonese lexicon. In *A Dictionary of the Chinese Language* (1819), compiled by the Protestant missionary Robert Morrison in Canton, both *yalan* and *yalanmi* were offered as the equivalents of cochineal.[107] In *Vocabulary of the Canton Dialect* (1828), Morrison further specified that '*ga lan*' (*yalan*) meant 'crimson'.[108]

The expansion of *Yalanmi* trade and vocabulary

The term *yalanmi* started to appear more frequently in commercial guidebooks related to the China trade from the mid-nineteenth century and became widely used across various Chinese dialects. This expansion in terminology corresponded to shifts in the global market and the transition from the Canton system to the treaty-port system in China's foreign trade after 1842. Regarding global production, after Mexico gained independence in 1821, other nations were able to bypass the Spanish in the trade. Subsequently, successful cochineal plantations sprouted in European colonies, such as Guatemala, the Canary Islands, Java, and Algeria, leading to prices falling.[109] In terms of supply, the United States emerged as the primary supplier of cochineal in Canton. In 1821–22, American ships transported 68 piculs of cochineal to Canton, which escalated to 270 piculs in 1822–23, and peaked at an unprecedented 707.5 piculs in 1827–28.[110] These figures vastly outpaced British and Dutch exports.[111] In the 1830s, the annual cochineal import from the United States ranged between 49 and 411 piculs.[112] Britain also ramped up its cochineal exports to China during this period, with the EIC delivering 349 piculs of cochineal to Canton in 1836–37.[113]

After 1821, more categories of cochineal appeared in Chinese accounts. In January 1834, the Chinese-language magazine *Dong xi yang kao meiyue tongjizhuan* (*Eastern Western Monthly Magazine*) observed the per-picul price of *jingzhai yalanmi* ('garbled cochineal', cochineal that had been repacked to be free from all impurities) cost $280–$300, while *weizhai yalanmi* ('ungarbled cochineal') was $180–$200.[114] The average cost per picul of cochineal imported from

[104]Ibid., 210.

[105]See Liu Jian and Gao Suyun, 'Jiangse zhuanghuaduan longpao shang de ranliao', 'The Qianlong Palette 2.0', Chinese Silk Museum, Wechat article, 23 November 2021. https://mp.weixin.qq.com/s/9WnJEtBbjtG6BqnMnjN8YA (accessed 2 January 2022).

[106]Ching, 'Shi shi "yalan dai"', 124.

[107]Robert Morrison, *A Dictionary of the Chinese Language* (East India Company's Press, 1819), part 2, 519, 990.

[108]Robert Morrison, *Vocabulary of the Canton Dialect* (East India Company's Press, 1828), vol. 2, unpaginated.

[109]Simmonds, *Science and Commerce*, 469–70.

[110]See *Return to an Order of the Honourable The House of Common, Accounts Relating to Imports and Exports: The East Indies, China, The British Colonies, and Great Britain* (House of Commons, 1840), 151–2.

[111]See *Return* (1840), 115–24, 155.

[112]Ibid., 153.

[113]*The Chinese Repository* (Printed for the Proprietor, 1838), vol. 6, 280.

[114]Karl Friedrich August Gützlaff ed., *Dong xi yang kao meiyue tongjizhuan* (1834) (Zhonghua shuju, 1997), 80.

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the United States was notably lower than that from Britain, which might have resulted from the variations in the quantities of garbled and ungarbled products each country brought to China.[115]

Following Qing China's defeat in the Opium Wars (1839–42, 1856–60) and the compulsory opening of treaty ports to Western ships,[116] the cochineal trade thrived. Annual cochineal imports to China consistently exceeded 100 piculs, with peaks in 1849, 1851, and 1856 of nearly 500 piculs.[117] From 1859, cochineal imports were recorded in the annual reports published by the statistical department of the Imperial Maritime Customs of Qing China.[118] During 1861–64, import volumes ranged between 269 and 415 piculs, reaching 439 piculs in 1868.[119] However, the trade began to decline after 1873, as the invention of aniline dyes in the mid-1850s gradually overtook the global cochineal trade.[120] From 1874-83, China's annual cochineal imports averaged around 100 piculs, dropping further to between 20 and 50 piculs from 1886-96; cochineal was only sporadically imported thereafter.[121] Meanwhile, its price dropped from $120 per picul in 1860 to $85 in 1865, stabilising between 45 to 55 Haikwan taels (about $36 to $44) per picul by 1900.[122]

The growing consumption of cochineal in China, as both red dye and pigment, resulted in further linguistic and social changes. The term *yalanmi* began to penetrate daily vernacular. *Yalandai*, a band dyed from cochineal used to bind feet or as a belt, was mentioned in the lyrics of a local song where a man purchases this item for his lover.[123] The term is also found in local drama scripts in scenes where women are getting dressed.[124] Notably, the characters for *yalan* underwent a change from '呀' (*ya*) with the 'month' radical to '芽' (*ya*) with the 'grass' radical. As the radical of a Chinese character often serves as the semantic indicator of that character's meaning, the change from 'month' (which could indicate a phonetic borrowing character) to 'grass' (an indicator of grass, herbs, and plants) suggests that some Chinese began to perceive the colourant as derived from a vegetable source. While the character '呀' remained prevalent in usage, the emergence of Chinese characters with different radicals to represent the phonetic rendering of *yalan* reflects a shift in Chinese understanding alongside the increased consumption of cochineal.

During the treaty-port era, *yalanmi* became a common term used in both Mandarin and local dialects. In 1844, the *English and Chinese Vocabulary in the Court Dialect* included *yalanmi* as a term used daily in the general language of the country.[125] In 1869, the dictionary of the Shanghai

[115]See *Return* (1840), 115–28, 152–3.

[116]See Robert Nield, *China's Foreign Places: The Foreign Presence in China in the Treaty Port Era, 1840–1943* (Hong Kong University Press, 2015).

[117]See *Report upon the Commercial Relations of the United States* (Cornelius Wendell, 1857), vol. 3, 373; *Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions in the Year 1855* (George Edward Eyre and William Spottiswoode, 1856), 273.

[118]The collection of *Returns of Trade at the Treaty Ports* published by The Inspector General of Customs in Shanghai provides detailed information on the import quantities and prices of cochineal.

[119]For the imports of cochineal between 1861–66, see *Returns for 1866* (Imperial Maritime Custom Press, 1867), 52–3.

[120]For the imports of cochineal between 1871–76, see *Returns for 1876* (1877), 44–5. For aniline dyes, China only imported 36 bottles of aniline dyes (valued at 14 taels) in 1877, but these cheap synthetic dyes were quickly embraced, particularly for red and blue colours. See *Returns for 1877* (1878), 218.

[121]See *Returns for 1872–77* (1878), 324–5; *Returns for 1878* (1879), 329; *Returns for 1879* (1880), 342; *Returns for 1880* (1881), 349; *Returns for 1881* (1882), 361; *Returns for 1882* (1883), 336; *Returns of 1883* (1884), 340; *Returns for 1884* (1885), 261, 338; *Returns for 1885* (1886), 340; *Returns for 1886* (1887), 354; *Returns for 1887* (1888), 378; *Return for 1888* (1889), 387, 413; *Returns for 1889* (1890), 407; *Returns for 1890* (1891), 419; *Returns for 1891* (1892), 442; *Returns for 1892* (1893), 442; *Returns for 1894* (1895), 459; *Returns for 1895* (1896), 438; *Returns for 1896* (1897), 444; *Returns for 1898* (1899), 468; *Returns for 1899* (1900), 658.

[122]Starting in 1873, values of imported commodities were recorded in the Haikwan tael (customs tael) instead of dollars. For quarterly rates from 1894 to 1897, see *United States Consular Reports: Commerce, Manufactures, ETC* (Government Printing Office, 1897), vol. 55, 12.

[123]See 'Nan shao yi', referenced in Ching, 'Shi xi "yalan dai"', 122.

[124]See *Sangu huimen* (Shenggang wuguitang, unknown date).

[125]Samuel Wells Williams, *English and Chinese Vocabulary in the Court Dialect* (Office of the Chinese Repository, 1844), 39.

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dialect listed 'cochineal 芽蘭米 (nga lan mi)', which chose the 'grass' radical.[126] This was followed by the emergence of 'ya-lan-mi 呀蘭米 cochineal' in the Pekinese dialect in 1871, suggesting increasingly widespread usage of cochineal dye in North China.[127] In 1876, 'cochineal, ngo-lan-mi 呀蘭米' was incorporated into the dictionary of Ningbo dialect of Zhejiang Province.[128] By 1880, *yalanmi* had become a basic term in daily life, and the character containing the 'grass' radical was included in the *Qianxue qimeng* (*First Book of Reading*), a primer reader compiled by the Basel Missionary Society for Hakka-speaking students in Hong Kong.[129] In 1883, 'in-chi-bi' was documented in the Shantou dialect of Guangdong Province for cochineal.[130] While spreading unevenly—the 1870 dictionary on the Fuzhou dialect did not incorporate a term for cochineal[131]—the geographical expansion of the term *yalanmi* attests to how widely cochineal had penetrated the Chinese market.

Meanwhile, Chinese textiles dyed with cochineal likewise became increasingly popular. For instance, store advertisements in Canton (around 1872) marketed cochineal-dyed sashes, floss, and silk to foreign merchants:

> Yung lun: True cochineal dyed sashes, and all sorts of embroidery in foreign gold thread;
>
> Benevolence: True cochineal and saffron dyed skein silk floss, thread, and warp and woof thread in all colors for sale;
>
> The Commencement of peace: All kinds of floss and silk skillfully dyed in cochineal and saffron.[132]

In contrast, the term *yanghong* did not spread as a term for cochineal. In commercial handbooks, *yanghong bu* (fabric dyed with foreign red) primarily referred to 'Turkey Red', a dye extracted from madder, although nineteenth-century Chinese painters continued to use *yanghong* for cochineal-made pigment.[133] As *yalanmi* gained popularity among merchants and the general public across treaty ports while *yanghong* became associated with madder, this pattern reflected cochineal's predominant use as a dye rather than a pigment during the period.

Knowing the cochineal insect in China and Japan

Amidst the flourishing cochineal trade and growing competition from aniline dyes in the second half of the nineteenth century, knowledge about the cochineal insect from Mexico finally disseminated to the Chinese public. Reports about the insect began to appear in books, magazines, and newspapers published in Shanghai, the new centre of exchange after 1848.[134] In consequence, terminological changes occurred: the term *yalanmi chong* emerged to refer to the insect, which was then replaced by *yanzhichong*. These changes coincided with shifting cultural and power

[126]Joseph Edkins, *A Vocabulary of the Shanghai Dialect* (Presbyterian Mission Press, 1869), 16.

[127]George Carter Stent, *A Chinese and English Vocabulary in the Pekinese Dialect* (The Customs Press, 1871), 537.

[128]William T. Morrison, *An Anglo-Chinese Vocabulary of the Ningpo Dialect* (American Presbyterian Mission Press, 1876), 79.

[129]Anonymous, *First Book of Reading in the Romanised Colloquial of the Hakka-Chinese in the Province of Canton* (Evangelical Missionary Society, 1880).

[130]William Duffus, *English-Chinese Vocabulary of the Vernacular or Spoken Language of Swatow* (English Presbyterian Mission Press, 1883), 45.

[131]R. S. Maclay and C. C. Baldwin, *An Alphabetic Dictionary of the Chinese Language in the Foochow Dialect* (Foochow: Methodist Episcopal Mission Press, 1870).

[132]Justus Doolittle, *Vocabulary and Hand-Book of the Chinese Language* (Rozario, Marcal, and Company, 1872), 444.

[133]Ibid., 61, 294.

[134]See *Report on the Commercial Relations of the United States with All Foreign Nations* (Cornelius Wendell, 1855), vol. 1, 524.

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dynamics between Qing China and Japan, and the localised term came to dominate trans-imperial knowledge dissemination about the foreign insect.

After the Opium War, many in Qing China sought to understand the world and China's position within it. Missionaries initially brought new geographical knowledge to Chinese elites, such as Karl Gützlaff's *Wanguo dili quanji* (*Universal Geography*), Martino José Marques' *Waiguo dili beikao* (*Geographies of Foreign Nations*), and Robert Morrison and his two sons' *Waiguo shilue* (*Brief History of Western Countries*). These works included reference to Mexico, and *yalanmi* was noted as one of its exports.[135] Qing elites also engaged in compiling geographical works, and Lin Zexu, the commissioner of Canton who combated the British opium trade, compiled a draft work on world geography titled *Sizhou zhi* (*Account of Four Continents*).[136] Lin entrusted these materials to a pioneering scholar, Wei Yuan, who further integrated Lin's collected sources and missionaries' newly published works into a comprehensive geographical treatise, *Haiguo tuzhi* (*Illustrated Treatise on the Maritime Kingdoms*).

The *Haiguo tuzhi* gained significance in Qing China when reform-minded Qing officials launched the Self-Strengthening Movement from 1861-95, a campaign of learning from Western military and economic methods to combat the threats posed by Western powers.[137] These officials established a translation division within the newly founded Kiangnan Arsenal in Shanghai, and foreigners were subsequently recruited to translate books about science, technology, medicine, and various other fields.[138] One of the leading translators was John Fryer, a key figure in popularising knowledge about the cochineal insect.

Before joining the translation division, Fryer had wholeheartedly devoted himself to broadening the Chinese public's horizon of science.[139] In 1874, he collaborated with Qing officials and the British Consul to establish a public reading room in Shanghai known as *Gezhi shuyuan* (Shanghai Polytechnic). In 1876, as he joined the Kiangnan Arsenal, he also initiated a widely read Chinese-language magazine, *Gezhi huibian* (initially *The Chinese Scientific Magazine*, later renamed *The Chinese Scientific and Industrial Magazine*). In November 1876, Fryer wrote an article in the *Gezhi huibian* about the *yalanmi chong*, in which he introduced not only the insect itself but also the social history of the cochineal industry in the Canary Islands.[140] He first explained that the insect, which produced red dye, exclusively fed on a specific type of cactus plant found in South America. Fryer then provided a detailed account of the Spanish introduction of cochineal production to the Canary Islands in the nineteenth century, which brought substantial profits but resulted in grain shortages. The article also highlighted that increased production led to a significant decrease in prices, dropping from one tael per pound to five maces in 1860–72. Additionally, Fryer observed that during the peak period of cochineal trade, some chemists had successfully experimented with alternative methods to produce substitute materials.

In 1879, Fryer and Chinese physician Zhao Yuanyi co-translated a medical encyclopaedia *Xiyao dacheng* (*Great Compilation of Western Medicine*), which made the scientific description of the cochineal insect more accessible to Chinese readers.[141] In the entry for cochineal, Fryer and

[135]Karl Friedrich August Gützlaff, *Wanguo dili quanji jiaozhu*, collated by David K. Y. Chng (Bafang wenhua qiye, 2019), *juan* 33, 338.

[136]See Shunyi Chen, 'Translation and Ideology: A Study of Lin Zexu's Translation Activities', *Meta* 62, no. 2 (2017): 313–32.

[137]See Benjamin A. Elman, 'Naval Warfare and the Refraction of China's Self-Strengthening Reforms into Scientific and Technological Failure, 1865–1895', *Modern Asian Studies* 38, no. 2 (2004): 283–326.

[138]See David Wright, 'The Translation of Modern Western Science in Nineteenth-Century China, 1840–1895', *Isis* 89, no. 4 (1998): 653–73.

[139]On Fryer's life, see Adrian Arthur Bennett, *John Fryer: The Introduction of Western Science and Technology into Nineteenth-century China* (Harvard University Press, 1967).

[140]John Fryer, *Gezhi huibian*, no. 11 (1876): 12. Tam Tat Hin also interpreted cochineal as 'an insect used to dye scarlet' in the *Hua-Ying zidian huiji* (1875), and he provided *yalanchong* as one of the Chinese equivalents for cochineal.

[141]John Fryer and Zhao Yuanyi trans., *Xiyao dacheng* (Kiangnan Arsenal, 1879). The book is the Chinese translation of *A Manual of Materia Medica and Therapeutics* (fifth edition, 1847), a popular medical treatise of the time by British botanist and surgeon John Forbes Royle.

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Zhao provided illustrations of the female and male cochineal insects, explained the presence of carminic acid for dye production, and offered instructions on its various uses. They also offered the first Chinese translations of various insect-based red dyes found worldwide, including the kermes insect (*kemishi chong*), lac insect (*lake chong*), shell-lac (*shelaike*), *Coccus polonicus* (*bolankekesi*), *grana fina* (*xili*), and *grana sylvestra* (*yeli*)—a lesser species grown in Vera Cruz and in Brazil.[142] The term *yalanmi chong* (cochineal insect) and knowledge of different types of insect dyes were copied by other Chinese works in the late nineteenth century.[143]

Meanwhile, in the mid-nineteenth century, Japan, like China, was forced to open its doors to various Western countries. This led to the Meiji Restoration, accompanied by a fervour for understanding the West. From the 1870s, a large number of Western works were translated into Japanese, and a set of new scientific terminology was established.[144]

Within this context, the Japanese terms for cochineal not only borrowed from Chinese vocabulary but also developed new terms. In the second half of the nineteenth century, more cochineal was brought to Japan, some of which was re-exported from Shanghai.[145] Accordingly, in the Japanese customs' records of the 1880s and 1890s, instead of using the prevalent commercial term *yanlanmi*, Japanese officials selected the less-used term *yalanchong*, ending with 'chong' (insect) as the name of the commodity.[146] With more scientific knowledge about the insect introduced to the Japanese, a new term, *enjimushi* 臙脂蟲 (rouge insect, equivalent to the Chinese term *yanzhichong*), emerged in the 1880s and gradually gained prominence. The term is more comprehensible in Japanese; the first part, '*enji*' (rouge, equivalent to *yanzhi*), denotes the red makeup used on lips and cheeks. The commodity and the vocabulary were both introduced from China to Japan.[147] Therefore, in 1888, a bilingual dictionary suggested *enjimushi* as the Japanese translation for cochineal.[148] Similarly, a Japanese-French bilingual dictionary in 1893 equated the French term *coccinelle* with *enjimushi*.[149] Scientific knowledge about the insect dye also appeared in magazines. In 1898, the making of carmine from the *enjimushi* was published in the influential magazine *Taiyō* (*The Sun*).[150] In 1900, an author referred to the family of scale insects as *enjimushi* in an article published in the *Dobutsugaku Zasshi* (*Zoological Magazine*).[151]

The emergence of a new word in Japanese, in turn, shaped the evolution of Chinese terminology for cochineal in the twentieth century after power dynamics between the two countries shifted. Following Qing China's defeat by Japan in the First Sino-Japanese War (1894–95), China sought to learn from Japan. In 1896, thirteen Chinese students were sent to study disciplines such as technology, politics, and economics at Japanese universities.[152] By 1899, an additional 100 Chinese students had enrolled.[153] Following this, the number of Chinese students studying in Japan, either sponsored by the Qing government or self-funded, soared into

[142]Fryer and Zhao, *Xiyao dacheng*, 1879, vol. 9, 15–6.

[143]See *Xixue dacheng* (1888); *Xixue fuqiang congshu* (1896); *Shiwu tongkao* (1897); and so on.

[144]See Ruselle Meade, 'Translating Technology in Japan's Meiji Enlightenment, 1870–1879', *East Asian Science, Technology and Society: An International Journal* 9, no. 3 (2015): 253–74.

[145]*Commercial Reports by Her Majesty's Consuls in Japan* (Harrison and Son, 1877), 36.

[146]See *Annual Return of the Foreign Trade of the Empire of Japan* (The Insetsu Kioku, 1882), 15; Laurence Oliphant, *Narrative of the Earl of Elgin's Mission to China and Japan* (Harpers & Brothers, 1860), 635.

[147]See Kyō Chō, *The Search for the Beautiful Woman: A Cultural History of Japanese and Chinese Beauty* (Rowman & Littlefield, 2012), 28.

[148]Goro Takahashi, *Kan Ei taishō iroha jiten* (Hakubunsha, 1888), 1079.

[149]Nakaye Tokkai and Nomura Taiko, *Futsu Wa ji-i* (Butsugaku kenkyūkai, 1893), 239.

[150]'The Ingredient for Carmine', *Taiyō* 4, no. 2 (1898): 198.

[151]*Dobutsugaku zasshi* 12 (1900): 49.

[152]See Paula Harrell, *Sowing the Seeds of Change: Chinese Students, Japanese Teachers, 1895–1905* (Stanford University Press, 1992), 1.

[153]Ibid., 2.

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the thousands by 1903 and potentially exceeded 10,000 by 1906.[154] These Chinese students learned Western political, commercial, and scientific concepts through Japanese translations, which they subsequently translated back into Chinese. This process, termed 'translingual practice' by Lydia Liu, led to the incorporation of numerous Japanese translations of Western terminology into the modern Chinese lexicon.[155] These borrowed terms supplanted some older concepts. For instance, *kexue* (science) replaced the traditional Chinese term *gezhi* (investigating things and extending knowledge).[156] This new set of terms influenced not only scientific terminology but also the language used in everyday life.

Yanzhichong, borrowed from Japanese *enjimushi*, appeared in Chinese works published in Shanghai no later than the 1910s. In 1913, an important Chinese newspaper, the *Shi bao* (*Eastern Times*), introduced several exotic topics to readers, including *yanzhichong* from Mexico.[157] The short article clarified the parasitic traits of the cochineal insect, its reproduction methods, and other aspects. The author furthermore referred to the colourant as *yanghong*, implying an unfamiliarity with the commercial term, *yalanmi*. Despite some inaccuracies within the article, the subject itself captivated Chinese audiences, leading to the article's re-publication in a renowned magazine *Minquan su* (*Essence of Civil Rights*) in 1914.[158] The 1910s also saw the publication of numerous articles about the procedure for preparing *yanghong* from the insect *yanzhichong*.[159] As time progressed, newspapers and magazines expanded their discussions about cochineal, covering topics such as the insect's biological features, its production in Guatemala and the Canary Islands, its use as a colourant in lipstick, and other related themes.[160] While an author in 1913 still treated *yalanmi* as the source material of the pigment *yanghong*,[161] by the 1930s, *yalanmi* and *yalanmichong* were rarely mentioned in articles and had become unfamiliar to the Chinese public.[162] They only occasionally appeared in Chinese writings, but when they did, the character '蚜' (*ya*) with the 'insect' radical was sometimes adopted to emphasise the insect nature of cochineal.[163]

In twentieth-century China, when aniline dyes supplanted organic ones within the textile industry, imported cochineal was primarily used by painters. Consequently, the painters' term *yanghong* also re-emerged as a key vocabulary referring to cochineal red. But as knowledge about the exotic insect producing *yanghong* became more common, it was the new term *yanzhichong* that gained increasing popularity among the public. From a linguistic perspective, *yanzhichong* (rouge insect) was clearer to Chinese native speakers, similar to the clarity of *enjimushi* for the Japanese public. *Yanzhi* (rouge) had been used in Chinese for more than a thousand years to denote a shade of red and a specific pink or red cosmetic product. Therefore, to Chinese readers, *yanzhichong* naturally denoted an insect that produces red. This 'localising' feature—albeit borrowed from Japanese—contributed to its widespread acceptance.

[154]Ibid.

[155]See Liu, *Translingual Practice*.

[156]See Shen Guowei, 'Science in Translation: Yan Fu's Role', in *Science and Technology in Modern China, 1880s–1940s*, eds. Jing Tsu and Benjamin A. Elman (Brill, 2014), 93–114.

[157]'Zhenwen julebu', *Shi bao*, 1 September 1913, 10.

[158]'Yingwen: yanzhi chong', in *Minquan su* 3 (1914): 6.

[159]For instance, see 'Yanghong zhi zhifa', in *Jiating changshi* 2 (1918): 144.

[160]Several instances, see 'Yanzhi chong', *Da shijie* (1918), 2; 'Wujizhui dongwu yu wenming', *Dongfang zazhi* 22 (1925): 87–98; 'Where Cochineal Comes From?', *The North-China Daily News* (4 June 1926), 4; 'Yanzhi dao', *Shijie huabao*, no. 3 (1935): 14.

[161]'Yanghong', *Jinbu* 4 (1913): 122.

[162]For instance, in 1936, the provincial government of Hebei ordered a county official to research *yalanmi* as the substance was not listed in the *Zhongguo yaodian* (1930). See 'Gongdu', *Hebei minzheng yuekan* 2 (1936): 240.

[163]'Zuo yanghong yuanliao de yanzhichong', *Xiaopengyou* 832 (1947): 12–3.

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Conclusion

The Chinese terminology for American cochineal offers insights into the varied Chinese understanding and usage of this substance, which coexisted yet remained distinct for centuries, each undergoing its own development. During the eighteenth century, cochineal was recognised by Chinese painters as *xiyang dahong* or *yanghong*, also known as *gezuonila* in the Qing court and referred to as *yalanmi* by Chinese traders and maritime officials in Guangdong and Fujian. The emergence and evolution of each term represented a specific type of connectivity between China and the world. *Xiyang dahong* described a precious pigment producing a deep red shade, imported from Europe, which was almost unaffordable outside the Qing court. Over time, however, the term evolved into the abbreviated form, *yanghong*, losing its emphasis on both European origin and the deep red hue, as the supply increased and the usage of the pigment diversified. Meanwhile, the exchange of scientific knowledge between Emperor Kangxi and Europeans at the Qing court resulted in *gezuonila*. Although Kangxi learned of the insect's American origins, the similarity and foreign nature of both cochineal and lac dye led to their conflation in his understanding. Early Chinese interpreters not only transcribed the market term 'yalan,' but also added 'mi' (grain) to describe the shape, which intentionally or unintentionally resembled the Spanish understanding of the commodity. Later, when Western translations expanded public knowledge of cochineal, the radical of the Chinese character for cochineal evolved to 'grass' and 'insect,' and the term *yalanmi chong* also emerged.

The lifecycle of terminology was intricately intertwined with the historical processes in which cochineal was situated. The term *gezuonila* gradually ceased circulating when the Qing court no longer welcomed Jesuits in the late eighteenth century. For *yanghong*, although the term also came to refer to 'Turkey Red' in the nineteenth century, it reverted to its primary role as a key term for cochineal pigment in the twentieth century. *Yalanmi* emerged as a commercial vocabulary, and the term's spread across various dialects paralleled the expansion of the cochineal trade across China. However, with the global downturn in the cochineal trade, *yalanmi* was quickly forgotten. As Shanghai became the new hub of Sino-foreign interactions, *yanzhichong*, a term used in newspapers and magazines to disseminate knowledge about this insect-based red dye for the public, ultimately gained popularity. This term also implies 'localisation' as a driving force in the popularisation of standard terminology within the shared cultural realm between China and Japan. In conclusion, the case of cochineal demonstrates that changes in terminology can indicate when previously strong global-local connections suddenly break, weak connections are renewed, or new connections are established from the rupture of old ones.

This article responds to critiques of global history by advocating for a more localised, micro-historical approach, highlighting how a long-term perspectives on the linguistic evolution of the terms for a global commodity within a society can contribute to the study of global material culture. Each term emerged from the entanglement of specific local-global contexts, particularly in trade and knowledge exchange. The coexistence of multiple local terms for a foreign material substance during the same period enables scholars to map the complexity of local-global connectivity, further prompting a re-evaluation of the geographical spaces, media channels, and social classes involved in these connections. Moreover, the emergence and evolution of each local term not only exemplifies changes in the relationship between local and global histories but also illustrates how cultural traditions and regional interactions drive changes in establishing standardised, comprehensible terminology. Therefore, this linguistic perspective encourages us to reconsider the nuances of spatial scope within global history.

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Niping Yan is Assistant Professor of History at the University of Macau. Her research focuses on the interactions between the Chinese and Spaniards during the early modern period, with a particular emphasis on trans-Pacific trade, material culture, and the exchange of books and knowledge. She obtained her PhD in 2023 from the University of British Columbia, where her dissertation explored the making of the famous Spanish manuscript, the Boxer Codex, in the late sixteenth-century Philippines.

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