Cotton: The Making of a Modern Commodity

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Abstract. Cotton and cotton textiles have long had a prime position in histories of industrialisation and more recently in narratives of the Divergence between the West and 'the Rest' in the eighteenth century. This paper brings together the analysis of the production and trade of raw material and that of consumption of finished cloth. It argues that cotton was the first 'transcontinental' manufactured product whose commodity chain brought together capital, labour, land, technologies and consumers in different continents. Central to the creation of what can be seen as a rather 'modern' way of conceptualising resources and commodity production and trade was Europe and its emerging industrial technologies. Yet, the story of cotton and cotton textiles in the eighteenth century needs also to be read against a global background that gives due consideration to environmental and resource issues.

Introduction

Raw cotton, spun yarn and cotton textiles are among the most traded and treasured commodities worldwide. Cotton is the material of our clothing and furnishing and – notwithstanding the success of synthetic fibres in the twentieth century – is still the most common fabric for everyday use. This was not the case just a few centuries ago. When European traders landed in India in the early sixteenth century, they were astonished by the variety and quality of cotton textiles for sale. India was the major world producer of cotton and cotton textiles, though other areas of Asia were developing their own cultivation and cotton manufactures. Over the following centuries three major global changes affected this commodity. First, its consumption became truly global when Asian cottons started to be consumed not just in Europe but also in many parts of Africa and the Americas. Second, new areas of the globe started to cultivate raw cotton, in particular the Americas where plantations were cultivated by slaves brought from West Africa. And finally, Europe emerged as a new area of production of cotton cloth to rival and eventually replace India. Mechanised production led to an 'industrial revolution' that changed the economic trajectory of the West and the 'rest' of the world.

These three narratives have been considered as separate and largely seen within three distinct historiographical contexts (Figure 1). The first is a narrative of trade and consumption that in recent years has been recast to encompass wider geographies. Its changing agenda will be the topic of the first part of this paper. The second is a narrative of slavery and the ecological potential provided by a vegetable fibre such as cotton. This will be the subject of the second part of my paper and will consider the importance of raw materials

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as well as finished products. And finally the last one is a narrative of industrialisation and economic divergence that is often linked to mechanisation and industrialisation. The final part of this paper, however, would like to relate the classic story of the rise of cotton manufacturing in Europe to both markets and resources. I claim that the true innovation brought about by the setting up of cotton textile manufacturing in Europe was not its reliance on machines or its industrial organisation; it was instead its ability to manage a new – and the first – 'commodity chain' that was transcontinental.

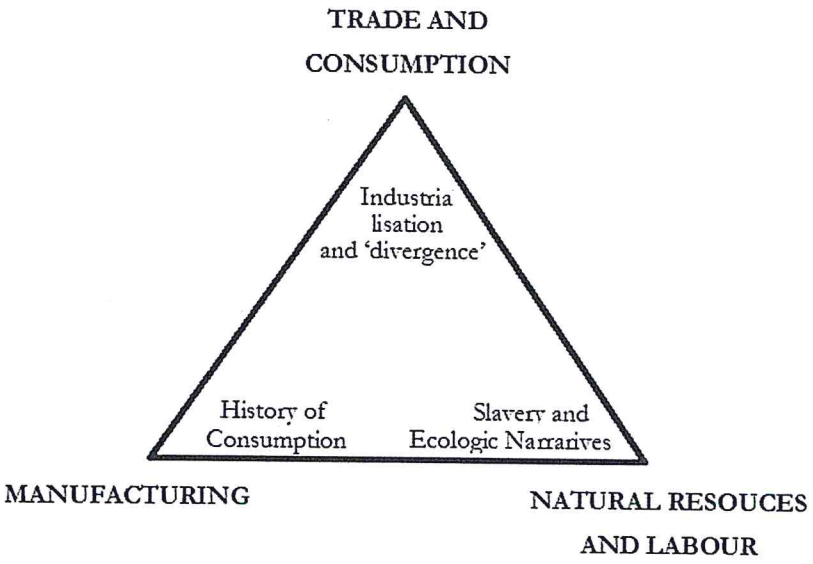

Figure 1. Three Historiographical Traditions for Cotton and Cotton Textiles

Markets and Consumers: Globalising Cotton Textiles

In the past thirty years, the analysis of cotton and cotton textiles has been re-written from the agenda of trade and consumption. Unlike older narratives that posited cotton at the core of the industrial revolution (famously Hobsbawm wrote that 'Whoever says Industrial Revolution, says cotton'), more recent and more culturally-influenced approaches have seen cotton textiles at the core of the consuming habits of early modern people around the world.[1] Such interpretations underline that by the time the first Europeans started to trade directly with Asia in c. 1500, cotton cloth produced in the Indian subcontinent had already secured markets across the Indian Ocean and beyond. In the centuries after 1500 Indian cottons

1 Eric Hobsbawm, *Industry and Empire: From 1750 to the Present Day* (New York: Penguin, 1999), 34. For an overview of this recent literature, see: Prasannan Parthasarathi and Giorgio Riello, "From India to the World: Cotton and Fashionability", in Frank Trentmann (ed.), *Handbook of the History of Consumption* (Oxford: Oxford University Press, 2012), 145-70.

conquered new markets, especially in Europe and the Americas, and made inroads into the habits of consumers almost everywhere in the world.[2] This narrative appears particularly 'modern' in the sense that it prefigures many of the traits that world trade came to assume in modern industrial societies. Unlike precious and expensive Chinese silks, Indian cotton textiles reached the most remote parts of the globe and changed the consuming habits not just of the elites but also of poorer consumers. They replaced traditional fibres such as arrowroot and linen, as cottons were both cheap and available in large quantities. Rather than being expensive oriental luxuries in reach of the few, Indian cottons were the first cheap mass commodity satisfying the everyday needs of Chinese peasants, African slaves and European housewives.[3] The scale of the trade and its consequences both globally and within local markets is emphasized.

Thanks to cotton, in the seventeenth and eighteenth centuries the position of the European trading companies in the Indian Ocean strengthened. The high profits of the intra-Asian cotton textile trade (coupled with the declining importance of spices) explain why European traders invested heavily in the so-called 'country trade' (intra-Asian trade). For example, by the 1770s European traders controlled approximately half of all shipments of goods from Batavia to India.[4] Batavia was the entrepot for trade in various Indian cottons such as guinea cloth and salempuri from the Coromandel Coast and Surat. Over 50,000 pieces of guinea cloth and salempuri from Coromandel, and baftas and niquanias from Surat were traded each year, most of which found their way to Java, Bali, East Indonesia and other parts of the archipelago.[5] The long hand of Europe is visible in the control of both production and consumption markets.

Yet, the 'modernity' of cotton did not just lay in its capacity to restructure global trade. It also reshaped consumption, especially in the West. Europeans – like many other consumers across the world – were attracted by the properties of the cotton fibre. They liked a softer, lighter type of cloth that – unlike silks or woollens – could be easily washed without damaging the cloth. Yet their fustians (mixes of linen and cotton) did not provide either the quality or the richness of colour of Indian textiles. This is the reason why the European East India companies started to import Indian cottons into Europe. Significant cotton textile cargoes arrived in Lisbon in the sixteenth century and found markets across the continent, from central Spain to southern England and Italy, but it was with the expansion of the Dutch and English companies in the first half of the seventeenth century that the importation of Indian cottons into Europe assumed a large scale.

Historians have underlined three aspects of the way in which cotton impacted on

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2 Giorgio Riello, "The Globalisation of Cotton Textiles: Indian Cottons, Europe and the Atlantic World, 1600-1850," in id. and Prasannan Parthasarathi (eds.), *The Spinning World: A Global History of Cotton Textiles, 1200-1850* (Oxford: Oxford University Press and Pasold Research Fund, 2009), 261-87.

3 See in particular my *Cotton: The Fibre that Made the Modern World* (Cambridge: Cambridge University Press, 2013), esp. chs 4-6.

4 Gerrit Knaap, *Shallow Waters, Rising Tide: Shipping and Trade in Java Around 1775* (Leiden: Brill, 1996), 88.

5 These textiles varied greatly in length. A piece of guinea cloth could be 100 feet long; a piece of salempuri was 65 feet long; a piece of bafta was c. 50 feet long; and a piece of niquanias c. 30 feet. Knaap, *Shallow Waters*, 93, and 131.

European consumption. First, they considered the creation of new consuming habits. Together with other Asian goods, cotton textiles were perceived as exotic products that provided new designs and colourful patterns for consumers. Initially these textiles were used to decorate rooms. Large-scale wall hangings made of Indian chintz were popular in the seventeenth and throughout the eighteenth century to decorate bedrooms. These were called 'palampores' and represented scenes with birds and flora or the famous tree of life, all design motifs that were expressly produced for European consumers. Sometime in the second half of the seventeenth century, Indian cottons started to be used for clothing. The anonymous author of *The Trade of England Revived* (1682) explained that consumers wanted "a Bangale that is brought from India, both for Lynings to Coats, and for Petticoats too".[6] In one of Molière's plays of the 1670s a bourgeois gentleman, Monsieur Jourdain, decides to don an informal robe (called *banyan*) made of calicoes: 'I had this printed cotton made up', says Monsieur Jourdain with confidence, 'my tailor told me that people of quality wear them in the morning".[7] A few years later the English playwright and political commentator Daniel Defoe would frown upon the "persons of quality dressed in Indian carpets"[8]

Historians such as Maxine Berg, Beverly Lemire and John Styles – just to cite the most significant authors in this debate – have provided slightly different narratives of cotton's rise in Europe and its uptake by consumers of different social standings.[9] The banning of Indian cottons across Europe in the period 1686 to 1774 suggests that imported cottons were seen as sufficiently detrimental to local textile industries to deserve a total ban. However, it seems that bans were quite ineffectual at stopping consumers from purchasing Indian calicos and chintzes.[10] In England, as in France and elsewhere, people continued to wear forbidden cloth, risking fines, incarceration or simple humiliation as was the case of the wife of a councillor in the French city of Rennes who was surprised "at eleven o'clock in the morning near the city walls, dressed in calicoes".[11]

Scholars have questioned whether a 'calico craze' – a truly mass fashion for Indian cloth – swept Europe or if the use of cottons remained modest until the start of the European

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6 *The Trade of England Revived: and the Abuses Thereof Rectified* (London, 1681), 16-17.

7 Cit. in Riello, "Globalization of Cotton Textiles", 271.

8 Cit. in Arno S. Pearse, *The Cotton Industry of India, being the Report of the Journey to India* (n.a., 1930), 19.

9 Maxine Berg, "Manufacturing the Orient: Asian commodities and European Industry 1500-1800," in Simonetta Cavaciocchi (ed.), *Prodotti e tecniche d'oltremare nelle economie europee. Secc. XIII-XVIII. Atti della Ventinovesima Settimana di Studi, 14-19 aprile 1997* (Florence: Le Monnier, 1998), 385-419; id., "In Pursuit of Luxury: Global History and British Consumer Goods in the Eighteenth Century," *Past & Present*, 132 (2004), 85-142; Beverly Lemire, *Fashion's Favourite: The Cotton Trade and the Consumer in Britain, 1660-1800* (Oxford: Oxford University Press and Pasold Research Fund, 1991); id., "Fashioning Global Trade: Indian Textiles, Gender Meanings and European Consumers, 1500–1800," in Giorgio Riello and Tirthankar Roy (eds.), *How India Clothed the World: The World of South Asian Textiles* (Leiden: Brill, 2009), 365-90; id., *Cotton* (Oxford: Berg, 2011); John Styles, "What Were Cottons For in the Industrial Revolution?," in Riello and Parthasarathi, *Spinning World*, 307-26; id., "Indian Cottons and European Fashion, 1400-1800", in Glenn Adamson, Giorgio Riello and Sarah Teasley (eds.), *Global Design History* (Basingstoke: Routledge, 2011), 37-46.

10 Lemire, *Cotton*, 33-64.

11 Cit. in Philippe Hudrère, *Les Compagnies des Indes Orientales: trois siècles de rencontre entre orientaux et occidentaux* (Paris: Editions Desjonquères, 2006), 169-70.

cotton manufacturing industry in the 1770s.[12] They all agree however that cotton textiles played a major role in reshaping consumption patterns. This is a second important point that is underlined by Jan de Vries in his concept of an 'industrious revolution'.[13] Cheap printed calicos and chintzes were among the 'pupoluxe' goods that late-seventeenth- and eighteenth-century European consumers wanted.[14] Indeed, de Vries argues that such a demand could only be satisfied by an intensification of labour. Industriousness became not just a virtue but also a practice in order to supplement meagre earnings from land and artisanal activities especially on the parts of wives and daughters. Cotton textiles – perhaps not alone – instigated tremendous change in labour practices in Europe.

A third and final point comes specifically from Maxine Berg's contribution to such debates. She argues that Indian cotton textiles did not just reshape consumer demand (as Styles and Lemire argue) and by therefore intensify labour and expand the commercialisation of production in Europe (as argued by de Vries). Imported Indian cotton textiles were also key to product and process innovation in Europe. Berg thus connects trade, consumption and production and makes a strong case for an understanding of Europe's trajectory towards the substitution of imported manufactured goods with national domestic products. She also connects India and Europe not just via the medium of trade and design, but also through the importance of technology transfers (in cotton but also lacquer, porcelain, etc.).[15] By doing so she adds a qualitative dimension to manufacturing thus underlying the need on the part of Europe to match Indian product's quality.[16]

This focus on Europe has however created a somewhat false impression that other markets and consumers might have been less active or might have appreciated less the cultural value, material properties and economic potential brought about by cotton textiles. This is far from true: a now large historiography points to the fact that processes of import substitution were at play in different parts of the world. Western Europe was just one among the many world areas where Indian cotton textiles were replaced by local copies and imitations. This is the case for Southeast Asia as much as Western Africa.[17]

Historians have also scaled down the role of Europe in the early modern history of cotton textile trade. Prasannan Parthasarathi, for instance, underlines that cotton textiles were first and foremost central to the consuming habits of Indian consumers and that the Subcontinent itself remained the largest cotton textile market in the world well into the nineteenth

12 Carole Shammas, *The Pre-industrial Consumer in England and America* (Oxford: Clarendon, 1990), 96-100; Styles, "What Were Cottons for in the Industrial Revolution?"; id., *The Dress of the People: Everyday Fashion in Eighteenth-Century England* (London and New Haven: Yale University Press, 2007), 109-32.

13 Jan de Vries, "The Industrial Revolution and the Industrious Revolution," *Journal of Economic History*, 54: 2 (1994), pp. 249-270; id., *The Industrious Revolution: Consumer Behavior and the Household Economy, 1650 to the Present* (Cambridge: Cambridge University Press, 2008).

14 On the concept of 'populuxe', see: Cissie Fairchilds, 'The Production and Marketing of Populuxe Goods in Eighteenth-Century Paris', in John Brewer and Roy Porter (eds.), *Consumption and the World of Goods* (London and New York: Routledge, 1993), 228-48.

15 Berg, "In Pursuit of Luxury".

16 Maxine Berg, "Quality, Cotton and the Global Luxury Trade," in Riello and Roy, *How India Clothed the World*, 391-414.

17 For a summary, see Riello, *Cotton*, passim.

century.[18] Both old and new research underlines moreover that a large part of the world trade of cottons was not controlled by Europe. Steensgaard already showed in the 1970s the persistence of early modern land routes from India to the Middle East and Anatolia and proposed the enthralling idea that such a trade could be several times larger than the total trade of the East India companies.[19] John Guy in more recent years has focused his attention on Asian markets and has pointed to the fact that the intra-Asian trade (both by European and non-European intermediaries) in cotton textiles remained a thriving component of world trade.[20] Guy's work has found important developments in the scholarship of Ruth Barnes, Rosemary Crill and Robyn Maxwell.[21]

One might say that the scale and scope of European action has been re-sized. Yet, as my own work but also recent research by Robert DuPlessis and Kazuo Kobayashi underline, the globalisation of cotton textiles was one that interested Atlantic markets and the New World, areas in which Europeans played a dominant role.[22] Thanks to European traders, cotton textiles entered the vast space of the Atlantic Ocean, reshaping not just people's consuming habits but also the economies and societies of Europe, Africa and the Americas. An important outlet was the African market where cottons (both imported from India and produced in Europe) were sold in exchange for slaves to be employed in the American plantations. A Dutch trader explained that "the Blacks ... would rather have the entire purchase sum in dry goods, such as cottons, gingham, salempuris [cloth], calavap [cloth], etc. A sensible ship's captain knows, at whatever place on the Coast he is, which of his goods are in demand. But he does not know which goods will be in demand when he goes fifty mile further along the Coast".[23] Indeed West African consumers were very precise in their tastes

18 Prasannan Parthasarathi, "Cotton Textiles in the Indian Subcontinent, 1200-1800," in Riello and Parthasarathi, *Spinning World*, 17-42; id., *Why Europe Grew Rich and Asia did Not: Global Economic Divergence, 1600-1850* (Cambridge: Cambridge University Press, 2011), passim.

19 Niels Steensgaard, *Carracks, Caravans and Companies: The Structural Crisis in the European-Asian Trade in the Early 17th Century* (Copenhagen: Studentlitteratur, 1973). His work has been expanded in more recent times by Olivier Raveux who has studied the role of Armenian merchants and artisans in linking India, the Middle East and the Mediterranean in the trade and manufacture of cotton textiles. Olivier Raveux, "Espaces et Technologies dans la France méridionale d'ancien régime: l'example de l'indiennage marseillais (1648-1793)," *Annales du Midi*, 116: 246 (2004), 155-70; id., "The Birth of a New European Industry: l'indiennage in Seventeenth-Century Marseilles," in Riello and Parthasarathi, *Spinning World*, pp. 291-306.

20 John Guy, "Sarasa and Patola: Indian Textiles in Indonesia," *Orientations*, 20: 1 (1989), 48-60; id., *Woven Cargoes: Indian Textiles in the East* (London: Thames & Hudson, 1998).

21 Ruth Barnes (ed.), *Textiles in Indian Ocean Societies* (London and New York: Routledge, 2005); Rosemary Crill (ed.), *Textiles from India: The Global Trade* (Calcutta: Seagull, 2005); Rosemary Crill and Ian Thomas, *Chintz: Indian Textiles for the West* (London: V&A Publications, 2008); Robyn Maxwell, *Textiles of Southeast Asia: Tradition, Trade and Transformation* (Melbourne: Australian National Gallery and Oxford University Press, 1990).

22 See in particular: Riello, "Globalization of Cotton Textiles"; id., "Indian Cottons and British Trade: The Connection between the Indian and Atlantic Oceans in the Long Eighteenth Century" (Paper presented at the 8th Anglo-Japanese Conference of Historians, Osaka, 10-11 August 2015); Robert S. DuPlessis, 'Cloth and the Emergence of the Atlantic Economy', in Peter A. Coclanis (ed.), *The Atlantic Economy during the Seventeenth and Eighteenth Centuries: Organization, Operation, Practice, and Personnel* (Columbia, SC: University of South Carolina Press, 2005), 73-94; id., 'Cottons Consumption in the Seventeenth- and Eighteenth-Century North Atlantic', in Riello and Parthasarathi, *Spinning World*, 227-46; id., *The Material Atlantic. Clothing, Commerce, and Colonization in the Atlantic World, 1650–1800* (Cambridge: Cambridge University Press, 2015); and Kazuo Kobayashi's PhD Thesis: http://blogs.lse.ac.uk/southasia/2013/06/27/indian-cotton-textiles-in-the-eighteenth-century-atlantic-economy/.

23 S. Axelrod Winsnes (ed.), *A Reliable Account of The Coast of Guinea (1760) by Ludewig Ferdinand Rømer* (Oxford:

and had a long experience of wearing Indian cottons that reached them via trans-Saharan routes.

No less demanding were North and Latin American consumers. Already in 1700 the colonies in North America were supplied with Indian calico quilts exported from London to places such as New York, Pennsylvania, and Virginia. By the mid-eighteenth century various types of cotton textiles ('Blue', 'India', 'Negro' as well as printed and painted) were exported from England to the American colonies.[24] 'Casta paintings' (representing the ethnic mix of the Spanish American population) depict men, women and children wearing a variety of high-quality brightly-coloured Indian chintzes and calicoes.[25] Indian cottons were commonly used in menswear as confirmed in paintings and inventories. Cottons included locally-produced textiles (probably of lower quality), canequin (imported from India) and other imported varieties.[26]

The Potential of Cotton: Ecology and Environment

This expanding system of trade and the changes in consumption patterns that it produced across the world have made some historians conclude that cotton cloth was the first modern commodity.[27] This is a somewhat premature conclusion if we do not consider the consequences caused by the consumption of cottons on a global scale. The production system that supported such enormous trade was based on a patchwork of productive specialisations of localities in the Indian subcontinent. Each of the four main coastal areas of India (Gujarat, the Malabar Coast, the Coromandel Coast, and Bengal) produced a wide range of products destined to specific markets not just in India but across the Indian Ocean and eventually – as we have seen – across the entire world. This structure of production had slowly emerged over the centuries and was characterised by: a) rural – often household spinning performed by women; b) weaving performed by men in weaving villages; c) finishing performed in key centres of trade and manufacture; and d) peasant production of raw materials. Trade in raw cotton was not unknown in early modern India but most of the localities (such as Dacca, a centre for high-quality muslin) relied on supplies from their own hinterland.[28] For sure, there was no intercontinental trade of raw cotton or even pan-Asian trade. The longest distance travelled by raw cotton was from the south to the north of the vast Chinese empire, but like in India, cotton remained a peasant crop. So was the case in the Middle East, West Africa and indeed pre-Columbian America, where New World varieties

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Diasporic Africa Press, 2000), 191.

24 Riello, "Globalization of Cotton Textiles," 284.

25 Abby Sue Fisher, "Mestizaje and the Cuadros de Castas: Visual Representations of Race, and Dress in Eighteenth Century Mexico" (Unpublished Ph.D. Thesis, University of Minnesota, 1992), 66-7.

26 Beatriz Ricardina de Magalhães, "A Demanda do trivial; vestuário, alimentação e habitação," *Revista Brasileira de Estudos Políticos*, 65 (1987), 172-73.

27 Riello, "Globalization of Cotton Textiles."

28 Riello, *Cotton*, ch. 4.

of cottons were cultivated.[29]

The only area of the world that never cultivated large quantities of cotton was Europe. Some cotton was cultivated in the Mediterranean Islands of Crete, Malta and Sicily and in Southern Spain and later the Balkans, but this was poor-quality fibre produced in small quantities. It did not mean however that cotton textile production was absent from Medieval Europe. Northern Italy and Southern Germany became in the thirteenth and fourteenth centuries important areas of production of a cloth called 'fustian' a mix of cotton and linen.[30] The cotton used for the weft of this cloth was imported from the Middle East, in particular from Syria and Lebanon.[31] Cotton was a substantial part of the trade of the merchants of Venice who sold it in turn to manufacturers in the northern Italian and German cities.[32] By the sixteenth century other areas of Europe such as the Flanders, northern France and England produced their own fustian cloths. An early seventeenth-century English commentator explained that in Lancashire textile manufacturers bought "cotton wool in London that comes first from Cyprus and Smyrna, and at home work the same, and perfect it into fustians, vermilions, dimities, and other such stuffs, and then return it to London, where the same is vented and sold, and not seldom sent into foreign parts, who have means, at far easier terms, to provide themselves of the said first materials".[33]

Over the period c. 1300 to c. 1700, Europe had manufactured small quantities of mixed linen-cotton (fustians) by importing raw cotton from the Levant. The rise and decline of different cotton 'proto-industrial' areas of Europe showed the weakness of relying on a raw material that was totally imported. This was unique compared to any other manufacturing sector of the European economy and was also one of the limits of Europe in developing a viable cotton textile industry. Alternative sources of supplies had to be found. Far too expensive and bulky to import it in large quantities from distant Asia, over the seventeenth century Europeans developed cotton plantations in the Americas. They used the labour of slaves that they bought on the coasts of West Africa in exchange for beads, metals, weapons and most of all textiles. Cotton cultivation in the New World was not an immediate success. Small quantities of cotton from New Spain reached Europe in the late 1560s and some Brazilian cotton early in the following century, but before the 1620s hardly any American cotton was cultivated to be exported to Europe.[34] Cotton cultivation was first practiced in

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29 Andrew M. Watson, "The Rise and Spread of Old World Cotton," in Veronika Gervers (ed.), *Studies in Textile History in Memory of Harold B. Burnham* (Toronto: Royal Ontario Museum, 1977), 355-68.

30 Maureen Fennell Mazzaoui, *The Italian Cotton Industry in the Later Middle Ages, 1100-1600* (Cambridge: Cambridge University Press, 1981); id., "The First European Cotton Industry: Italy and Germany, 1100-1800," in Riello and Parthasarathi, *Spinning World*, 63-88.

31 Janet L. Abu-Lughod, *Before European Hegemony: The World System, A.D. 1250-1350* (Oxford and New York: Oxford University Press 1989), 235.

32 Frederic C. Lane, 'Ritmo e rapidità di giro d'affari nel commercio veneziano del quattrocento', in *Studi in Onore di Gino Luzzatto* (Milan, 1949), vol. 1, 258-59.

33 Roberts, *Treasure of traffic* (1641), 32-33. Cit. in William H. Price, "On the Beginning of the Cotton Industry in England," *Quarterly Journal of Economics*, 20: 4 (1906), 608.

34 Eufemio Lorenzo Sanz, *Comercio de España con América en la época de Felipe II* (Valladolid: Servicio de Publicaciones de la Diputación Provincial de Valladolid, 1979), 628; Kristoff Glamann, "European Trade 1500-1750," in *The Fontana Economic History of Europe* (London: Fontana, 1971), vol. 2, 27.

Barbados in the 1620s spreading to the Bahamas islands in the following decade.[35] Over the next half a century cotton made inroads into most of the West Indies, its cultivation being first practiced in Jamaica in the 1670s. Cotton cultivation also reached mainland North America, arriving in Virginia in the late 1640s and South Carolina in the mid-1660s.[36]

The slow diffusion of cotton cultivation in the Americas can be explained by the fact that cotton competed against sugar and that the latter was a rather remunerative crop. Cotton was instead bulky and of relatively low value, one early eighteenth-century commentator noticing how "were it not that by screws and engines they can make a great deal (of raw cotton) lie in a small room, the freight would be so chargeable, that it would not be worth bringing hither raw; but they will press it so hard, as to make the timbers of the ship crack".[37] Cotton was therefore initially cultivated on marginal land and only when European demand for this raw material increased in the course of the eighteenth century, was a cotton plantation system developed in the West Indies and later Brazil. American cotton was an important raw material not just for the British cotton industry but also for the developing French one. The import of raw cotton from the Antilles increased from just 30 tons in 1730 to 650 tons in 1740.[38] England imported cotton from the West Indies and from the 1780s also from Brazil.[39]

The harsh conditions and suffering of the enslaved labour force have been the topic of several scholarly studies.[40] Less attention however has been paid to: a) the ecologic consequences of Europe switching from the production and consumption of linen and woollens (the first derived from two vegetable fibres - hemp and flax - and the other from an animal fibre) to cotton (a vegetable fibre); and b) the environmental consequences brought about by the intensification of cotton cultivation in the Americas.

With hindsight the success of cotton manufacturing in Europe might appear something well understood by contemporaries. Yet, as late as 1751, a Committee of the British House of Commons concluded that cotton was "only a temporary Thing".[41] Cotton was seen as a

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35 Barbara Gaye Jaquay, "The Caribbean Cotton Production: An Historical Geography of the Region's Mysterious Crop" (Unpublished Ph.D. Thesis, Texas A&M University, 1997), 60-1.

36 For an overview see: M.B. Hammond, *The Cotton Industry: An Essay in American Economic History. Part I. The Cotton Culture and the Cotton Trade* (New York: American Economic Association, 1897), 4-5; Frederick C. Knight, *Working the Diaspora: The Impact of African Labor on the Anglo-American World, 1650-1850* (New York: NYU Press, 2010), 76-83.

37 J. Houghton, *Husbandry and Trade Improv'd: Being a Collection of many Valuable Materials Relating to Corn, Cattle, Coals, Hops, Wool, &c.* (London, 1727), 136.

38 Pierre H. Boulle, "Merchandises de traite et développement industriel," *Revue Française d'Histoire d'Outre-Mer*, 62 (1975), 317.

39 James Lang, *Portuguese Brazil: The King's Plantation* (New York: Academic Press, 1979), 185.

40 On slavery and cotton plantations see in particular: Douglas C. North, *The Economic Growth of the United States, 1790-1860* (Englewood Cliffs: Prentice-Hall, 1961); Robert W. Fogel and Stanley L. Engerman, *Time on the Cross: The Economics of American Negro Slavery* (Boston: W. W. Norton & Company, 1974); Robert W. Fogel, *Without Consent or Contract: The Rise and Fall of American Slavery* (New York: W. W. Norton & Company, 1989); Gavin Wright, *Slavery and American Economic Development* (Baton Rouge: Louisiana State University Press, 2006).

41 *Report Relating to Chequered and Striped Linens* (1751), 293. Cit. in Beverly Lemire, "Transforming Consumer Custom: Linen, Cotton, and the English Market, 1660-1800," in Brenda Collins and Philip Ollerenshaw (eds.), *The European Linen Industry in Historical Perspective* (Oxford: Oxford University Press and Pasold Research Fund, 2003), 198.

cheap substitute for flax which was becoming increasingly expensive. Cotton turned out however to be a permanent feature of most European economies and a cause of enormous economic change. In Britain, between 1785 and 1830 cotton textile production expanded thirty fold. The workforce employed in this industry was as large as 800,000 already in 1806. Thanks to cotton, small villages like Bolton, Oldham and Manchester had by the 1820s grown to be large industrial towns. This was just the beginning as the industry doubled in size in the 1820s and again in the 1830s. By the 1840s several continental European countries boasted similar rates of expansion in their cotton industries.

The elasticity of raw material supplies from the Americas allowed this industry to develop at a uniquely rapid rate without substantial real price increases for raw cotton fibres.[42] Cotton was not a free good. As already observed, raw cotton was produced by a complex system of exploitation of labour and land. Both these factors were however external to Europe. I put forward the argument somewhere else for an 'ecologic' understanding of cotton and its cultivations in large 'off-shore' plantations.[43] The argument can be summarised in two main points. The first is based upon a counterfactual world in which cotton did not exist at all or in which it was not produced in the Americas but in Europe. The consequences for Europe would have been massive if it had produced its own raw cotton as it had done for its existing wool, linen and silk industries. . The same could be said of Europe's ability to replace all its cotton cloth with either linen or woollen cloth. Although these are hardly interchangeable, the exercise once again shows that Hobsbawm's 'cotton revolution' could not have happened either by relying on wool or linen, or by having raw cotton produced within Europe's border. It was the link between cultivation and manufacturing that was broken by having the production of raw cotton carried out in plantations in another continent where both land (virgin land) and labour (slave labour) were abundant. It was unprecedented in the history of manufacturing for an entire industry to rely on resources produced in another continent through a dedicated system of production that fed an expanding industry.

There is however a second issue that is often forgotten: the environmental impact of this new transcontinental configuration of production. Cotton cultivation had showed to be elastic and by the third quarter of the eighteenth century, the production of this raw material had become integral to the economies of many West Indian islands. Yet, cotton's potential was not infinite. By the 1780s the cotton crop seemed to be increasingly a victim of drought and insect attacks as a report to the Danish government from the island of S. Croix explained. This was because planters in the attempt to cultivate virgin land had cleared vast parts of unproductive vegetation that surrounded their plantations. This had changed evaporation and increased the power of winds.[44] Most of the West Indian Islands experienced one of the

42 Between 1750 and 1810 European cotton consumption increased between six and eightfold. Paul Bairoch, *Economics and World History: Myths and Paradoxes* (Hemel Hempstead: Harvester Wheatsheaf, 1993), 158.

43 Riello, *Cotton*, ch. 11.

44 G. Tyson Jr., "On the Periphery of the Peripheries: The Cotton Plantations of St. Croix, Danish West Indies, 1735-1815," *Journal of Caribbean History*, 26: 1 (1992), 9-10.

earliest cases of man-made environmental catastrophe: cotton had exhausted the land and there was no more virgin land to be cultivated. In the Bahamas, where cotton production was still more than 600 tons a year in the early 1810s, by 1832 had diminished to just 42 tons.[45]

More cultivable land was however present on the American mainland. It is said that the long-stapled 'Anguilla' cotton was introduced into the United States in 1786 when a certain Roger Kensall, living in the Bahamas, sent some seeds to his business partner James Spalding in Georgia.[46] Over the following decade several planters abandoned the Bahamas to set up new plantations in Georgia.[47] In 1791 the US cotton production was practically non-existent. Ten years later, in 1801, the US exported as much cotton to England as the entire British West Indies. In 1811, the US sold 43.9 million kilograms of cotton to England, 56 per cent of all cotton used by British mills.[48] The rise of what came to be known as "king cotton" continued for the entire first half of the nineteenth century, providing endless supplies to the fastest growing industry in human history.[49]

Two factors explain the enormous growth in US raw cotton production. First, the introduction of a new ginning machine by Eli Whitney in 1794 was as revolutionary for cotton growing as Arkwright's machines were for cotton manufacturing.[50] Whitney's saw-gin was a remedy for the labour intensity of cleaning green-seed cotton. Second, as the US production of raw cotton jumped from 334,000 bales in 1820 to 1.35 million in 1840, Alabama, Mississippi and Louisiana became the new 'cotton states'.[51] Hundreds of thousands of slaves, especially younger and stronger ones, had to leave their communities in Virginia, Maryland, Delaware, South Carolina and Kentucky as they were sold for work on the cotton frontier.

This 'industrialisation' of raw cotton production did not just affect the American South. European manufacturers were keen to find new and cheaper supplies in Africa and Asia. Long-staple American cotton was introduced in Egypt only in 1815 and became a major item of export in the 1830s.[52] Thanks to the decreasing cost of shipping, India became another potential area for cotton cultivation.[53] As part of a British imperial project of exploitation of natural resources, the English East India Company first, and later the British government, encouraged the setting up of cotton plantations (cultivated by waged labour) in

45 D. Gail Saunders, *Slavery in the Bahamas, 1648-1838* (Nassau: Media Publishing, 1985), 27

46 *Ibid.*, 26.

47 Howard Johnson, *The Bahamas: From Slavery to Servitude, 1783-1933* (Gainesville: University Press of Florida, 1996), 72.

48 Jaquay, "Caribbean Cotton," tables 10 and 12.

49 Eugene R. Dattel, *Cotton and Race In the Making of America: The Human Costs of Economic Power* (Chicago: Ivan R. Dee, 2009), 30-1. See also Sven Beckert, *Empire of Cotton: A Global History* (London: Vintage, 2015).

50 Henry Hobhouse, *Seeds of Change: Five Plants that Transformed Mankind* (London: Counterpoint, 1985), 187-88.

51 Paul E. Johnson, *The Early American Republic, 1789-1829* (Oxford: Oxford University Press, 2006), 90.

52 Egypt emerged as an important supplier of raw cotton only in the second half of the nineteenth century and in response to the productive crisis caused by the American Civil War. E. J. R. Owen, *The Middle East in the World Economy, 1800-1914: A Study of Trade and Development* (Oxford: I.B. Tauris, 1993), 69.

53 Deschamps, Louis, *Le Coton, études élémentaires sur la plantation, la culture et la production de cet arbuste, par L. Deschamps...* (Paris, 1884?), 70 and 75.

South Asia, a project that came to bear results only after 1860.[54]

Re-weaving the Narrative: Cotton, Modernity and Manufacturing

I put forward the argument that cotton became revolutionary not simply via the application of machinery, but because machinery and cotton *together* allowed for a tremendous expansion of production. This could have not been achieved by any other natural fibre. The revolution in manufacturing in England and elsewhere in Europe stemmed from a search to replace Indian products to satisfy increasingly demanding consumers. It was made possible by abundant raw material supplies from the America. What is now called 'the industrial revolution' was a 'wave of cotton', not a 'wave of gadgets' (to use Ashton's famous expression). If machinery were applied (as eventually they were) to wool or linen, the results would have been much more modest because the elasticity of supply for raw cotton remained very high.

Outcomes – as we know – were prodigious. Cotton, a fibre that in the mid-eighteenth century accounted for a tiny percentage of Europe's textile production, by the early decades of the following century had become the most important textile in the West, characterised by new mechanised and urbanised structures of production. Historically, no other area of the world had ever so radically changed its manufacturing economy, transforming a previously minor sector into the largest of its industries. In Britain where cotton had accounted for just 2.6 per cent of value added in industry in 1770, by 1831 had reached 22.4 per cent.[55]

Historians have written copiously on the process of industrialisation that affected cotton textile production in Europe at the end of the eighteenth century. A series of mechanical inventions starting with John Kay's flying shuttle (1733), and followed by John Wyatt and Lewis Paul's spinning frame (1738), James Hargreaves's spinning jenny (1765, patented 1770), and Richard Arkwright's waterframe (1767, patented 1769) came to 'revolutionise' manufacturing, allowing for the production of cheap and high-quality cotton textiles in Europe.[56] Already in 1793 a committee of the English East India Company commented upon the fact that "The slow Progress of an Indian Manufacture, unaided by Machinery, will require Ten, Twelve, perhaps Fifteen Persons to perform the same Work which a single British Manufacturer can execute, assisted as he is by numerous Inventions and Improvements".[57]

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54 William Sandford, *On Cotton Growing in Turkey and Syria* (London, 1862), 9.

55 N. F. R. Crafts, *British Economic Growth during the Industrial Revolution* (Oxford: Oxford University Press, 1985), 17. Still in 1975 the consumption of cotton alone surpassed that of all other fibres taken together. Douglas A. Farnie, "The Role of Merchants as Prime Movers in the Expansion of the Cotton Industry, 1760-1990," in Douglas A. Farnie and David J. Jeremy (eds.), *The Fibre that Changed the World: The Cotton Industry in International Perspective, 1600-1990s* (Oxford: Oxford University Press and Pasold Research Fund, 2004), 24.

56 Patrick K. O'Brien, "The Micro Foundations of Macro Invention: The Case of the Reverend Edmund Cartwright," *Textile History*, 28: 2 (1997), 201-33.

57 *Report of the Select Committee of the... Directors of the East India Company, Upon the Subject of the Cotton Manufacture of this Country* (London, 1793), 6.

Yet, it is incorrect to read this industrial transition as a new chapter in the history of global transformation, disconnected from what we have seen so far. The trajectory of economic development that produced swathes of factories and chimneys in central and northern England at the end of the eighteenth century, started a long time before in remote islands of the Atlantic, on the coasts of the Indian peninsula and the commercial ports of Southeast Asia.[58] Patrick O'Brien, for instance, although sceptical about the direct contribution of trade on British industrialisation, admits that "without the discoveries and expansion of European power into Asia, Africa, and the Americas… Europe's potential for further and even more rapid advance – based upon indigenously generated science and technology – could have been restrained".[59]

Economic historians in recent years have underlined how industrialization cannot be reduced simply to the application of more efficient technologies but required suitable factor endowments and institutions, and efficient factor and commodity markets.[60] It was the combination of abundant raw materials, new technologies and new markets that allowed the production of good-quality cotton cloth for the first time in Europe.

Perhaps it is worth stepping back to avoid becoming teleological. Opportunities are not necessarily picked up. A question to be asked is therefore why Europeans decided to manufacture cotton cloth in Europe when they had ready access to supplies of cheap Indian cloth. Legislation might have played a part in this as the banning of Indian cloth created an incentive to manufacture similar goods at home. Protected from competition and with easy access to the American and African markets, European entrepreneurs developed a calico printing industry and later, through innovations in spinning and weaving, were able to perform the entire process of production.[61] Yet it was not just a matter of economic protectionism. Indian cotton textiles generated enormous fascination among European craftsmen and entrepreneurs about the ways in which they were made.[62] Late seventeenth-century reports on India such as the memoir by the Frenchmen George Roques included passages on textile spinning and weaving and especially the finishing stages of calico painting and printing.[63]

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58 I.G. Simmons, *An Environmental History of Great Britain from 10,000 Years Ago to the Present* (Edinburgh: Edinburgh University Press, 2001), 144-45.

59 Patrick K. O'Brien, "European Economic Development: The Contribution of the Periphery," *Economic History Review*, 35: 1 (1982), 1-18.

60 See in particular Tirthankar Roy, "Knowledge and Divergence from the Perspective of Early Modern India," *Journal of Global History*, 3: 3 (2008), 361-87. There has been a strong debate around Robert C. Allen's *The British Industrial Revolution in Global Perspective* (Cambridge: Cambridge University Press, 2009) in which he proposes a rather narrow explanation of the phenomenon of industrialization based on technological innovation. This was prompted by wage differentials across different world areas.

61 Giorgio Riello, "Asian Knowledge and the Development of Calico Printing in Europe in the Seventeenth and Eighteenth Centuries," *Journal of Global History* 5: 1 (2010), 1-28

62 Maxine Berg, "Asian Luxuries and the Making of the European Consumer Revolution," in Maxine Berg and Elizabeth Eger (eds.), *Luxury in the Eighteenth Century: Debates, Desires and Delectable Goods* (Basingstoke: Palgrave, 2003), 229.

63 Indrani Ray, "Of Trade and Traders in the Seventeenth-Century India: An Unpublished French Memoir by Georges Roques," in Lakshmi Subramanian (ed.), *The French East India Company and the Trade of the Indian Ocean: a Collection of Essays by Indrani Ray* (New Delhi: Munshiram Manoharlal Publishers, 1999), 1-62.

Additional reasons to manufacture cottons in Europe were triggered by the fact that consumers did not always receive the design and colours that they wanted. Relying on an importation process that took the best part of two years from the moment when orders were placed to when the Indian cloth reached Europe, it was unlikely that cotton could respond to fashion changes of a seasonable nature. Moreover, the Indian producers had little understanding of the tastes and requests of European consumers. A letter from a factor (an employee based in India) of the French East India company explained that the handkerchiefs and other chintzes requested from France would be made according to the design sent to India but that although "we have already ordered them from the calico painters, we won't be able to send them to you soon".[64]

Production in Europe meant the ability to modulate supply and respond to consumer demands. By the late eighteenth century, European producers could manufacture not just calicos and chintzes but also fine muslins. One commentator observed that these changes were brought about by machinery and sufficient supplies of cotton "but also from the circumstance of the foreign growths being best adapted to the fine fabrics of muslins, which have of late made so considerable a progress; and which is so exceedingly important in a national point of view, as to produce in many instances from 5 to 10,000 per cent. on the value of the raw material, *and this for labour alone*".[65] Next to technologies, supplies of raw materials and access to markets were fundamental for the global success of cotton textiles.

Conclusion: Cotton and the Modern World

This paper has argued that the 'modernity' of cotton should not just be interpreted in the commodity's ability to gain global markets in the early modern period. The global appeal of cotton textiles prompted intense import-substitution processes across the world and in Europe as well. This eventually led to a shift (from India to Western Europe) and reconfiguration (from manufacturing to industry) of this key sector in the early modern world economy. Yet this story of industrialisation and divergence between Asia and Europe is also one of restructuring of what we might call a 'global commodity chain', to borrow an expression used by recent contemporary theorisation on commodity analysis (Figure 2).[66] Cotton textiles became the first commodity whose chain was global. The degree of geographic proximity between raw material production and manufacturing as performed in India (what we might call 'The Old Cotton System'), came to be replaced by a new

64 *Correspondance du Conseil supérieur de Pondichery et de la Compagnie, 1726-67, vol. 4: 1744-49*, edited by A. Martineau (Pondicherry: Société de l'Histoire de l"nde Française, 1920-30), 75.

65 *Observations on the Advantages Which this Country Derives from a Free and Unfettered Importation of the Raw Material of Cotton Wool* (London, 1789), 2.

66 See in particular: Steven Topik, Carlos Marichal and Zephyr Frank (eds.), *From Silver to Cocaine. Latin American Commodity Chains and the Building of the World Economy, 1500-2000* (Durham: Duke University Press, 2006); Michael L. Dougherty, 'Theorizing Theory: Origins and Orientations of Commodity Chain Analysis', *Global Studies Journal*, 1: 3 (2008); Jennifer Bair, 'Global Commodity Chains: Genealogy and Review', in Jennifer Bair (ed.), *Frontiers of Commodity Chain Research* (Stanford: Stanford University Press, 2008), 1-15.

transcontinental system in which raw materials from the Americas were used to support locally-concentrated production in Western Europe for global markets ('The New Cotton System'). This, however, had enormous consequences not just in Western Europe (the rise of a factory system and industrialisation) but also in the Americas (plantation system, slavery, ecologic impasses, etc.), and in Asia (de-industrialisation and market expansion).

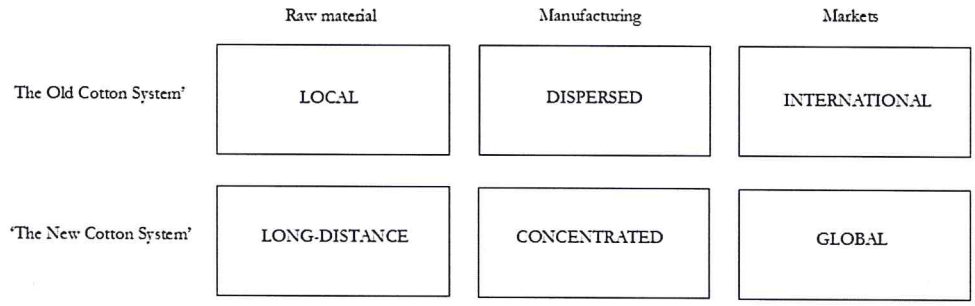

Figure 2. The 'Old' and 'New' Cotton Systems.