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Global goods and their impacts on society, economy, and environment: an analysis from the Early Modern Age to Contemporary Times

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ABSTRACT

Questa tesi di laurea magistrale, dal titolo " The Global Goods and Their Impact on Society, Economy, and Environment: Analysing the Phenomenon from the Early Modern Age to the Contemporary Age" si sviluppa principalmente intorno al fenomeno dei cosiddetti "global goods", ovvero quella categoria di beni che nel corso della storia moderna e contemporanea non solo hanno funto da mezzo di collegamento tra i "quattro angoli del mondo", ma sono stati altresì capaci di generare, sull'onda del fenomeno emergente della globalizzazione e delle sue varie ondate, un impatto senza precedenti in ambito sociale, economico e ambientale, apportandovi profondi cambiamenti.

Lo scambio di beni su scala mondiale nel corso della storia ha avuto, di fatto, un ruolo significativo nel cambiare molti aspetti della società, dell'economia e dell'ambiente. Questa ricerca intraprende un esame approfondito del concetto di merci globali e delle ripercussioni notevoli che hanno avuto sulla società, sull'economia e sull'ambiente. Partendo da un'indagine sulle origini storiche di questo fenomeno, si analizzerà la sua progressione attraverso i diversi periodi storici per poi culminare in un'approfondita panoramica dei suoi impatti.

Il presente studio si articola principalmente su tre capitoli, seguiti da una sezione conclusiva.

Partendo dal Capitolo I, constateremo che la prima età moderna è stata segnata da una significativa trasformazione dell'arena globale, con la nascita di un mondo più integrato. La scoperta di nuove rotte marittime, inaugurate da importanti esploratori come Colombo e Vasco De Gama, ha facilitato lo sviluppo di connessioni globali. Questo capitolo esaminerà i numerosi processi che hanno svolto un ruolo determinante nella creazione di un mondo globalizzato, gettando le basi per lo scambio globale di merci.

Nel Sottocapitolo intitolato "Empire Building and Expansionism", analizzeremo come le maggiori potenze europee della prima età moderna, quali gli spagnoli, i portoghesi, gli inglesi e gli olandesi, aspirassero fortemente all'espansione. Infatti, le suddette nazioni ambivano alla conquista di territori remoti, inaugurando un periodo caratterizzato dalla costruzione di imperi e dal continuo espansionismo territoriale. Questa prima parte vuole esaminare l'ampia incidenza che tali processi di espansionistici ebbero sulla circolazione di beni a livello mondiale.

Nella sezione intitolata "The Commercial Revolution" osserveremo e analizzeremo l'ascesa dell'economia capitalista nel continente europeo durante la prima età moderna e i profondi cambiamenti che ha innescato nei meccanismi del commercio globale. Questo sottocapitolo si propone di fornire un'analisi della rivoluzione commerciale, sottolineando la sua importanza nel migliorare il flusso mondiale di merci e nel gettare le basi dei sistemi economici contemporanei.

In seguito, dimostreremo che l'epoca in esame è stata caratterizzata da grandi progressi scientifici, con un'enfasi particolare sulle innovazioni nel campo della navigazione e della cartografia. Questi cambiamenti sono stati fondamentali nel favorire il commercio a lunga distanza. Inoltre, le conoscenze

sulla geografia terrestre hanno svolto un ruolo decisivo nel facilitare la scoperta di rotte commerciali fino ad allora sconosciute. Questa sezione si pone l'obiettivo di far luce sui progressi in campo scientifico che hanno avuto un ruolo fondamentale nel consentire l'esplorazione e il commercio a livello globale.
Infine, vedremo come la caccia a rotte commerciali alternative verso l'Asia e le Americhe abbia portato all'esplorazione e alla conseguente identificazione di regioni precedentemente inaccessibili. Questa sezione discuterà l'importanza di queste scoperte nell'espansione del commercio mondiale di beni, processo che ha portato alla diversificazione nella varietà di merci scambiate.

Spostandoci al Secondo capitolo di questa tesi, parleremo di come le città portuali abbiano svolto un ruolo cruciale come punti nevralgici all'interno delle reti commerciali globali, funzionando come arterie principali per lo scambio intercontinentale di merci. In questo capitolo si sottolineerà l'importanza capitale delle città-Porto nel consentire il flusso di merci a livello internazionale.
In seguito, vedremo come nel corso della prima età moderna alcune merci siano divenute protagoniste assolute all'interno della rete del commercio globale. Esamineremo l'importanza dell'oro, dello zucchero e del cotone come agenti catalizzatori del commercio globale, esplorando anche la loro circolazione transcontinentale e le loro profonde implicazioni sociali, economiche e ambientali.

Per quanto riguarda il capitolo finale di questa tesi, l'attenzione si sposterà sul XIX secolo, in quanto è stato un periodo caratterizzato da significative trasformazioni nelle dinamiche della globalizzazione, guidate soprattutto dall'avvento dell'industrializzazione e dai progressi tecnologici. Il presente capitolo si propone di esaminare questi sviluppi e il loro impatto notevole sul commercio internazionale di beni, che in seguito ha portato a un'importante riorganizzazione dell'economia globale.

A seguire, discuteremo i modi in cui i progressi tecnologici del XIX secolo abbiano rivoluzionato l'estrazione e la circolazione dei beni. In questa sezione si prenderà in esame il ruolo del cobalto, del petrolio greggio e dell'oro in questo contesto, dimostrando come queste materie prime abbiano contribuito a formare il mondo contemporaneo grazie al loro impatto di ampia portata su molti settori, su tutti quelli economico, sociale e ambientale.

In ultima, nella sezione conclusiva, cercheremo di stabilire dei collegamenti tra l'evoluzione storica del commercio globale di merci e i suoi effetti a lungo termine sulla società, sull'economia e sull'ambiente. Analizzando il complesso rapporto tra nazioni, popoli e risorse, speriamo di fornire preziose nozioni sul fenomeno delle merci globali, chiarendone il significato nell'odierna realtà globalizzata. Infatti, con questo lavoro si intende ampliare la nostra consapevolezza circa il fenomeno dei beni globali ed i loro molteplici impatti, perlopiù duraturi, partendo da tempi remoti per poi provare ad innescare, in tutti noi, una riflessione collettiva circa lo stato attuale della questione in una dimensione fortemente interconnessa, come quella in cui viviamo.

INTRODUCTION

This Master's thesis titled "The Global Goods and Their Impact on Society, Economy, and Environment: Analysing the Phenomenon from the Early Modern Age to the Contemporary Age" principally evolves around the phenomenon of so-called 'global goods', in other words, that category of goods that in the course of modern and contemporary history have not only acted as a means of connection between 'the four corners of the world', but have also been able to generate, on the back of the emerging phenomenon of globalisation and its various waves, an unprecedented impact in the social, economic and environmental spheres, bringing about profound changes therein.

In fact, the trade in goods on a worldwide scale has had a significant role in changing many aspects of society, economy, and the environment throughout history. This study undertakes an extensive examination of the concept of global goods and its significant implications for society, the economy, and the environment. The exploration starts with an investigation into the historical origins of this phenomenon, assessing its progression through several periods, and culminating in an in-depth overview of its impacts.

This study mainly articulates in three chapters which are followed by a concluding section.

Starting with Chapter I, we will see that **t**he Early Modern Age was marked by a significant transformation in the global arena, as it saw the rise of a more integrated globe. The establishment of novel maritime passages, pioneered by notable explorers like Columbus and Vasco De Gama, facilitated the development of global connections. This chapter will examine the many processes that have played a significant role in the establishment of a globalised world, laying the foundation for the global exchange of products.

In the subchapter entitled "Empire Building and Expansionism", we will analyse the ways in which major European powers of the Early Modern Age, such as the Spanish, the Portuguese, the British, as well as the Dutch, had massive aspirations for expansion. In fact, the forces in question pursued supremacy in distant territories, initiating a period characterised by the establishment of empires and the pursuit of territorial expansion. This section aims to examine the extensive influence of empire-building processes on the worldwide circulation of goods.

Then, in the section entitled "The Commercial Revolution" we will observe and analyse the rise of a capitalist economy in the European continent during the Early Modern Age and the profound shifts it triggered in the patterns of global commerce. This subchapter aims to provide an analysis of the

commercial revolution, emphasising its significance in improving the worldwide flow of products and establishing the groundwork for contemporary economic systems.

Consequently, we will demonstrate that the age under consideration saw significant scientific progress, with a particular emphasis on innovations in navigation and mapping. These developments were crucial in facilitating long-distance commerce. The development of new knowledge about the Earth's geography played an essential part in facilitating the discovery of until then unknown trade routes. This section aims to elucidate the scientific advancements that had a pivotal role in enabling global exploration and commerce.

Then, we will investigate how the pursuit of alternative trade routes into Asia and the Americas resulted in the exploration and subsequent identification of previously unexplored regions. This section will explore the importance of these findings in the expansion of worldwide commerce in goods networks and the diversification of the variety of commodities exchanged.

Moving on to the second chapter of this thesis, we will discuss how Port cities played a crucial role as critical points within the global commerce network, functioning as primary arteries for the intercontinental exchange of commodities. This section will emphasise the crucial significance of these cities in enabling the movement of international commodities.

Then, we shall see that during the Early Modern Age, certain commodities emerged as significant players in the global trade network. This section will examine the importance of gold, sugar, and cotton as pivotal catalysts for global commerce, while also exploring their transcontinental circulation and their profound social, economic, and environmental implications.

As for the final Chapter of this research, the focus will be placed on **t**he 19th century, as it was a time characterised by significant transformations in the dynamics of globalisation, mostly driven by the advent of industrialization and improvements in technology. This chapter seeks to look into these developments and their significant impacts on the international trade of goods, ultimately leading to an important reorganisation of the global economy.

Following that, we are going to discuss the ways in which technological advances in the nineteenth century, revolutionised the extraction and movement of products. This section will then consider the role of cobalt, crude oil, and gold in this setting, demonstrating how these commodities helped form the contemporary world through their far-reaching impacts on many domains including the economic, social and environmental.

In the Conclusion, we will draw connections between the historical evolution of the global trade in commodities and its long-term effects on society, the economy, and the environment. By

looking into the complex system of interactions between nations, peoples, and resources, we hope to provide valuable insights into the phenomenon of global goods, illuminating its significance in today's globalised environment. In fact, this study aims to expand our understanding of the global goods phenomenon including its enduring impacts on our linked world by examining historical events, prominent goods, and revolutionary eras.

CHAPTER I

1.1 The making of a globalized world through trade

The Early Modern Age marked a pivotal period in human history characterized by remarkable transformations in global commerce, trade, and expansionism. During this era, significant changes occurred in the way societies interacted and conducted business, ultimately leading to the creation of a globalized world. The exploration, colonization, and extensive trade networks established during this time played a crucial role in shaping the modern interconnected global landscape.

This chapter aims to delve into the dynamic processes that contributed to the creation of a globalized world in the Early Modern Age. It will explore the key factors driving exploration and expansionism, the development of international trade routes, and the impact of commercial activities on different regions of the world. By examining the interplay between commerce, trade, and expansionism, we can gain valuable insights into the forces that propelled societies towards global integration. One of the driving forces behind the globalizing trends of the Early Modern Age was the Age of Exploration. During this particular time in world history, Explorers from various European nations set sail to discover new lands, seeking new trade routes and resources. This period witnessed the voyages of notable explorers such as Christopher Columbus and Vasco da Gama, who opened up new horizons and established contact with distant regions. These explorations not only led to the expansion of trade networks but also triggered colonization efforts that produced profound and lasting impacts on societies across the globe.

The establishment of colonial empires and the rise of maritime powers were closely tied to the expansion of global trade. European nations, including Spain, Portugal, England, France, and the Netherlands, established trading posts, colonies, and territorial control in strategic locations worldwide. This expansionism facilitated the exchange of goods, ideas, and cultures between different regions, laying the foundations for the emergence of an Early globalized world.

Moreover, advancements in technology, particularly in navigation and shipbuilding, played a crucial role in fostering global connectivity. Innovations such as the compass, astrolabe, and caravel enabled sailors to navigate vast distances, facilitating long-distance trade and expeditions. Additionally, the emergence of joint-stock companies in the Netherlands as well as in Britain furnished the necessary financial means and organizational structures to support large-scale trading ventures.

Through an examination of historical accounts as well as scholarly research, this chapter will analyse the multifaceted nature of the Early Modern Age's globalized world. By exploring the interconnectedness between commerce, trade, and expansionism, we can gain a deeper understanding of the foundations upon which our modern globalized society is built. Furthermore, by tracing the historical origins of globalization in the Early Modern Age, we can gain insights into the complex interplay of economic, social, and political forces that shaped our modern interconnected world.

The debate around the phenomenon of globalisation and its actual beginning in the Early modern age continues to animate debates in many fields of knowledge. According to publishers, it appears to be a matter of fact that the term "globalization" is the term that is being used more frequently than any other in the print sector in both academic as well as non-academic contexts. This tendency comes as no surprise as, in accordance with the widespread sentiment among experts in the field, the time is high for historians to create new globalisation timelines.[1]

What should not be seen as a surprise instead, is the fact that economists and the public, based on the technological advances of the Industrial Revolution, traditionally assume as a matter of faith that the nineteenth century also represents the natural location to seek the roots of the present, globally interconnected market system. Yet global historians, who believe that the Industrial Revolution is not a precondition for intercontinental commodities trading, disagree with this viewpoint.[2]

In fact, according to Flynn and Giraldéz, a view that we may find ourselves to be in accordance with, the crucial aspect to consider when examining the onset of globalization is not the convergence or divergence of a given set of indices at a precise time. The focus instead, should be rather placed on people, goods and events that took place in one part of the world and that had lasting and widespread impacts on societies worldwide.[3] For instance, based on the views of Flynn and Giraldéz, what appears to be rather evidence, as already emphasised by many experts on several occasions, is the clear connection between the exchange of goods and the rise of globalisation as a phenomenon. As a result, through the international trade of such goods, the world has in a certain sense been unified. Testifying the paramount importance of global trade in goods in the emergence of globalisation is undoubtedly the contemporary world. Today, in fact, we live in a world that is fully submerged in the processes of so-called globalization, where everything is interconnected and there is a constant trade of things. One can obtain a wide range of products from the opposite side of the world even from the

[1] McCants, A. E. C. (2007). Exotic Goods, Popular Consumption, and the Standard of Living: Thinking about Globalization in the Early Modern World. *Journal of World History*, *18*(4), 433–462. http://www.jstor.org/stable/20079448, p. 435
[2] Ibidem, p. 436
[3] Flynn, D. O., & Giráldez, A. (2008). Born again: Globalization's sixteenth century origins (Asian/global versus european dynamics). *Pacific Economic Review*, *13*(3), 359–387. doi:10.1111/j.1468-0106.2008. 00403.x, p. 368

comfort of his own house. The world's consumer products are always readily available, and this ease of access is having many disastrous effects.

It is crucial, however, to note right away that an organism's birth, in our case globalization, is a requirement for its development. Globalization must also have seen onset as a requirement for evolution into the current stage of globalisation, just as a child's birth is a prerequisite for development into maturity.[4]

Once again, we think it is important to renew our emphasis on the geographical and economic linkages that gave birth to significant and unforeseen global transformations, starting from the sixteenth century and becoming the subject of investigation in several historical disciplines. The transformations we are talking about, have had such an impact on so many domains of society that their effects still characterize in many ways the contemporary world.[5]

When addressing an issue such as that of the so-called 'global goods' before proceeding to define such products and investigating their impacts in the social, economic and environmental spheres, it seems of paramount importance to shed light on why it is possible to already attribute the adjective 'global' to such goods and even talk about these commodities as being the true drivers of the process of globalisation as far back as in the Early modern age. In line with this reasoning and in accordance with Anne and McCants, in recent times the prevailing view that has been developing in the particularly dynamic subdiscipline of "global history" suggests that the long-distance trade of goods, capital, knowledge, and of tastes that we all know as a fundamental element of the current world is nothing but an old process.[6]

According to Parker, despite intellectuals have most frequently referred to the time frame between the 1400s and the 1500s as being the "age of discovery," throughout which Westerners commenced to explore and capitalise on lands in Asia, Africa, and America, empirical studies with regard to the past 25 years has demonstrated the fact that the period in question emerged upon extensive links between populations throughout Eurasia well before Vasco da Gama made landfall on Indian soil in 1498. A widely known event which occurred during the first meeting between Portuguese and Indian officials in the Indian city of Calicut exemplifies and attests to the incredible extent to which these intercontinental interactions have expanded. The Portuguese sailor was introduced to a group of North Africans who conversed in Castilian and even Genoese, which are tongues spoken in the

[4] Ibidem, p. 362
[5] Ibidem, p. 372
[6] McCants, A. E. C. (2007). Exotic Goods, Popular Consumption, and the Standard of Living: Thinking about Globalization in the Early Modern World. *Journal of World History*, *18*(4), 433–462. http://www.jstor.org/stable/20079448, p. 433

Spanish and Italian peninsula. This recognition, along with the presence of Africans proficient in European languages in the spice lands, highlights the multicultural character of Asian marketplaces along with the widespread practice of cross-continental movement before European expansion.[7]

However, the intercontinental trade in goods such as gold, sugar and cotton that rose in the Early Modern Age from approximately 1400 to 1800, brought the emergence of the world's first global economy, with Europe, Africa, Asia and the Americas being linked through trade. The term 'global goods', which will be widely employed throughout our research, is used to refer to a particular category of goods that in the course of both modern and contemporary history, not only played a significant role in facilitating interconnectivity between 'the four corners of the world', generating and characterizing the phenomenon of early globalisation and its further stages but most importantly, in the interests of our research, this flow of goods was also able to produce a set of unprecedented impacts in the social, economic and environmental spheres, bringing about profound changes therein.

In accordance with Flynn and Giraldéz, we maintain the line that suggests that from the sixteenth century onwards, or even a few centuries prior, global trade and the spread of flora and fauna occurred simultaneously, resulting in significant physical transformations of regions and land masses. These ecological changes on a global level played a massive role in demographic revolutions across the modern world. Moreover, as a consequence, global trade activities resonated across centuries, bringing about cultural, economic, environmental, and demographic transformations.[8]

Keeping our sight on the rise of a model of global trade, we think that the emergence of such intercontinental trade was due to several factors, including the development of new transportation technologies, the rise of European maritime powers, and the discovery of new markets. The development of new technologies, such as the compass, the astrolabe, and the caravel, were key, as they allowed sailors to navigate the world's oceans more efficiently.

These pre-conditions allowed the sixteenth century to witness the connection of all densely populated landmasses, facilitated by military might and driven by limited market access.[9]

During this period in world history indeed, there was a significant cultural, political, military and most importantly economic exchange. However, and it is crucial to underline it, it was not a narrative of one region of the globe overpowering the others. Instead, a multitude of actors including individuals, businesses, tribes, states, and empires engaged in both conflict and collaboration,

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[7] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p. 1
[8] Flynn, D. O., & Giráldez, A. (2008). Born again: Globalization's sixteenth century origins (Asian/global versus european dynamics). *Pacific Economic Review*, *13*(3), 359–387. doi:10.1111/j.1468-0106.2008. 00403.x, p. 365
[9] Ibidem, p. 364

resulting in sustained contact between various regions of the world and ultimately culminating in the integration of global space.[10]

Worth highlighting is the fact that, between approximately 1250 and 1350, Asia experienced a relatively calm century, during which travellers from the Old Continent accompanied by evangelists including the Venetian Marco Polo as well as William Rubruck, travelled as far away as China. It is important to note the fact that also individuals from Arabia, India, China, Persia, and Turkey, travelled across the Silk Roads alongside popular explorers of the time comprising Ibn Battuta, which suggests the fact Westerners were not the sole population to explore uncharted territories.[11]

According to Janet Abu-Lughod, in fact, even as far back as the 13th century, there were nine distinct areas of exchange for goods, people, and ideas. One of these zones was located along the eastern coast of the Mongol-Yuan empire, extending from Beijing in the north to the South China Sea, linking the prosperous territories of the Southeast Asian Islands to the centres of power in China, Japan, and Korea. Other zones covered much of the Indian Ocean, the Silk Road, Central Asia, Northern Africa, the Mediterranean, northern Europe, and other regions.[12]

However, the emergence of European maritime powers such as Portugal, Spain, the Netherlands, France and England, was crucial in providing the necessary capital, political power, and naval technology to undertake long-distance trade. The discovery of new markets, such as the Americas and Asia, provided a source of new commodities and consumers.

Starting from the sixteenth century, we observe not only the exchange of high-value luxury goods for the affluent markets but also an increasing trade of commodities in bulk across vast distances. In the Ottoman Empire, for instance, the consumption of exotic luxuries and commodities that were utilised in daily life thrived. The Safavid Empire in present-day Iran was also a significant hub in the worldwide flow of commodities. Additionally, Europe received substantial quantities of Asian goods through various chartered companies such as the English, the Dutch, and the French, as well as smaller companies like the Swedish, Danish, and Ostend companies.[13] Chartered companies, in fact, played a significant role in connecting the world through the exchange of goods and commodities from the 1300s onward. These companies were granted a royal charter, which provided them with a monopoly on trade in a specific area or with a specific group of people. One of the most famous

[10] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p. 3
[11] Ibidem, p. 2
[12] Gerritsen, Anne, and Giorgio Riello. *The global lives of things: the material culture of connections in the early modern world*. Routledge, 2015, p. 3
[13] Ibidem, p. 4

chartered companies was the Dutch East India Company, which was established in 1602. This company was granted a monopoly on trade with Asia and the Indies and played a crucial role in connecting Europe with these regions. The Dutch East India Company established trading posts and colonies in places such as Indonesia, India, and South Africa, and it played a crucial role in the development of the spice trade. In a comparable fashion the English East India Company, which was founded in 1600, played a crucial role in linking Britain to Indian markets as well as the rest of Asia. The company established trading posts and colonies in places such as India and Singapore, and it played a crucial role in the development of the tea and opium trades. Other important chartered companies that helped connect the Early Modern World and that should be worth noting, are the Hudson's Bay Company and the Royal African Company. they were established to facilitate trade with specific regions of the world. The Hudson's Bay Company was established in 1670 to trade with the indigenous peoples of North America, while the Royal African Company was established in 1660 to trade with Africa. It appears to be rather important to also emphasise that those who, as we do, believe that intercontinental trade in goods in the early modern era was the real factor in the emergence of an early form of globalisation cannot simply praise "Euro-Asian and Euro-American trade" as the sole vector of this early process of global interconnection because, as we have already emphasised and as also accurately pointed out by Flynn and Giraldéz, strong ties between the American and Asian continents via the Pacific Ocean and the various global ties with the African continent also played a significant role in this early global interconnection.[14]

As a consequence of these distant connections with both the African and Eurasian continents, a vast array of flora from these regions spread to the Americas. We could discover commodities such as scallions and olives as well as common fruits such as bananas, grapes, peaches, pears, and oranges. Cattle and horses appeared in the New World for the first time in the sixteenth century. In this instance, chocolate represents a broader category of products unavailable to Westerners before 1500, such as coffee from the Muslim World and tea from China. Chocolate illustrates much more plainly the extent to which these products from the New World were novel to Europeans. During the preceding five centuries, they have evolved into global commodities that are grown, traded, and devoured throughout the contemporary world. Their ability to be grown in plantations, as opposed to being merely transplanted to other continents, was essential to their success. This is precisely what occurred with sugar, a traditional Old World sweetener that was initially combined with bitter cacao seeds to satisfy European appetites. Numerous regions of the New World experienced social, economic, and environmental transformations as a result of sugar. As, by the seventeenth century, it

[14] Flynn, D. O., & Giráldez, A. (2008). Born again: Globalization's sixteenth century origins (Asian/global versus european dynamics). *Pacific Economic Review*, *13*(3), 359–387. doi:10.1111/j.1468-0106.2008. 00403.x, pp. 362-3

was being grown on vast plantations with African slave labour.[15]

The importance of "things," such as goods, valuable materials, and even works of art, in illuminating the development of world connections in the Early Modern Period, and the extent to which goods and things circulated in those times, cannot always be denied. The masterpiece of the Spanish artist Antonio De Pereda demonstrates this. Indeed, the artist's work titled "Still life with an ebony chest" depicts various objects arranged on a surface covered with a red velvet cloth. The focal point of the still life is the ebony trunk in the centre of the painting. A piece of woven fabric drapes from the upper drawer of the chest. On top of the trunk are five vessels of various shapes and materials, including two red ceramic vessels with quartz decorations from Mexico, a gourd-shaped vessel with silver mounts, a clear glass vessel, and an Italian basin. On one side of the chest is a chocolatière with a wooden tool for stirring chocolate, and on the other is a Talavera pottery container with two handles. In the foreground are round wooden cases containing chocolate, bread, cookies, and cheeses; on the left is a silver tray with three glasses and a spoon. A tiny blue-and-white Delftware cup, a small lusterware basin from Manises, and a taller cup with a spreading, damaged mouth rim and fine underglaze blue decoration are displayed on the tray. The painting emphasises the wide variety of shapes, sizes, materials, textures, and hues used, and the evidence of use, such as the broken biscuits, shredded cheese paper, and chipped porcelain cup, contribute to the scene's realism.[16]

The fact that one can almost reach out and touch the objects in the painting suggests that these objects, or rather these products, were already prevalent and extensively utilised. We are talking about the stirring of chocolate, the consumed food, the filling of jars, and the opening and closing of compartments. Obviously, if one wants to focus on the painting, the objects appear to be yearning to tell their own tale. Consequently, the response of any observer in front of this work of art is to ponder the source of all these disparate items. The fact that the artist was able to locate all of these products and use them as subjects in his painting demonstrates, once again, that at that time, each of these objects was already circulating in "certain cultural and historical circles," aided in large part by the combination of crave and demand, a certain social dynamism, and status, which generated revenue in certain social settings. Finally, by analysing this topic from a distinct perspective, we have gained a thorough understanding of the cross-regional interchange of people, ideas, and objects during the Early Modern period. In fact, the artefacts depicted in De Pereda's still life are part of a larger global movement of products. As a matter of fact, the objects depicted by De Pereda only represent a small portion of the immense variety of objects and commodities that were traded and exchanged during

[15] Gerritsen, Anne, and Giorgio Riello. *The global lives of things: the material culture of connections in the early modern world*. Routledge, 2015, p. 6
[16] Ibidem, p. 1

the early modern period. Tracing a historical chronology of such a global flow in commodities, we may notice that as early as the thirteenth century, Chinese traders in Southeast Asian islands and merchant communities traversing the Indian Ocean were involved in this type of commerce. Moreover, during the fourteenth century, Islamic merchants also traded along the Silk Roads. a few years later the Portuguese started their explorations in the second half of the fifteenth century, a time which has also seen the Spanish undertake expeditions to the Americas, the Dutch and English trading companies set foot in Asian seas, starting off the processes of territorial annexations and colonisations that have marked the subsequent centuries. All these phenomena have extensively contributed to connecting the Early Modern World and have also enabled the massive movement of goods over great distances.[17]

1.2 Empire Building and Expansionism

In discussing the extensive global circulation of commodities and individuals which has yielded substantial and enduring effects across the diverse facets of human existence, emphasis must be placed on the pivotal role of imperialistic dynamics in both enabling and propelling these transformations. Examining the genesis of this phenomenon has made it evident that the Eurasian processes of empire-building played a crucial role in establishing the foundations for and expediting the growth of long-range trade and the exchange of goods during the Early Modern era.

In fact, amidst the period labelled as the “time of the great explorations” that resulted in the conquest of the New World, as well as, in the aftermath of the same, the significance of the Pacific trade routes and the Atlantic ones that connected America with the East surpassed that of the traditional Mediterranean routes. This shift in importance was emblematic of a larger process, which was characterized by a reconfiguration of the global centre of power from the Mediterranean Sea to the Atlantic and the Pacific Oceans. This phenomenon posed a potential threat to the Mediterranean's economic and political prominence in the world. Because of the growing imperialistic attitudes adopted by European powers during the 16th century, there was indeed a transition in the nature of trade and commerce from a Mediterranean-centric focus to a more global orientation. Undeniably, this facilitated the emergence of a truly interconnected global economy. In fact, as we were anticipating, during this period, a host of European powers including Spain, Portugal, England, France, and the Netherlands established colonies and empires across the world, primarily through conquest and colonization. The Age of the Great Discoveries, also known as the Age of Exploration,

[17] Ibidem, p. 3

marked a period of global exploration and empire-building that spanned from the 15th to the 18th century.

The expansion of European overseas empires between the 14th and 17th centuries was largely due to the immense growth of state power, which was driven by several significant developments across the European continent. In the context of persistent clashes in addition to religion-based issues rulers together with representatives of government successfully navigated both ever-present challenges that confronted their power as rulers, specifically: the papacy as well as the wealthy. Secondly, significant innovations in the structure of European states endowed them with formidable military power, including advanced weaponry, a powerful army and navy, thereby bolstering their ability to extend imperial influence beyond their borders.[18]

In fact, during the Early Modern era, powerful monarchs such as Russian Emperor Peter the Great and Mughal Emperor Aurangzeb rose to power. These and other rulers of Asia, Europe, and Africa began to adopt increasingly centralized and bureaucratic governments. Some of these centralized governments created empires that functioned as major actors in modern economic, cultural, and biological interactions. A powerful state, led by royal officials, dictated policy, provided patronage, unleashed military power, and enforced a legal system that enabled merchants, immigrants, and missionaries to seek wealth abroad. Growing trade, resource exploitation, widespread immigration, and the dissemination of religious ideas furthered the interests of nations that controlled vast empires around the world, thus facilitating the work process. Imperial rule extended beyond Europe, encompassing Islamic regimes in West Asia and North Africa (Ottoman Empire, Safavid Empire, Mughal Empire), China and its Asian territories, Russia, and vast territories in Eastern Europe and Siberia. Other significant empires included the Incas of Peru and the Aztecs of Central America, the Caliphate of Sokoto, and the Buganda, Hoyo, Asante, and Rozwi kingdoms. While these conditions were essential, they did not foster global cross-cultural exchange and engagement to the extent of the Eurasian Empire.[19]

An understanding of the process of empire-building in the Early Modern Age necessitates an examination of several significant phenomena. The first of these is an overall demographic expansion. However, this turn in the growing number of people in the Old Continent follows as a direct consequence of what happened in the century prior, that is the 14th century, which registered a demographic catastrophe in the form of the Black Death, that decimated nearly half of Europe's population. However, in the 15th century, as we were highlighting shortly ago, we begin to witness a

[18] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p.15.
[19] Ibidem, p. 14

renaissance of activities and a significant growth in the population. This expansion had far-reaching consequences, as it placed a strain on Europe's resources and created a steadily growing demand for consumer and luxury goods, as well as precious metals, from both the European populations and governments. In response, European major powers embraced expansionist agendas to secure new sources of valuable commodities.

Driving the process of European empire-building were several factors, among which the desire for wealth and resources was undoubtedly the most important. At the time, European powers besides facing demographic difficulties, due to the quick growth of their populations, were facing economic uncertainties as well. This situation brought many of them to launch a quest for new sources of valuable commodities, such as gold, silver, spices, textiles, and many other commodities which they could use to increase their wealth and power. To achieve this end, they established colonies and empires around the world primarily through conquest and colonization. An aspect that, to us, appears noteworthy underlining is the fact that European powers faced very little to any sort of opposition in their expansionist quests for riches and lands.

As a matter of fact, the uncontested dominance of major European powers at home and abroad was closely linked to their ability to field and deploy efficient military forces. This transformation in the military capabilities of the major Old-World powers, including the Portuguese, the English, the Dutch, the French, Prussia, the Spanish, and Austria, is often referred to as a "military revolution" by many scholars. Improvements in fortifications, artillery, and troop strength have resulted in armies and fleets with far greater deadly potential than had been available during medieval combat.

The search for more destructive weapons was necessitated by the development of increasingly effective defensive fortifications, most notably the star-shaped layout and low, thick walls of the "trace italienne." Military engineers utilized superior metallurgy to create bigger and better weaponry, which was also used by shipbuilders to equip ships with a large number of powerful weapons. Governments enrolled a significant number of men for infantry and artillery duty, training them for countless hours to promote comradery on the battlefield and deference to superiors. By the 17th century, there were many thousands of military units.

Furthermore, to increase their military strength, a significant amount of money was required to build more ships, forts, weapons, training facilities, hospitals, and troops. Consequently, a significant bureaucracy had to be established to collect, account for, and distribute the money raised through taxation and debt financing.[20]

[20] Ibidem, p. 16

During the Age of the Great Discoveries, a significant factor driving the empire-building process was the desire to spread Christianity. In fact, many European powers were motivated by religious fervour and sought to expand and even force their faith upon the territories they conquered. Missionaries accompanied many of the exploratory expeditions, and this often-made Christian missions to be a key component of the empire-building process.[21]

An example of the striking role played by religion in supporting and being used as a justification for expansionism and colonisation is provided by the Portuguese ruler Henry, who holds the title of Grand Master of the Order of the Christ, a religious and military congregation that inherited the role and substantial wealth of the now extinct and well-known Order of the Templars after its suppression throughout Europe in 1312. Moreover, in 1454, he even obtained a papal bull from Niccolò V, which not only granted him certain privileges but also recognized him as "miles Christi", meaning a person dedicated with scrupulousness to the task of defeating the infidels and converting newly encountered populations.[22]

Empire-building initiatives during this era required substantial investments, as they involved a wide range of activities such as exploration, conquest, colonization, and trade. Governments had to seek ways to gather sufficient capital to sustain these endeavours. The investments made it possible for explorers like Christopher Columbus, Vasco da Gama, and Ferdinand Magellan to lead expeditions to discover new lands and establish trade routes. Conquistadors like Hernan Cortes and Francisco Pizarro led military campaigns to conquer and subjugate native peoples in the Americas. European powers were explicit about their desire to establish colonies and trading posts in strategic locations around the world to control trade routes and extend their political influence. Indeed, that is what can be inferred from the words of the Portuguese King, Manuel, who, after finding the way to finally access the spice trade, brimming with contentment and a sense of accomplishment, communicates with the Spanish monarchs, Ferdinand and Isabella, as if offering them a blueprint for the two colonial powers to emulate. He suggests that the lucrative spice trade, formerly under Moorish control, should be entrusted to the people and vessels of their kingdoms, enabling all of Christianity in this region of Europe to obtain spices autonomously.[23]

To regulate trade in their homeland's best interests, European governments implemented mercantilist strategies. For instance, the British government implemented the so-called Navigation Acts in the mid-17th century and 1660s, which forbade colonial merchants from buying products and services from parties who were not English. Mercantilism played a critical role in fostering commerce and

[21] Ibidem, p. 13
[22] Antinucci, Francesco. *Spezie: una storia di scoperte, avidità e lusso*. Gius. Laterza & Figli Spa, 2014, p.75
[23] Ibidem, pp. 82-83

establishing maritime empires. When kings, representatives of States, and lawmakers partnered with economic elites to carry out colonial endeavours, state construction, territorial expansion, and maritime business enterprises remarkably strengthened one another.

European empires' foundations were laid in two main oceans, namely the Indian and the Atlantic. Throughout the 16th century, Portuguese and Spanish merchants established fortified trading ports around the Indian Ocean's diverse coasts. During the seventeenth and eighteenth centuries, the Dutch, English, and French followed suit. Denmark also built a number of settlements in India beginning in the 1620s. The primary objective of most European imperial initiatives along Asian and African coasts was to control the spice trade and luxury commodities. In fact, as previously stated, the European arrival in Asia during the Early Modern period was initially motivated by the desire to bypass intermediaries in the spice trade. The Europeans established themselves in the region by leveraging their military superiority. Unlike in other regions of the world, European colonial powers did not initially exert political control over Asian nations. Instead, they focused on establishing themselves in commerce and utilized their advanced technology and military prowess to exert control over key commercial routes.

Conversely, European powers throughout the Atlantic followed a land-based plan based on extracting wealth from the ground and growing highly valuable commodity crops such as sugar, cotton, and tobacco. Throughout the 16th century, Spain and Portugal developed outposts in the Caribbean, as well as South and Central America.[24]

Moreover, the process of empire-building and expansionism undertaken by European countries during the Early Modern period led to the creation of vast trade networks that facilitated the exchange of goods and resources between colonies and the home country. However, in the pursuit of establishing large empires and trade networks, the interests of European states often came into conflict, resulting in hostilities and confrontations between them. This tendency towards rivalry and competition appears to be an inherent feature of European powers, which has a long history of commerce-driven wars. This warrior mindset was evident in the behaviour of European explorers, who were willing to launch wars against other Europeans and indigenous communities in pursuit of commerce and territorial expansion. To successfully expand their empires, European states had to engage with a wide range of financial elite groups, such as traders, businesses, credit institutions, and investors, to finance laws and policies designed to compete globally. The collaboration between companies and governments was a crucial element of foreign colonial and commercial activities. Notably, several economists, including Thomas Mun in England and Jean Baptiste Colbert in France,

[24] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p.18.

known as mercantilists, advocated for enhancing the productive capacity of foreign colonies to promote a nation's economic development. According to mercantilist theory, states should assume the primary responsibility for controlling commercial activity by implementing regulations that increase exports while reducing imports. The mercantilists argued that the primary goal of trade was to increase national wealth, which was measured by the amount of precious metals such as silver and gold bullion held by the government as reserves. Therefore, mercantilism played a significant role in shaping European states' economic policies and attitudes towards foreign trade and colonialism.[25]

Spain for instance established colonies in the Americas that produced valuable commodities like gold, silver, and tobacco. These goods were then shipped back to Spain and traded with the rest of the world. For instance, after Spain emerged as a major power in the Pacific Ocean by consolidating its hold on the Philippines and their capital Manila, it set up a yearly shipping service, referred to as the Manila galleon, that traversed the vast expanse of the Pacific from Mexico to Manila, transporting silver from the New World to the Old.[26]

Owing to Spain having a monopoly over one of the most demanded precious metals at the time, it became a vital trading partner for China owing to its provision of silver. While European countries generally expressed great interest in the luxury goods and craftsmanship of China, Chinese and Japanese markets did not exhibit any enthusiasm for other European merchandise. The silver plate atop the table in the artist De Pereda's work of art just alludes to the aforementioned Spanish silver which, began to circulate across the Early Modern world around the final decades of the sixteenth century. The Iberians were in a position to benefit from indigenous assets, especiallythe bullion-rich mines throughout Potosì in the territory that is now Bolivia, as the Spanish dominion expanded into the Americas. The sliver that was extracted at Potosì was carried aboard Spanish galleons to a vast number of places including the European continent, Manila, the Philippines, the South China Seas, as well as the Indian Ocean.[27]

The dazzling silver plate on the table in De Pereda's artwork serves as further evidence of the fact, that European nations purchased huge amounts of commodities as well as merchandise from the Far East. The silver tray, therefore, reveals a massive worldwide network of commerce and trading, featuring Imperial Spain along with the late Ming and early Qing Chinese Empire serving as twin hubs.[28]

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[25] Ibidem, p.17
[26] Ibidem, p. 90
[27] Gerritsen, Anne, and Giorgio Riello. *The global lives of things: the material culture of connections in the early modern world*. Routledge, 2015, p. 4
[28] Ibidem

The goods from the Far East were so valuable that Portuguese and Spaniards acquired large amounts of products, especially porcelain and supplied it to customers in the Americas, as well as on the African coastlines, and across Europe. This made the number of marketed potteries increase significantly after the Dutch, English, French, and Swedish commercial enterprises positioned themselves in different sites around Asia, generating speculation concerning the entire amounts of pottery exports with estimates ranging in the millions.[29]

Textiles and Fabric from the Eastern regions of nowadays India rather than those from the Western Indies (the Americas), for instance, became commodities with worldwide appeal. In fact, since antiquity, textiles have been the most widely traded goods, with the highest-quality silk fabrics being sourced from China and the finest cotton fabrics coming from India.[30]

Aiming to facilitate commerce, better connecting, and undertaking naval operations on a regular basis, European governments and commercial firms built and deployed an enormous number of vessels into both the Atlantic and Indian Oceans. Throughout the 17th century, the Dutch East India Company, for instance, had over a hundred ships operating in Asian waters. Eurasian expansionism, however, has a long history as it goes back decades if not even centuries before Da Gama set foot in Malabar in 1498. In fact, the domain of international commerce started having a significant impact on the worldwide circulation of goods and products in the first half of the sixteenth century. This phenomenon proved to be actually the case not just for Europe in particular but also for East and Southeast Asia, the Ottoman, Mughal, and Safavid Islamic empires, along the coastlines of Africa, the Americas, and Australasia.[31]

Beginning with China, we start to see Chinese traders in the Southeast Asian archipelago along with trader circles extending throughout the Indian Ocean through the 13th century, to Islamic merchants trading products all over the legendary Silk Road in the early fourteenth century, to the initial quests launched by the Portuguese crown in the last decades of the fifteenth century, to the Spanish operations across the regions of the Americas around the sixteenth, to the establishment of Dutch as well as English trading organizations within the Asian seas in the 17th century, to the achievements of the nineteenth century, commodities were transported over considerable distances.[32]

Furthermore, owing in large part to the relatively peaceful conditions that prevailed under the governance of the vast Mongol empire that help the famed “Silk Road” emerge as a significant factor in global trade and cultural exchange during the 14th and 15th centuries. During the 15th century,

[29] Ibidem, p. 5
[30] Ibidem
[31] Ibidem, p. 6
[32] Ibidem, p. 3

this period of relative stability was further enhanced by the establishment of the "Pax Mongolica", which facilitated the flow of trade and cultural exchange between the Western, Middle Eastern, and Far Eastern regions of the world. The Mongol Empire's expansion into Central Asia brought this region under its direct control, and its conquests further extended its influence across the Middle East, North Africa, and Central Asia. Moreover, ever since the 14th century, Portuguese merchants had hoped to establish a considerably faster all-water passage to Asian commercial cities. Moved by this endeavour, in 1415, King Joao I and his sons surrounded and seized the Muslim port city of Ceuta on Morocco's waters. It was on that occasion that the stories about the trans-Saharan gold trade's wealth were made known to Infante Dom Henrique. Following that, Henry became obsessed with accessing African riches, and also with discovering a much more direct route to accessing Asian goods and launching an offensive against Muslim empires. He advocated for naval expansion in the Atlantic and colonization of the African coasts.[33]

Throughout the years of rule of the monarch, Manuel I, he claimed to be the " Master of colonisation, of the seas, and commerce in the Middle East as well as in Eastern Asia." These endeavours had already been approved by the Catholic Church through the Treaty of Tordesillas in 1494. Alexander VI, who was the pontiff at the time, decided to establish a north-south demarcation in the Atlantic Ocean, so as to decisively partition the freshly found territories between the two Iberian powers: the Spanish and the Portuguese. As part of Tordesillas' attempt to prevent conflict between the Christian powers, Portugal was allocated the lands east of the border and Spain was allocated the lands west of the border. Portuguese commanders bombarded coastal towns during the first half of the sixteenth century in an effort to gain control of a number of strategic areas. Afonso de Albuquerque, the capable and brutal ruler, prepared the way for expansionism in Asia by taking Goa, Melaka, as well as Hormuz.[34]

The Portuguese empire was a state-run corporation known as the Estado da India, and it was governed by a viceroy in Goa. This same Estado built defended trading posts at strategic points along the ocean's coasts. Around fifty facilities, as they were known, spanned from Kilwa and Mombasa on the East African coast to Melaka on the Malay peninsula throughout the 16th century. Additional facilities were located in Nagasaki, Japan, Macau, China, and Goa, Cochin, and Diu, India. Once Miguel Lopez de Legazpi' conquered the Philippines for Spanish monarch around 1565, something that started in motion a protracted procedure to colonize the region, until then, the Portuguese would not face any European competition. Towards the end of the 16th century, the Estado had effectively

[33] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p.20.
[34] Ibidem, p. 21

integrated Portuguese tradesmen and government ministers into the Indian Ocean port city exchange network. The Estado, on the other hand, had contradicting results in monopolising the trade in the Indian Ocean as, the Portuguese monopoly in the Pacific and various trade routes in this part of the Early Modern World, during the sixteenth century, faced challenges from local traders in several ways including local Resistance and Armed Conflicts which allowed Indigenous communities and local traders to resist Portuguese control and influence via engagement in armed conflicts, attacks to Portuguese trading posts and disruption of their operations. Cooperation among Rival Powers also served as a means to counter the dominance of the colonisers, with Local traders forming alliances and cooperating with rival powers, such as the Ottoman Empire and regional kingdoms. These alliances aimed to protect their own interests and challenge Portuguese control over trade routes. The Development of Alternative Trade Routes was made with the above-mentioned aim, as local traders sought alternative trade routes to bypass Portuguese-controlled areas. Indigenous people also started exploring new sea routes, utilising inland trade networks, and establishing connections with other regions outside Portuguese control. Moreover, local traders also adapted their trading strategies to counter Portuguese restrictions. In fact, they started to employ smaller, faster ships that could evade Portuguese naval patrols, utilize local knowledge of currents and winds, and developed networks of hidden ports and smuggling routes. Through economic Competition instead, traders in the Pacific region competed with the Portuguese by offering lower prices, better quality goods, or unique products. They sought to attract merchants and divert trade away from Portuguese-controlled ports. Furthermore, they also made diplomatic Efforts to bring local powers to engage in diplomatic efforts to undermine Portuguese influence. Finally, they sought alliances with other European powers, negotiated trade agreements, and utilized diplomatic channels to challenge Portuguese monopolies. These factors collectively contributed to undermining Portuguese control and gradually eroding their monopoly in the region. For instance, traders in India took the opportunity to evade Portuguese authorities, Egyptian and Muslim rivals tormented the Estado throughout the west side of the Indian Ocean as well, with the ruler of Sumatra staging a formidable resistance in the east. Towards the 17th century, Portuguese Estado da India was in severe crisis. In the first part of the 1600s, their Dutch rivals amassed a series of significant military triumphs that forced the Portuguese out of Southeast Asia and various regions of India. With such intense military rivalry, the Portuguese crown shifted its imperial investments steadily towards Brazil and other Atlantic ventures.[35]

Regardless of all they did, Portuguese commanders actually only genuinely controlled a relatively little amount of territory in Indian or other Asian regions, despite the fact that the Estado had

[35] Ibidem, p. 22

established itself as a significant actor in maritime trade in the area. Northern European nations, such as the Dutch, grew to have significantly more authority not just over commerce, but also with regard to spice production in certain maritime Asian regions. In order to challenge Portuguese maritime might and reduce competitive pressures from inside the Netherlands, the Dutch government founded the so-called East India Company, simply renowned as the VOC, around 1602 and granted it exclusive permission to trade in Orient. The VOC was also given permission by the Dutch government to conduct military operations, engage in diplomatic negotiations with regional political figures, and build fortresses. Nonetheless, according to Eric Ketelaar, the prevailing academic belief is that the VOC's interactions with the South Lands were primarily driven by trade rather than colonisation. However, upon examining the archives, practices, and artefacts from the encounters with the region, it became evident that the VOC had more complex intentions than just trade. Despite the outcome of their actions, which may have been more trade-oriented, these sources also revealed the Company's clear aspirations for colonization.[36]

In fact, during the first half of the 17th century, the Governors-General in Asia directed exploratory expeditions to the South Lands with the aim of claiming lands and resources they encountered and forming trading partnerships with local peoples. This led to the Australian land mass being named Nova Hollandia on European maps by the mid-17th century. The name persisted until the late 18th century when the British claimed and established the colony of New South Wales.[37]

The passage above perfectly sums up the patterns of Dutch maritime exploration and colonial expansion during the Early Modern period. It suggests an instruction or recommendation to explorers or navigators to thoroughly explore different coastal areas. The focus is on observing and documenting various aspects of the land and its inhabitants. The passage emphasizes the importance of gathering information about the local population, their settlements, territorial divisions, cultural practices, religious and political systems, conflicts, waterways, maritime activities, and economic resources such as fishing, trade goods, and local industries. Such detailed observations were crucial for colonial powers, the Dutch in this case, seeking to expand their knowledge, establish trade routes, and potentially claim territories for colonization during the age of exploration.

"Explore the coast in various locations and carefully observe if it is inhabited, the characteristics of the land and its people, the towns and villages they live in, the divisions of their territories, their religious and political practices, their wars, rivers, boats, fishing, goods, and industries."[38]

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[36] Gerritsen, Anne, and Giorgio Riello. *The global lives of things: the material culture of connections in the early modern world*. Routledge, 2015, p. 147
[37] Ibidem
[38] Ibidem, p. 148

As already pointed out, the reasons behind VOC's presence in the waters of the Pacific, were indeed to explore the South Lands with the aim of identifying potential goods that could be added to their worldwide trading activities. They were also curious about what the local inhabitants possessed, what they desired, and what they were willing to trade. As a result, the directives instructed commanders to investigate the types of minerals, precious stones, vegetables, animals, and fruits present in the area. The South Lands were said to be full of gold and inhabited by giants, so the VOC had long been fascinated with them.[39]

For a number of factors including the above-mentioned, the Dutch were significantly more successful than the Portuguese at regulating commerce and production throughout Southeast Asia and East Asia.[40]

The Dutch were not to underestimate as, despite their modest size as a nation, they were already acquainted with effectively exercising their power and hold over some dominions in the Caribbean as well as in the Baltic waters. Their success came from many factors including, above all, their ability as well as their commitment to commerce, which helped them establish numerous colonies with the only aim in mind: facilitate trade. Moreover, with extremely competent administrators serving as company governors, the VOC operated with ferocious economic efficiency. The VOC was indeed a private joint-stock organization that was managed by a management committee of seventeen administrators and collected funds by publicly selling stocks. Founding figures prioritised capital inflows rather than other concerns and fought corruption and mismanagement. Furthermore, the Dutch were effective in dominating commerce in Eastern Asia because they made use of military power to establish commercial dominance. The VOC's directors made significant investments in naval armament and hired high-skilled naval captains to work for the organization. Another astonishing factor testifying to Dutch dominance throughout most of the 17th and 18th centuries is the fact that Amsterdam shipbuilders built a striking number of more than a thousand vessels for operations in the Pacific. The VOC established claims to commercial areas, secured exclusive arrangements with local government officials, or rather purely established themselves on trade and production across the Spice Islands of the Pacific, a region that became their headquarters for operations. During the late 1600s, the principal Dutch possessions in Asia comprised Java, the Moluccas, and many other Indonesian islands, Malacca, Sri Lanka (also known as Ceylon), and South Africa's Cape Town colony, which served mostly as a transit route to Dutch transport of goods between the Homeland and their dominions in the Pacific region. The English were being forced

[39] Ibidem, p. 149
[40] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p. 23

away from several locations in Indonesia by the Dutch, and the French, as well, had faced a similar fate in India. The struggle of the other European nations to establish a presence in Indonesia interestingly benefited the British, who intensified their activities on the Indian peninsula.[41]

Indian goods, particularly calicoes and cotton, immediately demonstrated to be a more durable and profitable business with an apparently longer market life than spices, which appeared to reach saturation around the end of the 1600s. This period coinciding with the sunset of the 17th century came with two key events: the rise of the English naval might on the one hand and the increase of the expenses needed to effectively control spice production throughout the Pacific resulting in a significant reduction in VOC revenues. It's important to note right away that the VOC was dissolved in 1799 but, the specific details and reasons behind its failure are complex, and while increased expenses in regulating spice production may have been a contributing factor, they were not the sole or primary cause to the demise of the VOC. In fact, among the several factors that have greatly contributed to the decline and eventual bankruptcy of the company are the followings: First, the company engaged in costly military campaigns to protect its trading interests and maintain control over spice-producing territories. These military endeavours, including conflicts with local rulers and competing European powers, strained the company's resources. Testifying to the great competition put in place by the European rivals of the Dutch is the episode that occurred on June 13, 1613, as the cargo of Witte Leeuw, a ship belonging to the Dutch East India Company, was lost near St. Helena Island. The ship was sailing back to the Netherlands as part of the VOC convoy when it was assaulted by two Portuguese carracks. The wreckage of the ship was discovered much later, in 1977. Among the items found were seven out of the ship's 25 cannons, significant amounts of pepper, and exquisite porcelain. Corruption and mismanagement also played their role, as, over time, the VOC became plagued by corruption and mismanagement, with officials and employees embezzling funds and engaging in fraudulent practices. These internal issues further eroded the company's financial stability.[42]

[41] Ibidem, p. 24
[42] Gerritsen, Anne, and Giorgio Riello. *The global lives of things: the material culture of connections in the early modern world*. Routledge, 2015, p. 11

Figure 1 Porcelain cup, produced in Jingdezhen, China, before 1613. H 8.2 cm.

Moreover, while the VOC enjoyed an uneven monopoly on the spice trade, the market demand for spices decreased over time, leading to a decline in prices. This had a negative impact on the company's profitability. A decisive element that contributed to "put a full stop" to the company's existence, was the fact that it took on substantial debts to finance its operations and expansion. The company struggled to repay these debts, which contributed to its financial downfall. Less than a century after the VOC's doors were shut, the Dutch had lost their position as the dominant nation in Asia as well as Europe to the English and French. As for English merchants, they were the first to wander into the Indian Ocean around 1591, joined by their main rivals, the French, some years later. The British established a presence throughout Southeast Asia in 1608, after a crew established a commercial base at Surat on India's coast. The nascent English East India Company built facilities on the Indian eastern Coasts. The EIC was a joint-stock organization established by Queen Elizabeth I around 1600. Until about the mid-1800s, the English firm maintained a pivotal role in the growth of their conquered territories. The French East India Company that, instead, was founded in 1664, enjoyed little to any success as it failed to gain support in French economic circles, therefore it remained a royal company, although an impoverished one that underwent multiple reorganisations.[43]

The largest English settlement in Asia was founded in the 17th century by factors in Gujarat, Coromandel, and Bengal, which later served as a starting point for a vast empire that first started to take shape in the mid-1700s. A restructured French Indies Company established facilities at Pondicherry on that same Coromandel coast, Mahe along the Malabar coast, Mauritius off the coast

[43] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p. 25

of eastern Africa, and a few other locations in India. Denmark also established a commercial organisation in India, with a presence in Serampore, near Calcutta. Throughout the 17th century, the English and French empire-building and commercial Companies also identified and established outposts in Australia, New Zealand, and throughout the Pacific archipelagos.[44]

In the 18th century, Pondicherry, situated on the Coromandel Coast in South India, was the primary trading centre of the French East India Company in the Indian Ocean. It served as a bustling commercial hub where a vast array of goods and consumer products from India, Europe, and the Far East were traded. The diverse social, professional, and ethnic backgrounds of the consumers and merchants who frequented or lived in Pondicherry added to the remarkable variety of goods available. These groups included Europeans, both born in Europe and Asia and people of Indian origin from all backgrounds. Despite their different backgrounds, these two distinct groups shared the same living spaces in this small enclave on the Coromandel Coast and consumed the same products.[45]

Like the English and Dutch trading posts in India, Pondicherry was a French port that shared similar features. Rather than being distinct, the French trading post was influenced by the Portuguese, who established their Estado da India in the early 16th century. The organization and operation of Pondicherry were akin to other European trading ports in India and Asia, such as Batavia, the Dutch trading port. The main objective of European traders was to facilitate and foster trade through various means, including human and logistical networks that relied on comparable underlying structures. The only difference was their long-term goals. France aimed to develop an empire of trading ports in India but did not aspire to create a colonial empire, unlike Britain. The successive governors of French trading ports in India did not harbour any desire for territorial expansion.[46]

Pondicherry, like other European trading ports in India, was characterized by two simultaneous movements: the movement of goods and merchandise between Europe and Asia, and within Asia, and the movement of people involved in trade and government activities. The intense flow of people was a result of various factors, including the highly mobile indigenous population, the arrival and departure patterns of East India Company ships to and from Europe, ships bound for Indian trade in Asia, and the movement of administrative and commercial personnel between the trading posts of Asia. Pondicherry served as a corridor for individuals of diverse backgrounds, most of whom shared a common goal of trading or serving commercial activities. Some of the stopover visitors to

[44] Ibidem, pp. 25-26
[45] Gerritsen, Anne, and Giorgio Riello. *The global lives of things: the material culture of connections in the early modern world*. Routledge, 2015, p. 162

[46] Ibidem, pp. 162-3

Pondicherry chose to stay in the trading port for an extended period. The majority of these individuals were sailors who travelled on board the Company's ships that sailed between Lorient and the Indian Ocean. It is estimated that approximately 35,000 to 40,000 people sailed from France and passed through Pondicherry between 1720 and 1769. Despite being the primary source of textiles, which were exported to Europe and used for daily purposes, India could not meet all of the French requirements for goods. The subcontinent only offered a limited range of foodstuffs and construction materials, and hence, the French had to import a diverse array of products to meet their needs.[47]

The French relied on private commerce and the well-established trade of various goods within India to supply products to the Pondicherry market. These goods were sourced from a vast geographic area, including the East and South of India, Ceylon, Japan, the Maldives, the Mascarene islands, Madagascar, Mocha, Turkey, and beyond. Some of these goods were re-exported to Europe, such as porcelain and textiles from China, along with small, manufactured objects like fans, cabaret tables, and writing desks. Others were intended for local consumption within India, like jam and sugar from China, wine from Japan, raw materials and supplies such as wood, copper, tombac, gold, and ivory from the Philippines, and sugar and local alcohol from Java.[48]

Commercial activities were the main source of interaction between the French and Indians. The European presence in India was primarily focused on securing the supply of Asian products for export to Europe.[49]

The trading activities persisted in the trading port, centred around the Grand Bazaar or Saint Lawrence Bazaar in Pondicherry. The bazaar hosted numerous shops where people could procure everyday commodities or engage in trading. While the management of these shops was mostly handled by Indians, some of the shop owners were French, such as Charles de Flacourt, who owned 65 shops in the market in 1720.[50]

Among the most successful expeditions to Oceania, one that must be also cited was the one led by the Englishman James Cook, who visited Tahiti, Australia, and Hawaii including other locations. By 1768, Louis-Antoine de Bougainville explored Tahiti under the service of France. In order to conduct whale hunting missions, the Colonists founded the first settlement in the current state of New South Wales in Australia by 1788 and other expeditions in New Zealand in the following years. Both the

[47] Ibidem, p. 165
[48] Ibidem, pp. 165-6
[49] Ibidem, p. 170
[50] Ibidem, p. 171

English and French developed considerable empire grip over the Pacific region within the timespan comprised between the 1700s and the 1800s.[51]

Although European nations established trading settlements in the Indian Ocean basin, they simultaneously established land-based empire-building processes throughout the Atlantic area. The first Portuguese voyages that led colonists to island chains around the Atlantic Ocean and along the African coast were started by Infante Dom Henrique. In 1418 and 1431, sailors made their first incursions on the Madeira and the Azores' land masses. Officers established naval bases for future expeditions, while merchants established plantations on nearby islands within a few years. As Portuguese colonists began exploring the south, that is the African western coast throughout the 15th century, they developed relations with indigenous authorities and established factories in several sites. The most major ones occurred in the Kongo and surrounding Ndongo regions and nowadays area of Ghana. In 1483, the adventurer Diogo Cao came in the Kongo and forged a relationship with the king Nzinga a Nkuwu. Eventually, when the Kongolese king and his nobility embraced Christianity, Portuguese culture and language proliferated over the area. During the following years, a considerable share of Portuguese settled permanently in the Kongo and wed Kongolese women; their descendants eventually established a significant merchant elite that mediated business transactions involving Kongolese and Portuguese traders.[52]

Portuguese officials also founded Angola, a lasting settlement to the south. Later throughout the 16th century, several European nations and commercial enterprises established trade outposts along Africa's western coast. Spanish, English, French, Dutch, Swedish, and Danish all built trading posts for slaves and many other goods. The Dutch East India Company set its headquarters in Cape Town. When large numbers of immigrants established permanent settlements in the 1700s, it became a territory full of European settlers in Africa. But besides Angola and Cape Town, European expeditions failed to penetrate the hinterland beyond the coastal areas until the nineteenth century. Spanish sailors, traders, and government representatives concentrated their efforts on and around the Caribbean for two decades after Columbus anchored off the coast of the present Dominican Republic in 1492.[53]

As a matter of fact, Spain obtained the most significant economic gains from their overseas ventures, as they extensively surveyed the coastal regions of both North and South America and also launched exploratory missions into the interior. Indeed, following the initial voyages of exploration, a period of conquest ensued, whereby Spanish adventurers and unscrupulous individuals - commonly referred

[51] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p. 26
[52] Ibidem, p. 27
[53] Ibidem, p. 28

to as "conquistadores" - sought to gain control of the Amerindian territories by any means necessary, including violent and coercive tactics, in order to acquire the vast riches of the New World. The Spanish land-based economic scheme was proven by the early 16th-century conquest of vast empires spanning Latin America and the Caribbean. Towards the 16th century, Tenochtitlan, which changed its name to Mexico City, alongside Lima (Peru) became the principal headquarters of one of the largest European colonial kingdoms at that point in the Early Modern period. The Spaniards had captured America's two most powerful empires. Spanish expeditions spread beyond their centres of early annexations in pursuit of riches, farming land, and a route to Asia. The success of the Spanish in the conquest of the Aztec Empire was largely attributable to their superior weaponry. In 1522, the Spanish expedition under the leadership of Cortés employed this military advantage to great effect, as they besieged and set Tenochtitlán ablaze, effectively vanquishing the Aztec civilization. This victory was accompanied by the slaughter and extermination of countless Aztec inhabitants, as well as the execution of their ruler, Emperor Cuauhtémoc. The Spanish crown reaped substantial economic benefits following the conquest, as vast quantities of gold were secured and directed into the royal treasury. This accomplishment earned Cortés the governorship of Mexico, as a reward for his contribution to the Spanish empire's expansion in the New World. In the years that followed, a significant number of sailors travelled over, surveyed, and claimed for Spanish much of Central America as well as the southern chunk of North America spanning from Florida to California around 1513 and 1540.[54]

Among these brave figures, that played a crucial part in the Spanish takeover of the New World, was certainly Francisco Pizarro. He was an individual who dedicated his life to the pursuit of territorial acquisition in the New World. His exploratory missions focused predominantly on the coastal regions of South America, which yielded significant economic benefits for Spain. In 1531, Pizarro orchestrated the invasion of the Incan Empire, capitalizing on a period of instability and political strife within the kingdom, brought about by a conflict between two rival brothers vying for the imperial throne. The ensuing Spanish victory enabled Pizarro to amass further wealth and resources for the Spanish crown. The Spanish became considerably more geographically aware of their American dominion during the 1500s. It included much of Central America, most of North America, and nearly the whole of Latin America (with the exception of Brazil and Guiana). Large swaths of territory were claimed by Spanish conquistadors, who then started to exploit them for their abundant resources. The new rulers demanded work from the indigenous people in the manner of European elites, as was typical in Iberian rural areas. The Spanish government desired to cement its sovereignty

[54] Ibidem, p. 29

over newly discovered regions that were rich in natural riches as well as stop the voracious exploitation by individuals with private interests. The territory known as New Spain included the Caribbean islands and spanned from the southern part of what has become the United States of America to the Republic of Panama and Venezuela.[55]

When Pedro Alvares Cabral, a Portuguese sailor headed to India, spotted land on the west side of the Atlantic and opted to anchor there, the Portuguese conquest of Brazil officially started, and this was in 1500. The Portuguese then proceeded to create an impressive terrestrial dominion in Brazil, similar to what the Spanish did. Brazil was formerly seen by the Portuguese as little more than an "en route" point for ships traveling to Asia. However, by the 1530s, permanent residents had arrived in quest for properties to establish sugarcane plantations. Traders had also established temporary outposts in order to gather and market Brazilwood, a commodity for which Cabral gave the country the appellation of Brazil. In the Americas, similarly to what previously happened in both Asia and Africa, the Western European nations, that is, the English, the Dutch, the French, the Swedish, as well as the Danish challenged and surpassed the Iberian powers. The impact of geographical positioning may be seen in northern Europeans' later beginnings. Because of their northern geographic position, Britain and Holland emerged as maritime territories extending on the North Sea and Baltic Sea. Throughout the sixteenth century, English and Dutch merchants battled to pursue commercial advantages alongside German, Polish, and Scandinavian businesses as well. From 1555, for example, England established the Muscovy Company in an effort to foster economic ties with Russian tradesmen.[56]

Attempts to create long-term colonies yet were futile until the beginning of the seventeenth century, when Samuel Champlain established the initial French settlements in the area of Nova Scotia during 1604 along with Quebec in 1608; John Smith, on the other hand, and a number of expeditions established the initial British settlement in Jamestown, Virginia as of the year 1607. Some years thereafter, in the year 1623, the Dutch established their sole outpost in North America, located in Manhattan. The Dutch attempt was temporary since the English seized it in a quick naval confrontation in 1664 and dubbed the area New York. The nature of French and English endeavours in North America differed greatly. Regarding the first century, France's operations appeared to be mirroring the Western mercantile empires in the Asia-Pacific region as traders, Christian missionaries and troops built relatively small, reinforced bases at strategic locations to conduct trade with the natives and, especially in the specific instance of the clergymen, promote the faith of Christianity.[57]

[55] Ibidem, p. 30
[56] Ibidem
[57] Ibidem, p. 31

The colonies of New France were primarily a commerce-based empire dedicated to acquiring fur from American Indians, and merchant organizations opposed migration out of fear that newcomers would clamp down on their trade.[58]

Property concessions from the governors of the colonies encouraged people to arrive in New France under the influence of an efficient government towards the close of the seventeenth century. Around the turn of the eighteenth century, the number of inhabitants had risen to more than 55,000 people. The English model of expansion in the Americas was substantially different compared to the approach taken by the French along with other European competitors. More than 700,000 British colonists arrived in the Americas since the establishment of the initial permanent colony of Jamestown in 1607 and the onset of the American War of Independence in 1775. The majority of English migrants ended up in colonies along the Atlantic coast, mostly to secure, clear, and develop land, while others went to work on plantations founded by English settlers around the Caribbean islands. Furthermore, they come from various social classes. English colonists constituted not only soldiers, traders, missionaries, and colonial officials, but also ordinary men and women seeking financial fulfilment and religious freedom.[59]

As a result, the English colony in northern America eventually became made up of settler communities oriented on farming and marked by intense European colonization. By the year 1607 the English acquired an ever-present presence in Virginia with the establishment of Jamestown. The settlers there suffered greatly in the initial stages and could have perished if not for the generosity of the Powhatan people. In the years that followed, English royal merchant firms established many more other settlements, notably Plymouth, Salem, and Boston, followed by Providence. As opposed to the other major European imperial powers, British provinces maintained their independence while being subordinate to the crown and Parliament. Throughout the 18th century, the effort of European sea forces to bolster their authority over places they claimed led to increased fighting both on the great oceans as well as within the colonies. The formation of empires throughout the world went hand in hand with bloodshed, involving indigenous tribes as well as among the colonizers. Throughout the course of the 18th century imperial forces like England, France, and Spain, together with local allies, raided each other on a regular basis in the Americas. Nonetheless, their colonial aspirations in Asia and America reached their peak via the Seven Years' War.[60]

The peace treaty of Paris was an agreement that of 1763 terminated the war known as the Seven Years' War and established English colonial supremacy over the regions of North America as well as

[58] Ibidem, p. 32
[59] Ibidem, p. 33
[60] Ibidem, p. 34

India. As previously noted, the English pushed the French out of India and established dominance over the entire North American colonial regions eastward of the Mississippi River. the French preserved two profitable sugar-producing land masses in the Caribbean, Martinique along with Guadeloupe, and rewarded Spain for joining forces by giving up both New Orleans in addition to the territory of Louisiana, the area westward of the Mississippi River. Notwithstanding this setback, the English were somewhat strategically placed to establish themselves as the planet's most advanced imperial force at the dawn of the modern period by controlling commerce as well as lands across Southern and Northern America.[61]

It was thanks to these factors that Britain emerged as the preeminent colonial power in North America and as well as in the Caribbean. In fact, this was also due in large part to its ability to export raw materials from the colonies and create a thriving domestic industry. A key factor in this success was the British policy of requiring its colonies to purchase British-made products, a demand that the British economy was able to satisfy more effectively than its Portuguese and Spanish counterparts. This capacity to exploit its colonial holdings was critical to Britain's ability to fuel the industrial revolution and support its continued economic growth, as the country possessed the requisite capital and materials to sustain these developments.

surprisingly, European empire expansion into the Americas did not occur as an inescapable subjugation of a particular population over others. Westerners fundamentally lacked the population size and technological means needed to subjugate numerous Native American communities. Instead, it was the active engagement of American indigenous groups, each split in its own greed, that allowed European colonizers to establish and develop an everlasting presence.[62]

It has become apparent from debates concerning the widespread worldwide movement of goods and people that the exchanges that took place during the Early Modern era participated a crucial part in setting the stage for and speeding up the expansion of long-distance trade and the exchange of merchandise. These implications have had an extensive and long-lasting effect on a variety of facets of the lives of people. As a matter of fact, the relevance of both the Pacific trade routes and the Atlantic ones that tied the American continent with Europe and Asia eclipsed that of the traditional Mediterranean routes during the period known as the " time of the great explorations" that led to the subjugation of the New World, as well as in the years that followed the same. This change in prominence was a symptom of a bigger movement that saw the Atlantic and Pacific Oceans replacing the Mediterranean Sea as the world's centre of power and commerce.

[61] Ibidem, p. 35
[62] Ibidem, p.36

1.3 The Commercial Revolution

The Early Modern period in Europe experienced a significant shift away from political turmoil, religious dominance, limited local trade and internal conflicts that were prevalent during the Middle Ages. As a matter of fact, the Early Modern Age was a time characterised by the consolidation of political power under nation-states, the reform of religious practices, the acquisition of a wide range of knowledge, the emergence of scientific thinking and a renewed appreciation for the Renaissance, discoveries thanks to the expansionism of some European powers resulting into both the intensification of long-distance trade and the rise of influential commercial enterprises. According to scholars, this period marked by a "material and cultural" shift, could be said to span approximately from the second half of the 15th century to the late 18th century. This process of transition eventually turned out to be so crucial that throughout history, a great number of scholars made persistent endeavours to grasp its true essence.

According to some of them, the key to allowing us to better understand this phenomenon, lies in the resurgence of a new scientific temper and of a mindset geared towards exploration, catalysed by an evolving social and political framework imbued with the spirit of the Renaissance.

The others instead, posit that the retreat of religious institutions, influenced by reformist inclinations and movements, played a vital role. This retreat paved the way for the emergence of Protestant churches that encouraged the pursuit of commercial and economic activities, unburdened by the stigmas imposed by Catholicism. These are the huge changes that characterised and were pivotal in bringing about the transition towards modernity making economic historians identify the core of such transition in the explorations and discoveries of the New World and the establishment of new trade routes to the Old World. These discoveries created unprecedented connections for the exchange of goods, liberating them from the dominance of Western Asian and Islamic powers that have been controlling trade and trade routes for centuries. As a result, new markets emerged, giving rise to new urban centres, commercial networks, and institutions that facilitated both international and local trade. This transformative economic shift led to the emergence of a "European World Economy". In this new world, political boundaries held little significance as regions became interconnected through networks of commerce and trade. This integration gave birth to what experts have called a unified "World Economy", with its epicentre located in the great commercial nations of Western Europe.

"Commercial Revolution" was the expression that was employed by experts to describe the magnitude of global economic expansion and transformations observed as part of the structure and function of

the financial and trade entities, most significantly across the sixteenth and seventeenth centuries of the Early Modern time. It has been argued that these transformations established the groundwork for the ensuing decades' emergence of the capitalist system along with its mechanisms.[63]

The rise of Italian mercantile classes and the subsequent development of institutional structures to secure their dominance over the trade of spices and other vital commodities in the East, starting from the thirteenth century, serves as a pivotal point for many analyses of European economic systems. Throughout the years, economy historians have devoted their attention to studying the changes and shifts in European patterns of commercial exchange and their resulting impacts on the regional economy within the entire continent. Various aspects have been examined, including the emergence of Iberian economies, the establishment of transcontinental trading posts, the transformation of the North Atlantic and Baltic seaboard into a major hub for European trade, and the establishment of colonies in both the New World, along with the African coast and the Indian Ocean region. The impact of these developments on European commercial structures has been deemed "revolutionary", particularly in terms of how commerce and commercial transactions have seen a radical transformation in the new ways they are now being carried out.[64]

The pursuit of wealth through the advancement of long-distance trade and the support of banking families and credit providers necessitated states to adopt policies that contradicted the Catholic Church's stance on usury and the concept of profit derived from trade and exchange. The conclusion of the Crusades towards the late fourteenth century also opened up avenues for commerce in Asian regions, particularly along the eastern coast of the Mediterranean. This development brought significant trade and connections, including increased demands for pilgrimage traffic and a steady influx of wealth from the Ottoman and Egyptian sources into European territories. Alongside luxury goods, spices and textiles from Asia found their way into the European market. The emergence of markets and fairs that facilitated the exchange of essential and luxury commodities brought the evolving commercial landscape of Southern Europe to the forefront. Due to challenges posed by wars, political instability, and geographical issues, transportation of goods on land became cumbersome, leading to the rise of coastal trade. This, in turn, prompted the development of robust port-centred urban areas across Western and Northwestern Europe, eventually evolving into the Hanseatic League during the 15th century.[65]

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63 Singh, V. K. (1970, January 1). *Unit-7 Commercial Revolution in Europe*. eGyanKosh. http://egyankosh.ac.in//handle/123456789/72249, p.107

64 Ibidem, p.108

65 Ibidem, p.109

Northern European ports and prominent commercial guilds based around the Hansa. Akin to this, Italian major urban centres and their mercantile groups which were dominated by Jewish merchants, came to rule the Southern European trading links and marketplaces. They began implementing new ideas as well as strategies discovered by their Oriental commercial partners. One of the most relevant discoveries in this sense was certainly the so-called "bill of exchange", that European merchants were not acquainted with and started using it immediately as they deemed it a very useful instrument for trade. The reasons behind the immediate success of the bill of exchange lie in that, after engaging with far-off Asiatic markets European merchants realized the challenges and risks of handling business at such distance.[66] Although a great number of the major transformations that shaped the commercial revolution, took place in the Western world, it is of capital significance to highlight that the commercial upheaval was not only confined to the European landmass, but it was rather a global phenomenon as a number of changes also concerned other regions of the early modern World. This is the case with India. In fact, from the 14th century onward, India developed a rather vibrant money economy that had been swiftly advancing in the direction of a form of a system known some years later as capitalism although a system which was unlikely to permeate the whole country. Money exchange, financial transactions, loans, and the so-called "bima", insurance for ships, are all examples of financial instruments that also included the "hundi", the Bill of Exchange.[67]

During the same time span in the West, an innovative form of labour organization commonly referred to as guilds also started to emerge over the ages, most notably in the newly developed, productive urban centres. The aforementioned guilds were an elite group made up of an equal number of workers and craftsmen that carried out some kind of speciality or exchange of a particular good or service and started ruling the political, cultural, and social environments of Early modern European cities as well as urban areas by the fifteenth century.[68]

Rapid changes in the "agrarian economy" served as the backdrop for a complete infrastructural development of what experts have dubbed the "commercial revolution" in the fields of commerce and trade, along with associated regulatory expansion. The emergence of what was known as the three-cropping system, completely novel implements along with equipment to facilitate farming activities, the construction of dykes to retain agricultural land from the sea In the north, as well as, the drainage of marshy areas both in Britain and France, and ultimately the advent of exotic crops

[66] Ibidem, p.110
[67] Braudel, F., & Reynolds, S. (1982). *The wheels of Commerce*. Harper and Row. P.124
[68] Singh, V. K. (1970, January 1). *Unit-7 Commercial Revolution in Europe*. eGyanKosh. http://egyankosh.ac.in//handle/123456789/72249, p.110

coming from the Americas and Africa, completely changed and boosted the methods by which farming was conducted and carried out in different parts of Europe.[69]

The demographic upheavals during the 14th century, mostly as a result of the large-scale decrease in population owing to the plague and other diseases, as well as incessant conflicts and distress and the deaths because of them, induced the feudal system to fall apart resulting from internal rifts. For an important timespan of the 14th century, these actions and occurrences caused agrarian areas and marketplaces for agriculturally associated goods to contract. Numerous areas throughout the European continent did not experience an increase in population if not only after the close of the 15th century. As a result of the increased number of people in the continent and consequently, of their needs, this latter element put a strain on the soil. Moreover, insufficient production combined with the strong consumer demand, caused the cost of food to increase, and this convergence served as the impetus for the 15th century "price revolution."[70] Improvements regarding the way agriculture was managed along with the way labour was used in the agricultural sector started to expand, be gradually assimilated, and be improved upon throughout the areas from Europe's western to its northernmost regions as well. Agriculture-related exploration and exploitation of new regions started. The demand for basic goods like clothes and other related agrarian products like oil and wine increased along with the population growth. To accommodate the growing need for food dairy and fishing have developed into significant auxiliary businesses. However regardless of all these improvements, what was still missing was making it easier for goods to be supplied from one part of Europe to the other. Around all the major rivers that linked the ports to the hinterland trade sites, new markets and fairs started being established.

The agriculture sector including the way in which land was organized underwent a substantial transition through the sixteenth century as a result of the massive spread of agricultural changes throughout the European continent.[71] Responding to the rise of market demand for farming and agriculture-based goods, the entrepreneurial strata started to purchase farming land as well as arrange workforce to gain a manufacturing environment earnings capacity making goods, paying salaries rather than demanding a percentage of the profits. By the beginning of the sixteenth century upward, such a capitalist approach with regard to property and farming was clearly perceptible in Britain. A number of wealthy people including, rich traders, business owners, and people who belonged to guilds started to acquire property close to urban centres so as to join the upper-class echelons formed by the rural landowners and achieve status within society.

[69] Ibidem, p.111
[70] Ibidem
[71] Ibidem, p.112

A lot of literature about crop cultivation started to circulate as, following the invention of the printing machine, many of such works were later printed and made widely available.[72] Throughout the sixteenth century, a variety of forms of crop rotation emerged in the Netherlands.[73] Another effect of the ongoing commercial revolution concerned the system of property enclosures. Such practice started to be adopted in Britain and grew increasingly popular during this time. This was in reaction to the expansion of cattle husbandry, a trend brought on by the rising demand for manufactured and untouched Woolen fabrics in the marketplaces across the Old World.[74]

Economic specialists view the sixteenth-century period in Europe as a significant one since it saw the emergence of an Atlantic economic system as a result of the maritime powers' shifting the commercial belt and commerce routes as well. Following the finding of alternative offshore trading routes, the ancient and centuries-old trade links connecting the Asia-Pacific region to the European continent, using Byzantium to reach the Italian city of Genoa as well as the Venetian republic, gave up their commercial leadership, facilitating the economic surge of the nations that faced the Atlantic Ocean. The growing prominence of the Belgian city of Antwerp, among other territories in its surroundings, is the earliest indication of this transformation.[75] This port city, particularly, started to be referred to as the "commercial hub" of the Modern World throughout the sixteenth century. The boom for Antwerp began towards the end of the fifteenth century when the Venetian merchants lost their monopoly over the spice trade of Asia to the Portuguese. These latter began to use Antwerp as a port of clearance and established close commercial relations with the German traders and mercantile communities in the area. The German merchants supplied the much-needed capital to the Portuguese to fund their trade with the Indies, in return for the spices which the Portuguese supplied. Antwerp also benefitted from the close trading association that the city merchants came to forge with the wool traders of England.[76]

The flourishing of prominent hubs for commerce like Antwerp, which eventually became the centre of economic activities of most of Europe's northern regions, clearly testifies to the huge process of development that such cities underwent during the time of the economic revolution. Large cities like London together as well as Amsterdam subsequently developed to represent and embody the conventional metropolitan trade centre of the time, just like the city of Antwerp, a city with several markets ruled by producers and trade unions.[77]

[72] Ibidem
[73] Ibidem
[74] Ibidem
[75] Ibidem, p.114
[76] Ibidem
[77] Ibidem

These organizations controlled the city's or, in some cases, even the empire's economic policymaking. The beginning of colonial dominance over overseas territories had previously triggered an unprecedented race to secure and administer such colonies' riches, especially to exploit them as outlets for European commodities.[78]

Elite families of traders engaged in long-range commerce, particularly the ones possessing substantial holdings in the European markets during the fifteenth century, developed and established banking institutions in their most basic forms. Via their sponsorship of exploration expeditions and their involvement in business, these initial merchant bankers laid the foundations for the earliest phases of the modern European economy, which was fuelled by trade. At the close of the sixteenth century, the aforementioned merchant lenders formed throughout a number of markets all over the European continent, in such a way that allowed them to shape consumer demand and oversee the manufacturing and shipping of goods. Furthermore, they started playing a crucial role within the society of the time as they were both the primary lenders and providers of currency for manufacturing as well as farming enterprises. Another important innovation that proved to be decisive during the commercial revolution took place in the Italian Peninsula, as Italian bankers came up with the technique of "twofold entry bookkeeping" to handle the funds more efficiently.[79]

The development of the so-called merchant bankers was witnessed in several towns throughout the United Kingdom, France, the Netherlands, the Belgian Flanders, the Italian peninsula, as well as the German-speaking world. This phenomenon was a phenomenon that did not only take place in some European towns, instead, it was a worldwide phenomenon, as we also have a similar phenomenon in the Eastern world.[80] In fact, in this part of the early modern world, it is possible to witness the existence of networks of creditors that, given that they were so advanced and effective, even the English East India Trading firm's factors, were granted permission to carry out business throughout the East Indies both on behalf of the organization as well as for their own account, were constantly resorting to these sarafs, exactly like the Dutch, as well as the Portuguese who, in the past, requested from the Japanese of the city of Kyoto or simply Christian merchants who encountered problems with finances received help from Muslim or Jewish loan providers based in the cities of Aleppo or Cairo. The Indian region was so advanced, from a financial point of view, that all of the major towns across its area possessed their own network of sarafs, or currency changers, who were usually members of

[78] Ibidem, p.115
[79] Ibidem
[80] Ibidem

the influential Banyan trade caste. Irfan Habib (I960), a respected historian, put forward an observation comparing the Western and Hindu systems for exchanging currency.[81]

According to Fernand Braudel, the French trader Tavernier, who was running a business in valuable minerals and travelled extensively across India as well as the eastern Indies, is just as instructive on Indian economic structure and advancement just as Hovhannes, who actually made use of the sarafs mechanism. The Frenchman describes how it was simple to travel around India and even outside of the Country without much cash on hand by just borrowing it. For a travelling salesman, regardless of who he was, nothing was easier than taking out a loan, say in Golconda, and repaying it in Surat.[82]

Italian families of merchants located in the cities of Genoa, Venice, and especially Firenze were among the truly prominent families who financed the initial efforts by the Iberian governments. among the greatest and most renowned Italian family of bankers, has to be the Medici of Florence. During the final stages of the 15th and 16th centuries, German-speaking cities like Augsburg were also experiencing the formation of commercial organizations and regional banking dynasties, of which, and perhaps the most notable of them, the Fugger family.[83]

among the main reasons for the founding of such early financial institutions was actually to finance the first crusades and to provide coins to pilgrims visiting holy sites, especially to traders in the trading hubs across West Asia. Bigger banking institutions became necessary as currency operations grew more complicated over the course of the century primarily as a consequence of increased demand for fresh goods as well as a more extensive business development of European rural and urban areas. The first officially recognized public banking institution in the continent, known as Taula de Canvi or Table of Exchange, was created in the Spanish city of Barcelona in 1401, following the principles of the one already founded in Venice.[84] The recently established business marketplaces, which required highly advanced means of exchange, grew to be concentrated in the north of the continent and also in the German regions.[85]

However, for what concerns the East Asian Far East area in general it is evident that the conventional stock markets like those one may find in London, the Dutch city of Amsterdam or various other important trade hubs in Europe were still missing. Yet there happened to be often gatherings of powerful tradesmen.[86]

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[81] Braudel, F., & Reynolds, S. (1982). *The wheels of Commerce*. Harper and Row. P.124
[82] Ibidem, p.125
[83] Singh, V. K. (1970, January 1). *Unit-7 Commercial Revolution in Europe*. eGyanKosh. http://egyankosh.ac.in//handle/123456789/72249, p.115
[84] Ibidem, p.116
[85] Ibidem
[86] Braudel, F., & Reynolds, S. (1982). *The wheels of Commerce*. Harper and Row. P.125

The southern area the region of the Anti-Atlas, amid the Gouzzoula mountains, with a view of the arid landscape and the riches of the sands, was home to what was considered one of North Africa's most popular trade fairs. Its relevance was acknowledged towards the start of the 16th century by Leo Africanus, who had personally witnessed it.[87]

A traveller described how the area resembled a stock market and was home to ship insurers, spice merchants and massive financiers all of whom were proficient in a variety of currencies as well as tongues. Merchants from abroad took part in an endless fair that went on for months as they were confined here annually while patiently waiting for the monsoon period Chinese merchants, who claimed had been living in Java for an exceptionally lengthy period and would continue to live there for a very long time, became prominent in this worldwide coming into contact. They have an investment responsibility therein since they lend money at interest and have developed a comparable public image with Jews in European countries, wrote a traveller in the year 1595.[88]

Large-scale transfers of money were required in multiple markets including among the plethora of economic actors owing to the rise in the number of financial transactions with regard to a wider portion of Europe's mainland, which was now made possible by growing demand coming from cities and other areas, because of the growing number of people and also the rise of commercial agriculture throughout numerous areas of the European continent. Increased political turmoil between the nation- states regarding areas with lucrative agriculture or natural riches, particularly precious metals like gold and silver, complicated the issue significantly. Innovative financial mechanisms and facility types that had previously evolved and were being used in Italian states started slowly but surely being employed and even localized throughout different territories across the European continent.[89]

The promissory note which entailed a payment from a different location on an alternative moment became a crucial type of capital exchange.[90]

The so-called "bill of exchange," a piece of paper that ensured the payment of an exact sum of liquidity, either upon demand or at a predetermined time, was developed during this incredible period in human history. It serves as an instrument that was envisioned by or made up of an agreement that guarantees unconditional compensation with capital that could be paid immediately or later.[91]

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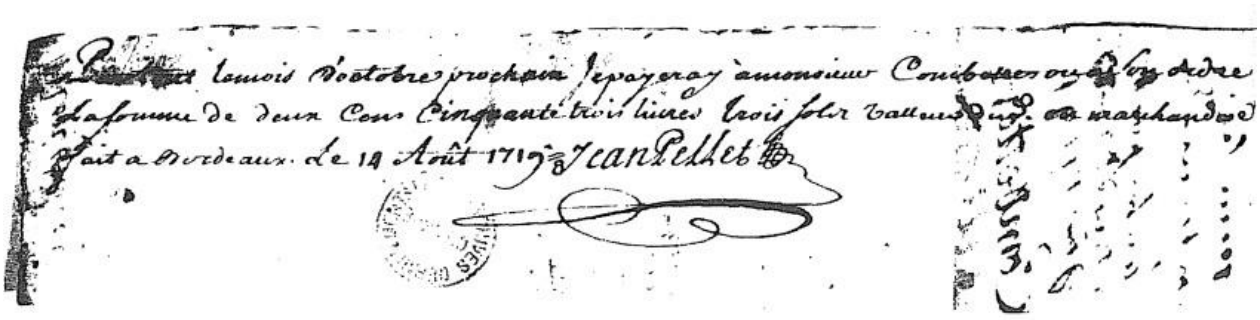
[87] Ibidem, p.127
[88] Ibidem, p.130
[89] Singh, V. K. (1970, January 1). *Unit-7 Commercial Revolution in Europe*. eGyanKosh. http://egyankosh.ac.in//handle/123456789/72249, p.117
[90] Ibidem, p.118
[91] Ibidem

These financial instruments made it easier to send money across great distances without having to carry large sums of cash from one location to another. Furthermore, the bill of exchange offered the additional benefit that they could be transferred around several merchants and salespeople prior to getting cashed.[92]

Around the seventeenth century, Dutch tradesmen started transferring finances to Asian commercial hubs like Batavia, Ceylon, and Bengal using bills as a means of exchange.[93]



Bill of exchange to the order of the Bordeaux merchant Jean Pellet (1719).
(Departmental Archives of the Gironde.)

Figure 2 Bill of exchange to the order of the Bordeaux merchant Jean Pellet (1719). Department Archives of the Gironde.

Another instrument that proved to function as a fundamental trade "facilitator" during the commercial revolution was the mechanism of the so-called promissory notes. Promissory notes, also called "note payable", were widely used in the Netherlands, in the city of Antwerp, as well as on French soil as a means of transferring and exchanging credit. It was a contract whereby one side agrees by written agreement to pay another party a certain amount in cash upon request or at a predetermined time afterwards under certain conditions.[94] By dealing with far-off Asiatic regions, Venetian merchants brought this custom of issuing notes to Europe. A number of scholars attribute the legendary Marco Polo to introducing various Chinese promissory notes to Europeans. These documents, indeed, were apparently released around 1384 with regard to the city of Genoa along with the city of Barcelona, albeit the actual letters have since been lost.[95]

A further innovative tool that emerged during the time of the commercial revolution, was the system of insurance. At the time, there developed a need to safeguard tradespeople from the risks associated with carrying goods over such far-off places as trade got more varied and the exchange of goods started to be structured over greater distances than ever before. During the time of the commercial

[92] Ibidem
[93] Ibidem, p.119
[94] Ibidem
[95] Ibidem

revolution, indeed, bankers and traders oversaw the development of insurance for maritime transactions as a business activity to protect against the dangers of ocean commerce. As a safety against the destruction of goods caused by wars, and highway piracy as well as against destruction caused by fire within warehouses. This led to the rise and development of numerous kinds of insurance models. An example of an Early model of insurance, that emerged in the Italian peninsula, has to be the so-called “foenus nauticum “.[96]

The rise of insurance as instrument to make intercontinental trade much safer has a whole Italian background as the oldest documented insurance agreements emerged as early as the 1340s within Italian towns notably Pisa together with the city of Genoa. As a matter of fact, Italian markets were the first in Europe to learn about and use insurance contracts. The usage started to spread throughout Europe, particularly in England, France, and the Netherlands during the sixteenth century. The laws governing insurance policies were first applied globally to maritime insurance and stemmed by Italian businessmen dubbed "Law Merchants."[97]

Commercial structures and institutions of power throughout the European landmass have been considerably more closely entwined as the nation-states as well as respective economies formed. Following the fall of both social and trade barriers, the aspirations of different social strata were able to be cultivated and expanded. The gradual introduction of liquid currency into European societies and the subsequent distribution of the currency generated profound effects on the socioeconomic and political environment of the European continent. Aggressive conquering as well as competition to seize territories to augment the

commodity markets, labour, as well as supply chains of domestic financial systems started off via the implementation of mercantile monetary practices, which were based on the notion of prosperity of nations and riches in the economies the nation-states. Throughout that period, increasing awareness about the role money played in determining status in society, influence in politics, in addition, to control over land, started to develop and gain form. In other words, what is known as the early modern 'commercial renaissance' created the groundwork and framework for the development of contemporary financial systems in a variety of manners.[98]

[96] Ibidem, p.120
[97] Ibidem, p.121
[98] Ibidem, p.125

1.4 The Scientific Revolution and Cartography

As we have already discussed in the previous sections of this paper, there have been multiple factors that have decisively contributed and allowed European powers to undertake expansionism to seek new lands as well as new markets to conquer, to create networks of trade in order to render the worldwide flow of goods and resources much easier. In fact, we could even infer that the Age of Western Expansion is nothing but the final result of a long-lasting economic, technical and scientific development.

One of the central factors if not the driving force behind the oceanic voyages and endeavours by the powers of the Old Continent, is undoubtedly the technological development that has experienced the entire European region.

According to Corradino Astengo, it was not the skill, audacity, or knowledge of one individual that led to the exceptional European transcontinental expansion during the second part of the fifteenth century, which caused the discovery as well as the conquest of the New and Old Worlds, it was instead the culmination of a scientific, technical, economic, financial, and in some cases even legal evolution that had its beginnings by the sixteenth century. [99]

In this particular time, the roadways throughout the entire European landmass were reconstructed, widened, and rendered secure, enabling the movement of people, products, and information. Over the years, a steadily increasing number of people moved from one end of the Old Continent to the other on foot, on mules, on horses, on wagons, as tradespeople, monks, administrators, and mercenaries of fortune. A significant feature for the spread of innovations and knowledge during this period of early scientific revolution was provided by Pilgrims and tradesmen as, travelling in the direction of Santiago de Compostela, the city of Jerusalem, Rome, or less important holy sites like Canterbury, Köln, and Einsiedeln, they contributed greatly to the process of acquisition and dissemination of novel technologies and information during their rest stops along the road.[100]

During the period in question, technological advancements had already liberated ships from fixed courses, enabling them to navigate any route, despite inclement weather. The dominant northerly winds and a consistent anticlockwise sea current had for many years compelled European ships to

[99] Astengo, C. (1992). The State of European Science and Technology in the Late Middle Ages. *GeoJournal*, *26*(4), 437–442. http://www.jstor.org/stable/41145427, p. 437

[100] Ibidem

travel nearly entirely along the northern coast of the Mediterranean Sea, and the powerful inflowing current had rendered it exceedingly challenging for vessels to leave Gibraltar.[101]

The commercial galley, a specific kind of ship in employment since antiquity, had an insufficient load capacity, limited mobility, and short sides that prevented it from securely facing open water. In addition, the vessel's efficiency to satisfy sails proved primarily by no means adequate.[102]

The newly developed vessel type, known as the caracca or just “navis”, took over the oceans by the latter half of the fifteenth century: large in dimensions, capable of carrying seven hundred tons plus, featuring significant freeboard and massive castles fore as well as aft, it was a true sailing fortification that could even endure travels in safety from the eastern coast of the Mediterranean across The Atlantic coasts of Europe “per costeriam”, which corresponds to following the seaboard of North Africa.[103]

During the fifteenth century and throughout the first half of the 16th, the caravel got a significant impact. Small, featuring a V-shaped keel, a straight sternpost with an axial rudder, and up to three masts combined with lattice sails that were rapidly swapped out for rectangular sails, as Christopher Columbus performed on the Nina at the time of his initial voyage, this kind of vessel proved adaptable and manoeuvrable, making it the perfect choice for safely exploring uncharted coastal regions. These new types of ships were of Iberian invention. However, it had drawbacks such as inadequate crew housing and a small room for cargo. Regardless of this, at the time, the Lusitan caravels were "the best ships that sail above the sea," in the words of Alvise da Ca' do Mosto.[104]

[101] Ibidem, p. 438
[102] Ibidem
[103] Ibidem
[104] Ibidem

Figure 3 Portuguese Caravel with Lateen Sails. National Maritime Museum, Paris.

A further novelty concerning shipbuilding, that was brought up during this period of the Early scientific revolution, to testify as compelling evidence of the strong connection between science and technology, characteristics of the latter half of the 15th century, was the introduction of artillery on board ships. This occurrence played a significant role in establishing the dominance of European ships during the 15th century across the world's oceans. Initially, cannons were manufactured as breech-loading, where the cartridge chamber, known as "Mascolo", had to be manually hammered into position against the barrel for each shot, posing a constant risk of explosion. Towards the end of the century, front-loading guns were introduced as a safer alternative although this required gunners to expose themselves to enemy fire during the loading process.[105]

During that era, sailors needed to possess the skills to protect themselves using both conventional weaponry and artillery. Additionally, they had to be proficient in operating various basic machinery, including capstans, cranes, and tackles, which enabled them to enhance their physical capabilities. Moreover, they had to be capable of performing basic tasks such as patching leaks, replacing mast components, and cleaning and sealing the keel. These tasks often had to be carried out in unfamiliar coastal areas, utilizing whatever materials were available.[106]

The compass, which emerged in the mid-13th century, underwent significant changes over time. Initially, it consisted of a magnetised needle positioned above a floating piece of wood or reed in a basin of water. It was later replaced by a needle supported by a pivot. Eventually, a paper disk with a painted rose of 32 winds was affixed over the needle. With this aid, the navigator could roughly follow a desired course. By the end of the 15th century, compasses of this type were still used, housed

[105] Ibidem
[106] Ibidem, p.439

in a slot in front of the helmsman, but were not yet mounted on gimbals as gimbal-mounted compasses only became widely adopted in the subsequent century.[107]

The portolano, which emerged around the same time, was essentially a compilation of written sailing information. It provided directions regarding the distances and compass bearings between various ports, capes, gulfs, and river mouths. Additionally, it included crucial details about potential hazards like shoals and reefs, drawing from the practical knowledge and experiences of sailors. Portolanos created in France and England usually relied on indicating the route based on the depth and characteristics of the seabed, rather than relying solely on visible landmarks. [108]

Starting from the latter half of the 13th century, a new and distinct type of chart gained popularity in the Mediterranean. This chart, known as the "OT world", stood apart from the scholarly cartography of the time. It depicted the existence of inhabited lands beyond the explored archipelagos, which played a significant role in motivating the Spaniards and Portuguese to venture into uncharted waters and take on the challenges of the ocean. [109]

This is a particular time in world history as it was a time in which the long-standing gap between scholarly cartography and practical navigation began to gradually close. Alongside the tripartite, quadripartite, and zonal world maps, these maps featured a representation of the Mediterranean, clearly influenced by nautical cartography, inserted within a tripartite framework. Notable examples of such maps include Andrea Bianco's "Mappa Mundi", and the anonymous Catalan world map.[110]

Similarly, there are numerous portolan charts that include legends derived from traditional "mappaemundi" and descriptive geography. One example of such a chart is the one created by Bartolomeo Pareto.[111]

While portolan charts had long dominated Mediterranean navigation, they were beginning to reveal their limitations for the new Atlantic routes. Their lack of isogonic lines led to significant errors when sailing for several days on the open sea, away from any visible coastal landmarks. Even the compass, due to magnetic variation, proved somewhat unreliable under these novel circumstances. It was the Portuguese, who sought a navigational method, employing star observation and new instruments, to determine the ship's position even when in the open sea.[112]

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[107] Ibidem
[108] Ibidem, p. 438
[109] Ibidem, p. 440
[110] Ibidem
[111] Ibidem
[112] Ibidem

The surge in interactions among individuals from diverse cultures occurred alongside a resurgence in intellectual and scientific exploration in various regions globally. In Europe, visionaries such as Nicholas Copernicus, Galileo Galilei, and Isaac Newton, among others, revolutionized the understanding of the universe and built a strong scientific mindset for studying natural phenomena. Similarly, in North America, a range of intellectuals, including Increase Mather and Benjamin Franklin, delved into scientific discourse, authoring works on science, and engaging in empirical investigation.[113]

Within China, scholars like Wang Lun and Li Shizhen embraced a comprehensive endeavour of enquiring into matters and expanding knowledge, leading to remarkable advancements in various fields of study such as Pharmacology, medicine, and botany.[114]

Japan and Korea also experienced a resurgence of enthusiasm for mathematics, medicine, and astronomy. The increased cross-cultural interactions facilitated the dissemination of unique advancements from various regions, allowing scholars to incorporate and adapt knowledge to their own needs. Two domains that particularly invited cross-cultural exchange were cartography and astronomy. Maps served not only as depictions of current geographical understanding but also as representations of worldviews and representations.[115]

As this time came to coincide with empire-building endeavours and exploration, the demand for precise maps became imperative. As a result, cartography garnered significant interest from scholars and ruling elites worldwide. While cartographers diligently charted the planet's surface, astronomers were simultaneously engaged in mapping the celestial realm. The allure of stars, comets, planets, and the vast expanse of celestial space had captivated the minds of thinkers since the earliest days of civilization.[116]

Amidst this scientifically and politically fervent environment, there was the rediscovery of Ptolemy's theories, which took place earlier in the century, reintroducing the concept of geographical coordinates and fostering an understanding among scholars that latitude could be reasonably calculated by measuring the pole star's height above the horizon.[117]

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[113] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p.212.
[114] Ibidem, p. 213
[115] Ibidem
[116] Ibidem
[117] Astengo, C. (1992). The State of European Science and Technology in the Late Middle Ages. *GeoJournal*, *26*(4), 437–442. http://www.jstor.org/stable/41145427, p.440

In 1478, Abraham Zacuto, a renowned astronomy professor at the University of Salamanca, authored the so-called "Almanac Perpetuum", which comprised comprehensive tables of solar declination. The meticulous calculations, although highly accurate, held no practical value without the presence of suitable instruments to facilitate accurate observations.[118]

During this century, the quadrant began to be utilised in navigation. Constructed from metal or wood, it took the form of a quarter circle with a curved side that was marked with degrees ranging from 0° to 90°. Two pinnules were placed on one of the straight sides, allowing the observer to observe a star, typically the pole star. A lead and line attached to the vertex enabled the observer to determine the height in degrees on the graduated side. Towards the end of the century, the quadrant was also used to measure the height of the sun during its daily culmination. However, in addition to the quadrant, as mentioned in the previous sources, the astrolabe was also employed.[119]

These instruments which relied on gravity, proved to be quite challenging to use at sea, particularly in unfavourable weather conditions. Consequently, it was far more convenient to employ the so-called "Balestilha" or cross-staff, believed to have been introduced around the conclusion of the century. This device consisted of a graduated wooden staff with a perpendicular sliding rule placed over it. By positioning the eye near the end of the staff and adjusting the sliding rule to align precisely between the observed star and the horizon, one could read the height in degrees directly on the staff. However, it was only until the 16th century that the cross-staff gained widespread usage. In the event that the ship deviated from its planned course due to adverse winds during the journey, pilots had access to numerical and graphical tables known as "Toleta de marteloio" to determine the ship's location. These tables aided in locating the point at which the ship was situated.[120]

The above-mentioned "Toleta", originally employed in the Mediterranean, underwent substantial modifications by the Portuguese to suit the Atlantic and align with their dominant North-South routes.[121]

In the year 1402, a group of Korean cartographers, under the leadership of Yi Hoe, created the first world map in East Asia. Referred to as the "Kangnido", this map primarily showcased Asia with a particular focus on Korea, China, and India. However, it also encompassed Europe and India. However, it also encompassed Europe and Africa in its depiction.[122]

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[118] Ibidem, p.441
[119] Ibidem
[120] Ibidem
[121] Ibidem
[122] Parker, Charles H. *Global interactions in the early modern age, 1400–1800*. Cambridge University Press, 2010, p.214

As for the Ottoman Empire, during its golden age, spanning from the 1500s to the 1600s, a process of intellectual assimilation took place within it. Starting in the 15th century, Ottoman intellectuals embraced the knowledge accumulated in the realm of science through medieval Muslim scholarship in Persia and Arab territories.[123]

Simultaneously, despite intermittent and prolonged conflicts between the Ottomans and the Christian world, numerous Turkish scholars embraced elements of European science. The geopolitical and religious hostilities did not hinder Ottoman intellectuals from adopting valuable Western ideas. Through trade, travel, and migration, particularly with Jewish individuals fleeing persecution in Europe, the Turks gained access to a vast amount of European literature encompassing subjects like medicine, anatomy, cartography, and astronomy. In the realm of cartography, Piri Reis crafted a world map in 1513, known as "the Atlantic map", by drawing upon Arab and Iberian maps. In addition, Reis authored a navigational treatise called "the book on Seafaring", which incorporated information derived from Portuguese and Spanish sources.[124]

During the late 1500s to the mid-1700s, the presence of Jesuit missionaries in China fostered another cross-cultural intellectual exchange. The Jesuit priests quickly acknowledged the Chinese court's strong emphasis on understanding astronomical phenomena. In this regard, the Chinese Board of Astronomy played a crucial role in providing forecasts for auspicious dates for imperial rituals, serving the Son of Heaven. The missionaries, recognizing this cultural priority, endeavoured to establish credibility among influential Confucian scholars and gain the emperor's respect by presenting him with the advantages brought by recent advancements in European astronomy.[125]

In astronomy, Confucian scholars assimilated crucial aspects of Western knowledge and integrated them into the Chinese intellectual and scientific heritage. However, when it came to cartography, the Chinese displayed considerably less openness to European advancements. Instead, European mariners and map makers, driven by their navigational experiences during the 1400s and the 1500s, spearheaded a revolutionary shift in the understanding of world geography. Notably, Abraham Ortelius, building upon the cartographic contributions of Amerigo Vespucci and Sebastian Munster, crafted the first modern-looking world map known as the "Theatrum Orbis Terrarum", in 1570. By the mid-sixteenth century, cartography in China had achieved a notable level of sophistication, encompassing square grids and advanced measuring techniques.[126]

[123] Ibidem
[124] Ibidem
[125] Ibidem
[126] Ibidem, p.116

With the aid of tables and instruments provided by knowledgeable individuals, sailors at the end of the 15th century managed to determine their ship's location in almost any situation by combining dead reckoning navigation and star observations. This newfound understanding liberated them from the apprehension of the open sea, a fear that had constrained their voyages to coastal regions throughout the Late Middle Ages.[127]

1.5 The discovery of new trade routes

As we have already seen and discussed in the previous sections of this paper, during the Early modern age, the great European nations embarked on a huge process of colonial and commercial expansion. Leading this expansionist process were the so-called Iberian powers initially, and later the Dutch, the English, and the French. All these nations, in addition to aspiring to create colonial empires, were also in search of new trade routes. In fact, one of the reasons behind the expansionist drive during the Age of Explorations was undoubtedly the quest for direct access, without relying on intermediaries, to the lucrative Eastern spice trade. It was thanks to these commodities that could then be easily classified as luxury items, that during the height of the Early Modern period, that is, the fifteenth century, in order to satisfy the immense demand for such products, both for culinary and medicinal purposes in the Old World, these precious goods were transported both through the old overland routes and the maritime routes of the Middle East. Despite the immense fortunes promised by the spice trade to the steadily growing merchant class, it also posed a significant challenge: how to find a sea passage that would allow for faster and independent access to this lucrative market?

At this point of our discussion, it appears useful to reflect on the factors and motivations that drove entire nations in their search for an access route to this wealthy and elusive market of the East. There were various motives, including economic, political, and religious factors, driving the search for a maritime route from Europe to Asia. Supported by the Crown, the Church, and ambitious private investors envisioning significant profits, explorers embarked on voyages toward uncharted territories.

Since ancient times, the spice trade in the East had been flourishing. In fact, before the 16th century, spices were transported through both overland and sea routes from the East. They travelled through the Persian Gulf and the Red Sea, passing through Egypt for Arabia, and eventually reaching the

[127] Astengo, C. (1992). The State of European Science and Technology in the Late Middle Ages. *GeoJournal*, *26*(4), 437–442. http://www.jstor.org/stable/41145427, p.441

Mediterranean. Additionally, the Silk Routes, which extended from China across Eurasia, provided another pathway for spices to enter the European markets.[128]

When Constantinople, the most important city of the Byzantine Empire, fell under the rule of the Ottomans in the year 1453, it meant that one of the primary land routes for the transportation of spices into the European continent was cut off. This served as still another incentive for European traders to come up with independent passage to the spice market and, if at all possible, seize control of the industry's primary manufacturing hub. Competitors in Europe, notably the strong Italian maritime republics including Venice and Genoa, may be severely hurt by European heavyweights like Spain as well as Portugal. Additionally, Christianity would avoid giving its riches to its main religious rival by avoiding the Islamic tradesmen who controlled the commerce in the spices marketplaces of Aden along with Alexandria, Egypt. Even though they were still unknown to Europe, Christian allies in Orient may exist.[129]

Moreover, as historian Michael Naylor Pearson explains, the expenses associated with using the traditional Middle Eastern routes to transport spices to Europe were somehow exceedingly high. The price of a kilogram of pepper underwent a significant increase as it changed hands, costing a mere 1 to 2 grams of silver at the source of production, but escalating to 10 to 14 grams in Alexandria, 14 to 18 grams in Venice, and even 20 to 30 grams in European consumer countries. Consequently, there existed immense potential wealth for Europeans provided they could bypass the established trade routes and fulfill the ever-growing demand for spices in the Old Continent. To accomplish this, it became imperative to discover a new maritime route to Asia.[130]

In order to solve this question, a number of great figures emerged, we are talking about great explorers. Among these, two names, in particular, stood out, that of Vasco da Gama and that of Christopher Columbus. These two sailors were hired and sent by the major expansionist powers of the time, Portugal, and Spain, with the task of discovering new maritime routes connecting the Old Continent to the East. Thus, from 1500 onwards, the powerful nations of the Iberian Peninsula, together with other European powers, embarked on a fierce race to secure the supremacy and control of the entire spice trade, as well as the ports that facilitated the sale and transit of such valuable merchandise and the territories where the spices were cultivated.

Soon after Portugal accomplished its Reconquista, pushing the last remaining Muslims in the southern region known as the Algarve region back toward the African continent and asserting freedom from

[128] Cartwright, M. (2021, June 09). **The Spice Trade & the Age of Exploration**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1777/the-spice-trade--the-age-of-exploration/.
[129] Ibidem
[130] Ibidem

its rivals "Christian Brothers", comprising its Spanish neighbours following equally violent conflicts, its commerce had already traditionally begun in the direction of its sole viable outlet the ports of the north of Europe, particularly Bruges and London, England. The finest products arrived from there, at a price that is simple for people to understand given the extensive network of swaps. Portugal was aware of the importance of the maritime route. Over many years, though, it has been one-way traffic. From the south to the north.[131]

Yet, in the event of success, direct access to Eastern goods, including priceless spices, could be attained right at the source of production. As a result, one could finally be able to acquire them at cheaper prices, foreseeing a clear opportunity for substantial revenues. Why On Earth halt the "hunt" for the despised Mouros within the nation's geographical borders, the Ocean, whilst one can continue the sequence of remarkable triumphs in the name of faith? This represents a splendid and longstanding ideal rationale familiar to the people.[132]

As we have previously pointed out, economic motivations are hidden behind this, and possibly, there might also be political reasons involved. Pursuing further conflict with the Muslims would result in extending the war to Africa, a region known for the origin of highly valuable commodities, particularly gold and slaves. The kingdoms of Castile and Aragon could strategize by venturing into Africa, aiming to assert dominance over these lucrative trades.[133]

The conquest of Ceuta, in fact, serves as a mere starting point in a series of occupations designed to establish Portuguese dominance over the coastal regions of Africa. The successful realization of this goal necessitates the direct elimination of intermediaries who have held a monopoly on the trade of West African goods, particularly gold and slaves, as they were traditionally transported by Arabs along the Saharan routes to the African Mediterranean coast. Moreover, seizing control of Ceuta offers a vital opportunity to generate revenues through piracy. This newfound control allows for the plundering of ships and Muslim villages, capturing highly sought-after goods and valuable individuals to be ransomed. It is important to note, as historian Francesco Antinucci ironically suggest, that both slavery and abduction are undertaken with the intention of promoting the greater cause: persuading and converting these stubborn unbelievers to embrace the true faith.[134]

Following Ceuta, the oceanic-African route commenced with the occupation of two groups of islands situated between Portugal and the western coast of Africa: we are talking about the isles of Madeira and the Azores. Taking advantage of the favourable climatic and land conditions typic to these

[131] Antinucci, F. (2016). *Spezie: Una storia di scoperte, avidità e lusso*. Laterza. P. 68-9
[132] Ibidem, p. 69
[133] Ibidem, p. 72
[134] Ibidem

locations, the King of the Lusitans undertook a genuine colonization effort centred around the cultivation of valuable commodities such as sugar and fine wine. These high-value products serve as excellent trade goods, making the most of the natural conditions found in the region.[135]

In the years that followed this endeavour, an astonishing number of 'navigators' would venture and continue to move southward along the western coastline of Africa setting up trading points.[136]

Among these was Bartolomeo Dias, who embarked on a journey along the West African Coastline in 1488, successfully completing the first circumnavigation of the Cape of Good Hope, the southernmost point of the African continent (present-day South Africa). Dias intended to undertake a subsequent, more daring expedition with the aim of discovering a direct maritime passage to India. Nevertheless, the leadership of this second voyage was entrusted to Vasco da Gama.[137]

In November of the same year, after successfully navigating around the Cape of Good Hope, the new captain of the enterprise, da Gama, made a halt at Mossel Bay to replenish supplies. Following that, the navigator proceeded up the East African coastline, making stops at various places including the Islamic trading post of Quelimane. Afterwards, Da Gama reached the Kingdom of Malindi in April, where he received the assistance of a pilot and a chart to aid the venturer in the voyage to India. Departing from Malindi in mid-April, the explorers then successfully traversed the vast expanse of the Indian Ocean and finally set foot in Calicut on the Malabar coast by mid-May. The direct sea route connecting Portugal to India had taken a duration of ten months but was finally set. Following the customary tradition of Portuguese sailors, the expedition marked their significant landfalls by erecting six pillars.[138]

[135] Ibidem, p. 73-4
[136] Ibidem, p. 74
[137] Cartwright, M. (2021, June 03). **Vasco da Gama**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/Vasco_da_Gama/
[138] Ibidem

Figure 4 Vasco da Gama Arriving at Calicut, India, 1900 A.C. Alfredo Roque Gameiro. National Library of Portugal, Lisbon.

The long quest for the spice route was over and now they were finally able to enjoy the Indian spices as much as they desired. However, the vessels were laden with a modest amount of valuable spices including pepper, ginger, cloves, and cinnamon, although it was merely a small representation compared to what would happen in future expeditions. Subsequently, the sailors embarked on their return journey to Portugal, with the ships arriving individually in July and August 1499, following some arduous and challenging months' voyage from India.[139]

During this period of the Early Modern Age, the fervour for finding new links to access the wealthy Indian spices trade spread widely across the continent because as we have said on many occasions European tradesmen, were still experiencing the same difficulties as, in fact, the main challenge that continued to persist regarded Muslim Arab merchants who were still dominating numerous important water routes to Orient. Therefore, Portuguese sailors along with several other explorers, experienced seamen and cartographers across the European landmass started seeking alternative maritime paths for reaching the East, and a notable contributor to this endeavour happened to be the Tuscan astrologer and mathematician Paolo dal Pozzo Toscanelli, who had previously reproduced the great geographer Strabo's chart of the globe and then offered a duplicate to the King Alfonso V of Portugal, recommending travelling westward to attain Cathay, nowadays China. When Alfonso V turned down Toscanelli's offer, he, in turn, handed another copy of the geographical map

[139] Ibidem

to Christopher Columbus, who, at the time in 1474, had gained himself an image as an adept sailor and seaman. The Columbus brothers came up with a plan around the year 1484, and Columbus then went to King John II of Portugal seeking financial support. Marco Polo's writings, Toscanelli's map, and several other sources served as the foundations for Columbus' computations. Columbus's plan was rejected and afterwards, he directed his attention toward the monarchs Ferdinand II and Isabella I of Spain, who, only after driving out the Moors from their country and defeating them, gave Columbus the three ships and money he had asked for.[140]

In the summer of 1492, Christopher Columbus embarked on his renowned expedition, setting sail from the port of Palos with his three well-known vessels: the Nina, the Pinta, and the Santa Maria. The primary aim of his expedition was to reach China, also known as Cathay. However, he was also instructed to assert the Spanish crown's ownership over any unclaimed territories and to uphold the prestige of the Church. As soon as he arrived at the island of San Salvador, in the Caribbean, in October of the same year, he realised he had not landed in China but, believed he had discovered an island near to his objective which, as far as he could tell, was not claimed by any sovereign nation and so he claimed it for Spain.[141]

Regardless of Columbus' initial intention, it is undeniable that he considered San Salvador to be one of the peripheral islands in the archipelago that he believed Japan was part of. This archipelago can be seen on Martin Behaim's globe of 1492. Columbus likely arrived at this conclusion by combining Marco Polo's exaggerated estimate of Asia's east-west span.[142]

People in Europe and broadly speaking, the entire European Christian community at the idea of unknown lands filled with potential Christians had their hearts filled with enthusiasm. Moreover, the possibility of unimaginable wealth was another reason behind the widespread fervour among the people of the Old World. This atmosphere made that the following year, Columbus was sent back to secure these opportunities, marking his second voyage. This journey established the so-called "encomienda system", where Spanish settlers laid claim to large areas of land and the native population provided labour in exchange for basic necessities as well as protection. Columbus still firmly believed that the lands he colonised for the Spanish crown were part of the Asian continent. However, upon his return to Spain in 1496, his third voyage was financed with the intention of

[140] Mark, J. J. (2020, October 12). **Christopher Columbus**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/Christopher_Columbus/
[141] Ibidem
[142] Parry. (1973). *The age of reconnaissance: discovery, exploration and settlement, 1450-1650*. Cardinal.

confirming this belief. What happened instead was that he ended up discovering the regions that nowadays are part of Central and South America.[143]

Among the outcomes of the extensive exploration along the coastal areas of the mainland was the realization that the New World, as the freshly discovered landmasses were increasingly referred to, possessed its own inherent interest and value. As a matter of fact, Columbus had discovered gold in Hispaniola, and starting from 1511, Cuba, skilfully settled by Diego Velázquez, began yielding significant amounts of this precious metal. In 1499, Ojeda stumbled upon the Margarita pearl fishery on the Venezuelan coast, which rapidly became a valuable asset and the centre of a thriving yet cruel slave trade. Cabral's expedition to Brazil unveiled the existence of Brazil wood, a commercially prized red dye, which ultimately lent its name to the territory. Cabot, instead, encountered a flourishing fishery that the ever-present Portuguese, among others, promptly capitalized on. Within the years that followed, a substantial supply of cod from the banks was making its way to Portugal.[144]

These series of exploratory endeavours undoubtedly served to mark the opening up of a new trade route: the so-called "transatlantic trade route". This new passage finally made it possible, as we have just discussed, to have a constant flow of several goods and exotic commodities from the Newly discovered territories, i.e., the New World, to the Old World. This flow in commercial goods and men, as well as animals, plants, and diseases, was perfectly summed up by Alfred Crosby with the expression "Columbian exchange". As this expression stands for the phenomenon that started after Columbus's expeditions in 1492. This phenomenon subsequently gained momentum resulting in the European colonization of the New World. [145]

[143] Mark, J. J. (2020, October 12). **Christopher Columbus**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/Christopher_Columbus/
[144] Parry. (1973). *The Age of Reconnaissance: discovery, exploration and Settlement, 1450-1650*. Cardinal.
[145] Horgan, J. (2022, May 19). **Columbian Exchange**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/Columbian_Exchange/

CHAPTER II

2.1 The importance of Port-cities for Early Modern global exchanges

The historical trajectory of European overseas expansion inevitably traverses its maritime ports. During the fifteenth century, and beyond, ports served as pivotal points for exploration as well as settlement as, European nations embarked on voyages everywhere the seas to reach Africa, Asia, and America. Most importantly, seaports served as both centres of departure as well as destinations for highly valuable goods coming from other regions of the world. Consequently, these significant ports were indisputably key hubs for the gathering of financial assets and material riches during the early modern era within the European continent. The most prominent ports in Europe served as both an expression and a representation of Europe's worldwide reach. Following their emergence in fact, a comprehensive maritime economy emerged throughout the continent, spanning from the Mediterranean region to the distant areas of the Baltic Sea and, broadly speaking, of the then-known Early Modern World.[1] Ports have historically served as significant hubs for economic growth and social transformation at the local, regional, national, and global levels.[2] The establishment of dominant naval facilities as well as armament ports can be attributed to the strategic management of maritime routes connecting metropoles and their conquered territories. Throughout the years, the impact of trading ports has closely paralleled the development concerning political and financial dynamics in the Atlantic region. This could lead us to infer that this could be the reason why the growth rate of Atlantic ports in Europe surpassed that of other European cities, whilst Mediterranean ports had growth rates comparable to those of interior towns.[3] As we delve into the historical significance and impact of ports and port cities, it becomes imperative to grasp the interpretation employed by historians when discussing these maritime hubs. The origins of the Early Modern ports are to be traced back to medieval urban practices. The designation "port" was typically bestowed upon towns whose primary focus revolved around trade, situated either along the

[1] Marnot, B. (2020, June 22). Ports as Tools of European Expansion. Encyclopédie d'histoire numérique de l'Europe [Online]. ISSN 2677-6588. Retrieved July 22, 2023, from https://ehne.fr/en/node/12437

[2] Polónia, A. (2010, June 15). European seaports in the Early Modern Age: concepts, methodology and models of analysis. *Cahiers De La Méditerranée*, *80*, 17–39. https://doi.org/10.4000/cdlm.5364

[3] Acemoglu, D., Johnson, S., & Robinson, J. (2005). The Rise of Europe: Atlantic Trade, Institutional Change, and Economic Growth. *The American Economic Review*, *95*(3), 546–579. http://www.jstor.org/stable/4132729, p. 549

banks of significant rivers or coastal regions. As trade and market activities assumed greater importance in a particular port, these endeavours would come under the regulation of urban authorities or the central government.[4]

The concept of the port underwent a significant mutation throughout the Early Modern era as Ports were identified by several characteristics: The first and most important was that ports had harbours that served as the focal point for the flow of goods and individuals. subsequently, the urban structure associated with ports has always encompassed prominent structures or places, among which are dockyards, storage facilities border control buildings, marketplaces, guesthouses, as well as taverns. Ultimately, ports were to be distinguished by social and economic categories that were serviced. Ports, for example, often drew a massive array of traders, financiers, accountants, business owners, and shipbuilders, along with newcomers. Ports' role as entry points, which is regarded by lots of people to be an embodiment of the globalising character ports had throughout the centuries, was made possible by an increasing variety of services offered along with exchanges involving ports together with their urban partners across direct hinterland areas, trans-national, and trans- continental linkages as well.

This position of the entry point turned out particularly essential for thinking about the many services ports served throughout the early modern age when most great cities had ports and were involved, in some manner, in the overall movement of European expansion overseas.[5]

However, just a few early modern ports were enormous, neither were all of them international entry points. A number of them were compelled into performing a social, commercial, as well as cultural "window role" by an authoritative government that was in dire require of communication with the outer world, exactly as the city of Saint Petersburg did inside the Russian state's circle.[6]

During the Early Modern era, ports played a pivotal role as gateways, owing to their status as bustling urban centres where a myriad of economic activities occurred. These transactions, which encompassed a wide range of functions, reflected the multifaceted nature of ports during that time. Besides fostering closer social ties, ports possessed unique purposes derived from their role as gateways to the open ocean and also as relays between diverse political bodies as well as societies. The primary and defining function of Early Modern ports centred around the exchange of goods, normally known as trade. However, this notion of trade extended beyond mere commerce, encompassing shipbuilding, bookkeeping, and an array of services, for instance, notarial registration

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4 Antunes Cátia & Institut für Europäische Geschichte (IEG). (2010). *Early modern ports 1500-1750*. Institut für Europäische Geschichte. Retrieved July 26 2023 from https://nbn-resolving.org/urn:nbn:de:0159-2010102547

5 Ibidem

6 Ibidem

as well as credit, insurance, and in certain instances, the establishment of specialized stock exchanges along with commercial companies. The prosperity of Early Modern ports as gateways for goods was contingent on their integration within vast exchange networks. While in the case of some ports for instance Venice, Seville, Lisbon and Cadiz that served primarily as centres for global trade, others such as Antwerp, Amsterdam and London experienced a different development, as these ports evolved from being simple regional hubs into influential ports with global relevance, effectively bridging the age-old European exchange networks with the newly discovered Atlantic and Asian trade links. In the majority of ports, the exchange of goods happened on a relatively free trade regime. Thus, possessing vital information about manufacturing places, consumption markets, and market dynamics was vital for a thriving port. This understanding held intrinsic value, encompassing insights into manufacturing practices, the climate, creditworthiness, and prevailing trends. The availability and timing of this information could prove advantageous or detrimental to a given port, depending on the specific circumstances and the quantity of information accessible at any given moment.[7]

Knowledge flowed with individuals, and as a result, ports had a comparative advantage over other sorts of urban centres. Because individuals regularly travelled with goods, and because ports were somewhat always an appealing setting for immigrants due to the great opportunities for labour inside the port or the potential to get transportation to another port, information reached the vast majority of ports quickly. Furthermore, there existed an increase in literary exchanges as well, which can potentially be classified as information. The aforementioned movement in publications such as books, and pamphlets, together with religious writings put ports at the heart of cultural interactions. This makes it not a surprise, however, that many harbours became largely permissive to a swap of unconventional religious views, political ideas, or technical breakthroughs. Ports, during this time, turned into secure locations for both indigenous and foreign scholars, clergy members, as well as traders' circles who were compelled to flee their native lands owing to their religious, scientific, or ideological beliefs as a result of the substantial circulation of academic as well as economic-related knowledge along with the level of acceptance demanded to maintain much of the transfer in knowledge flowing. Religious, social, and cultural mutual respect grew essential for preserving the existence of ports as social institutions due to individuals being compelled to coexist in sometimes constrained metropolitan locations. This is particularly true when it comes to issues with the upholding of law and order. During the Early Modern period, ports underwent significant transformations and evolved into prominent urban centres following two distinct patterns. The first pattern included gaining momentum by expanding beyond their conventional

[7] Ibidem

informal hinterland networks. Here, an aspect that is of great importance to highlight is the fact that the global economic landscape, together with the dense population concentration and the inherent structure of these coastal complexes, resulted in distinct demographic, sociological, and psychological phenomena that distinguish port zones from inland regions[8] - or by winning a competition against their peers at the local and regional levels. The renowned reputation of ports like Venice, Seville, Lisbon, and Cadiz may be attributed to their significant involvement in a bigger and more extensive foreign expansion effort led by the central governments to which they were affiliated. During the late sixteenth and early seventeenth centuries, port cities such as Venice, Seville, Lisbon, and Cadiz emerged as significant centres of global commerce due to their ability to engage in the exchange of novel commodities acquired from regions outside their conventional informal peripheral linkages.[9]

Figure 5 Hamburg: New tall ship port at the Asia quay around 1890-1900. Anonymous photochrom ©Library of Congress, Washington.

Port cities with remote locations, such as Venice, Lisbon, Seville, and Cadiz, relied on development via expansion. They were aware that capturing additional lands overseas was essential to their prosperity. They thus voluntarily contributed to the central state's attempts to expand its power abroad. They were used as pawns in political and diplomatic negotiations of the time. These ports needed allies in Europe to continue operating as commerce centres since they had weak ties to the rest of Europe. The decision was made to prioritise small regional ports located in the northern regions of the continent, which had strong connections to their respective hinterlands and surrounding areas. The selection process did not just focus on ports with comparable characteristics. Some of the cities that were picked as partners were Antwerp, Amsterdam, Hamburg, the Baltic ports, and London. Diplomatic arrangements as well as political complications had an impact on the selection process.[10]Unlike the development trends of Southern European ports, Northern European

[8] Polónia, A. (2010, June 15). European seaports in the Early Modern Age: concepts, methodology and models of analysis. *Cahiers De La Méditerranée*, *80*, 17–39. https://doi.org/10.4000/cdlm.5364

[9] Antunes Cátia & Institut für Europäische Geschichte (IEG). (2010). *Early modern ports 1500-1750*. Institut für Europäische Geschichte. Retrieved July 26 2023 from https://nbn-resolving.org/urn:nbn:de:0159-2010102547

[10] Ibidem

ports contended by giving incentives to partners in order to persuade them to undertake transactions on favourable terms. By granting unique rights for goods, people, and ideas imported from those areas, northern European ports encouraged interactions with their southern European counterparts. Examples of the procedures utilised include the Portuguese production facility in Antwerp and the granting of privileged charters to Venetian merchants in London. These strategies aided Northern European ports in becoming hubs for monopolistic practices designed to exert influence over the distribution systems that propagate goods, individuals, and ideas. Their principal objective was to significantly impact the flow of information and products.[11]

With the growth of international trade and changes in social and political landscapes, the Mediterranean ports began to integrate into a larger, more intricate system - the Mediterranean trading system. This system gradually became more organized and unified, ultimately leading to the emergence of free ports as a modern reality. This development was influenced by the evolution of centralized states and the implementation of mercantilist policies. It is intriguing to observe how these historical factors have greatly impacted contemporary trading practices.[12]

Throughout history, free ports have served as dynamic political and administrative entities, subject to continual nurturing and renewal. In various urban centres, such as Livorno, Marseilles, Nice, and Trieste, state authorities decided to establish free ports as a means of bolstering trade and redirecting business away from rival ports. In the case of Genoa, an aristocratic republic, the decision to establish a free port came during a time of crisis, specifically a food shortage. Merchants, shipowners, and artisans recognized the need to provide the city with provisions as expeditiously as possible and thus advocated for the establishment of a free port. It is thus interesting to note that although Genoa was considered the oldest free port in the Mediterranean, Livorno became the main port of the peninsula in 1590 under Cosimo I. This move made Tuscany a naval power in the Mediterranean, and it's fascinating to see how strategic decisions can shape the course of history.[13]

[11] Ibidem
[12] Iodice, A. (2016). L'istituzione del porto franco in un Mediterraneo senza frontiere. Politics. *Rivista di Studi Politici*, *5*(1), 19-33. https://rivistapolitics.wordpress.com/numero_5/
[13] Ibidem

Figure 6 Collection of various views of the city and port of Livorno, 1600.Calonaciu, G. National Library of Portugal.

The city saw an influx of Moors, Spaniards, and Levantine Jews, who brought with them their rich cultural heritage and established trade routes that were exceptional for the time. This resulted in a thriving economy and international partnerships that further strengthened the city's position as a prominent trading hub. Freeports started to proliferate across the Mediterranean region as an answer by several nations to the changing world market order's alterations and threats.[14]

Ports, in fact, were crucial to the development of Europe throughout the Early Modern period. Their development was fuelled by diverse economic, social, and cultural exchanges that added to their prominence within their respective areas, making them the most affluent cities of the period. The most influential ports throughout the time of the Renaissance and the sixteenth century concentrated largely on one task and achieved considerable relevance as a result of their active involvement in the nation's state's abroad growth. However, ports comprising Amsterdam and London began to take centre stage as the 16th, 17th, and 18th centuries unfolded. These evolved transforming into crucial nodes for the global swap of products, individuals, and thoughts.[15]

Such worldwide entry points like Amsterdam, along with London, were significant because they could play both a regional and a trans-continental function. As the hubs of their peripheral systems, local networks, and transcontinental marketplaces, they have been successful in achieving greatness as a result of their activities. Due to this enormous change from the Mediterranean region to the

[14] Ibidem
[15] Antunes Cátia & Institut für Europäische Geschichte (IEG). (2010). *Early modern ports 1500-1750*. Institut für Europäische Geschichte. Retrieved July 26 2023 from https://nbn-resolving.org/urn:nbn:de:0159-2010102547

Atlantic region axes, the northwest part of Europe experienced different social, political, economic, cultural, and religious changes compared to Southern Europe.[16]

Moreover, going back to Livorno's case, according to historian Corey Tazzara, this free port had a significant impact on the widespread adoption of the institution. In fact, it is vital to note that the expansion of free ports can be divided into four distinct phases. The initial phase, which lasted from approximately 1591 to 1650, can be referred to as the Tyrrhenian period. Inspired by Livorno's success, ports such as Genoa, Villefranche, and Nice in the Savoyard region implemented their own free port policies. This was followed by an expansive phase from roughly 1650 to 1740, during which free ports emerged throughout Western Europe, particularly in the vicinity of the Italian peninsula. Trieste, Ancona, Naples, Messina, Marseille, Tangier, Dunkirk, and Althona were among the best-known examples. By the mid-eighteenth century, colonial powers began establishing similar ports in the Caribbean Sea, including Martinique, Guadeloupe, Tobago, Jamaica, and Saint Domingue (Haiti). Subsequently, the concept of free ports spread to East Asia and North America, signifying the transformation of free ports from an Italian phenomenon to a Western European, Atlantic, and eventually global phenomenon.[17]

In summary, it can be said that throughout the Early Modern Age, port cities had tremendous significance, which can be comprehended via many lenses, such as historical, economic, and geopolitical. Throughout the early stages of the Modern Age, port towns assumed a crucial role in propelling economic growth, allowing the exchange of cultural ideas, exercising political influence, and nurturing technological progress. The subject's immense influence on the trajectory of historical events during this particular era is of utmost importance, making them a topic of considerable scholarly fascination within the realm of early modern history and the examination of global interconnections.

[16] Ibidem

[17] Tazzara, C. (2014). Managing Free Trade in Early Modern Europe: Institutions, Information, and the Free Port of Livorno. *The Journal of Modern History*, *86*(3), 493–529. https://doi.org/10.1086/676884 p. 496

2.2 The rise of a set of global goods

During the Early Modern Age, a notable paradigm shift took place because of the emergence of a range of global commodities that played a crucial role in shaping and interconnecting cultures on a global scale. This section examines the origins and significance of three major commodities on a worldwide scale: Gold, Sugar, and Cotton. It explores the far-reaching effects of these commodities on the economic, social, and environmental aspects of the Early Modern era.

During this age, gold had an unmatched prominence as a worldwide commodity. The object in question functioned as a representation of affluence and authority, facilitating the endeavours of exploration and subjugation. The pursuit of gold served as a catalyst for the Age of Exploration, resulting in the exploration and subsequent colonisation of new territories, as well as the creation of trade networks that facilitated global interconnectivity across various locations. The economic ramifications were significant, given that gold emerged as a universally accepted medium of exchange and a gauge of prosperity, while the social consequences included the ascent of mercantilism and the establishment of global interdependence.

The food item commonly known as sugar, sometimes referred to as "white gold," had a profound and revolutionary impact on the socio-economic and cultural landscape of the Early Modern era. The cultivation of sugar, particularly in the New World, was strongly dependent on the transatlantic slave trade, which represents a significant and sombre period in human history. From an economic standpoint, sugar emerged as a highly profitable agricultural commodity that played a pivotal role in driving the expansion of European colonial powers. The production and trading of this product had a significant role in the flourishing of the global economy. Nevertheless, the establishment of sugar plantations resulted in significant environmental impacts, characterised by the depletion of forests and the deterioration of soil quality.

Cotton has evolved as a significant commodity on a worldwide scale. The demand for cotton textiles saw a significant increase, leading to its widespread manufacturing throughout multiple continents. The economic ramifications were considerable, given that the trading of cotton emerged as a prominent driver for commercial activity. The cotton industry had an instrumental part in driving the expansion of early industrialisation, hence bringing about notable transformations in labour practices and urban development.

The significant environmental impacts were land conversion and heightened water consumption. The emergence of commodities such as Gold, Sugar, and Cotton throughout the Early Modern Age had profound global consequences. These commodities served as both economic catalysts and were

intricately connected to social as well as environmental transformations. The consequences of their circulation continue to reverberate in the present day considering that they played a pivotal part in building the current globalised society.

2.3 Gold

The early modern era, which spanned from the 15th to the 18th century, was a significant epoch characterised by extensive worldwide exploration and expansion. The historical period under consideration was marked by the European endeavour to acquire more lands, accumulate assets, and expand knowledge. This pursuit, as emphasized in the previous sections of this paper, was motivated by the intellectual and cultural climate of the Renaissance, which fostered a spirit of inquiry as well as curiosity. During this period, there was a notable emergence of expansive maritime empires, with Portugal, Spain, England, and the Netherlands taking the forefront of the European rise to power. Concurrent with these expeditions, there was an unexpected finding of substantial quantities of gold in the recently discovered territories of the Americas, Africa, and Asia.

In the year 1492, the coveted resource that had great appeal among European rulers proved to be the precious metal commonly referred to as gold. This valuable shimmering element facilitated the procurement of military forces, hired soldiers, and firearms, enabling the safeguarding and territorial expansion of the respective empires. Throughout the ages, gold has consistently maintained a scarcity, although, in the final years of the 15th century, its rarity reached an unprecedented level within the European context.[18]

The desire for finances served as a significant impetus for subsequent voyages, as European powers endeavoured to exploit these unexpected riches. The setting up of commercial networks had a vital role in enabling the transit of gold. The Spanish treasure fleets, for example, were responsible for the transportation of precious metals such as gold and silver from the Americas to Spain through the established trade route known as the "Carrera de Indias." Similarly, the Portuguese used the "Carreira da Índia" to engage in commercial activities with Asian regions. These transport networks facilitated the interconnection of continents and laid the groundwork for a global economic system.

[18] Cartwright, M. (2022, July 25). **The Gold of the Conquistadors**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/2045/the-gold-of-the-conquistadors/

In this particularly fervent time, the Transatlantic Trade had a crucial role in facilitating the movement of gold throughout the early modern era. Motivated by their pursuit of wealth and renown, Spanish conquistadors embarked upon the conquest of the Aztec and Inca civilizations, resulting in the acquisition of huge quantities of gold and silver.

Similarly, the Asian commerce routes were of significant importance in enabling the movement of gold across various locations. The Silk Road has historically served as a significant channel for the flow of goods, ideas, and cultural practices between the regions of Europe and Asia. As European merchants embarked on their eastward journeys, they met prosperous civilizations characterised by well-developed economic systems, where gold was important. India and Southeast Asia were renowned for their significant gold output and had significant roles as key participants in the global commerce network. The areas in question saw the Portuguese, Dutch, and British establishment of trade positions, resulting in the acquisition of precious goods such as gold. These encounters served as catalysts for economic expansion and also facilitated the spread of cultural ideas.

Figure 7 Mansa Musa of the Mali Empire 1375 CE. Detail from the Catalan Atlas Sheet 6, National Library of France, Paris.

During the period spanning roughly from the seventh to the eleventh century, there existed a significant trading network known as trans-Saharan commerce. The trade network had a crucial role in establishing a link between Mediterranean nations, characterised by a significant demand for gold and the accessibility to salt, as well as to the sub-Saharan economy, renowned for its abundant gold resources. The most important commodity of the cross-Saharan exchange was gold, a highly sought-after metal that attracted huge interest across many parts of the Western world. The movement of gold within commerce was influenced by the unpredictable connection between the

market's demand for coins and the ease of access to such currency. The establishment of the Soninke kingdom of Ghana is believed to be closely connected to the origins of the trans-Saharan trade in gold around the early fifth century. The advent of Mansa Musa of Mali and his passage into Egypt during the early fourteenth century, which brought along a significant quantity of gold, precipitated a considerable decline in the gold market. This event served as an indication that the overall supply of gold was not as plentiful as previously imagined. Without the slightest doubt, a portion of the African precious metal was likewise utilised in the production of bullion coins in the globe's western regions. This marks a turning point for the circulation of this highly craved good as global awareness of African gold was such that a nugget of precious metal held by the monarch of Mali can be observed on a Spanish map dating back to 1375.[19]

Gold was often used as a means of acquiring salt, a highly sought-after mineral that played a crucial role in the preservation of dried meat and the enhancement of culinary flavour. This mineral was scarce around the Savannah area in the south of the western part of the Sahara (known as the Sudan region) as well as the woodlands of southern Western Africa. The Portuguese disclosed a particular interest in acquiring gold due to their necessity of repaying Asian traders since the latter were less inclined to engage in barter trade. However, it is worth noting that a significant amount of gold continued to flow northwards via the Songhai Empire and into North Africa.[20]

The metal continued to serve as the primary commodity within trans-Saharan commerce, with kola nuts as well as slaves occupying secondary positions. According to the observations made by Leo Africanus, a renowned Moroccan intellectual, during his visits to Songhai during the sixteenth century, noted how the administrator of Timbuktu had a substantial number of gold items. Additionally, Africanus noticed that the currency used in Timbuktu consisted of gold coins without any kind of official marking or inscription.[21]

In fact, as earlier as the fifteenth century CE, the region west of the continent was responsible for the production of approximately 10 per cent of the global gold output. During the 16th century CE, the Portuguese were responsible for handling an average annual quantity of around 400-550 kilogrammes. Needless to say, a host of European powers, including nations such as England, France, Denmark, and Sweden, along with the Netherlands, showed a discernible curiosity in

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[19] Department of the Arts of Africa, Oceania, and the Americas. "The Trans-Saharan Gold Trade (7th–14th Century Century)." In *Heilbrunn Timeline of Art History*. New York: The Metropolitan Museum of Art, 2000–. http://www.metmuseum.org/toah/hd/gold/hd_gold.htm (October 2000).

[20] Cartwright, M. (2019, May 13). **The Gold Trade of Ancient & Medieval West Africa**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1383/the-gold-trade-of-ancient--medieval-west-africa/

[21] Department of the Arts of Africa, Oceania, and the Americas. "The Trans-Saharan Gold Trade (7th–14th Century Century)." In *Heilbrunn Timeline of Art History*. New York: The Metropolitan Museum of Art, 2000–. http://www.metmuseum.org/toah/hd/gold/hd_gold.htm (October 2000)

joining, if not taking over, the monopoly of this rich market. Nevertheless, it is important to acknowledge that the African monopoly over the trade of gold was nearing its conclusion due, among a number of reasons, also to the discovery of the abundance of such material in other parts of the world, namely, the Americas.[22]

According to Mark Cartwright, the Americas, in fact, proved to be a very favourable location for the pursuit of the precious metal. The native peoples of the New World did not attach value to the metal based on its scarcity or as a medium of exchange. However, they held it in high regard due to its lustrous appearance, resistance to decay, spiritual connotations, and the ease with which artisans could manipulate it. Due to these factors, it was extracted, exchanged, and offered as a kind of tribute across the entire continent. Upon the arrival of the colonizers from the Old World, their interaction with individuals adorned with exquisite ornaments and the sight of resplendent items adorning the walls of local temples elicited a profound sense of delight and elation. Upon commencing the takeover of Mexico in 1519, the explorer Cortés along with the people around him were primarily motivated by the pursuit of gold, which had a central spot in their collective consciousness. Towards November of the same year, the Spaniard met with the Aztec emperor, marking the first stages of their interaction in the pursuit of wealth. Notably, Cortés was given a splendid necklace adorned with golden crabs, which served as a symbol of their initial contact. Following the conquest of Tenochtitlan, the capital of the Aztec Empire, in August 1521, a significant amount of cultural and material wealth was acquired via the looting of various structures, including buildings such as temples, palaces, storehouses, as well as private dwellings. Indigenous populations were often subjected to captivity and torment in order to extract information about the location of their precious possessions, with a special emphasis on items made out of gold. The conquistadors had an obsessive need for various commodities, ranging from golden nose plugs

Figure 8 The Torture of Cuauhtémoc. Leandro Izaguirre, 1892. National Museum of Art, Mexico City.

[22] Cartwright, M. (2019, May 13). **The Gold Trade of Ancient & Medieval West Africa**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1383/the-gold-trade-of-ancient--medieval-west-africa/

to concealed deities. According to a contemporaneous indigenous account, the Spanish forcibly appropriated possessions from the local population. The main focus of their endeavour was to prospect for gold, exhibiting little inclination for greenstone, precious feathers, or turquoise.[23] The gold that was plundered from Cuzco, together with the abundant collection of gold vessels amassed by Atahualpa in a desperate attempt to secure his release, through a process of melting, subsequent deduction of the royal fifth, and subsequent distribution. This allocation of resources was sufficient to bestow upon each member of the army substantial wealth that would last a lifetime.[24]

Furthermore, in order to establish a consistent influx of gold, indigenous tribes were promptly compelled to provide the Spanish with an annual tribute, often consisting of little gold discs. Taxco, Zacatecas, Guanajuato, and Pachuca, along with San Luis Potosí saw the establishment of new gold and silver extraction facilities, resulting in a continuous influx of valuable materials being sent back to the Spanish monarchy. Moreover, in the year 1532, another Spanish explorer, Francisco Pizarro, launched a conquest of the thriving Inca Empire of Peru. The Incas believed that gold came from the perspiration of their sun deity Inti, which is why it was made used for manufacturing a variety of sacred items, including face shields as well as sun discs. Initially, the Incas utilised mines to obtain workforce as well as taxes from particular regions. Sources of gold were extracted by employing small tunnels which tracked the veins leading to the material. Furthermore, there also existed open-pit gold mines, and precious metal was extracted from riverbeds. The Spanish established and exploited valuable metal deposits throughout the region of South America to the full extent of their capacity. Particularly significant mines comprised those in Colombia's Cauca Valley, Bolivia's Potosì and Oruro, and Peru's Castrovirrey and Cerco de Pasco. During the sixteenth and seventeenth centuries, roughly 80% of the entire value of all commodities delivered to the European continent consisted of the metals silver and gold. As a result, as of the year 1560, the invaders had left and returned to Spain with over 100 tonnes of gold, effectively tripling the amount that was available in precious metal in Europe. In the final stages of the sixteenth century, ships delivered approximately four tonnes of gold annually to Seville.[25]

[23] Cartwright, M. (2022, July 25). **The Gold of the Conquistadors**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/2045/the-gold-of-the-conquistadors/
[24] Parry, J. H. (2000). *The age of reconnaissance: Discovery, exploration and settlement 1450-1650*. Phoenix. [25] Cartwright, M. (2022, July 25). **The Gold of the Conquistadors**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/2045/the-gold-of-the-conquistadors/

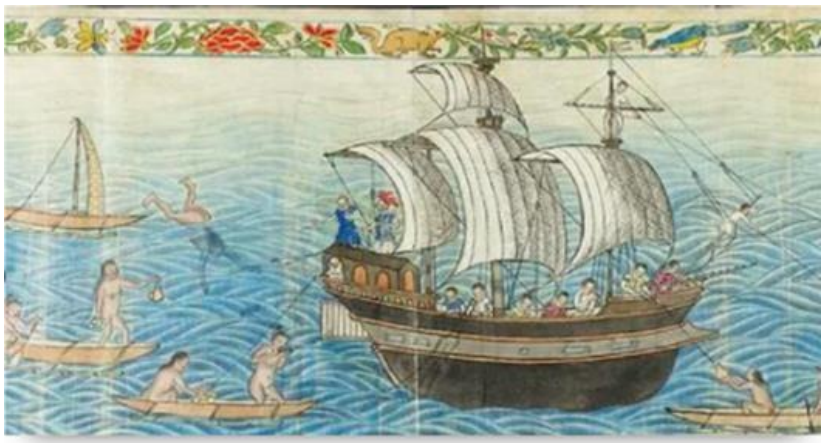

Figure 9 Spanish Manila galleon in the Ladrones Islands, Mariana Islands, in the Pacific Ocean 1590. From the Boxer Codex.

During the 17th century, the Portuguese economy played a significant role within the comprehensive Atlantic economic system. The trade in goods with the East Indies saw significant stagnation due to the prevailing dominance of Dutch, English, and French competitors. Following the demise of the first enterprise, Portugal, namely the aristocracy and the state, persisted in sustaining their livelihood via marine interactions and subsequently redirected their economic endeavours to include the Atlantic region.[26]

During that time, the allure of Brazilian gold grew stronger and stronger. This led to a decrease in sugar cultivation as workers were drawn away to the mines, where they could earn more money. However, the idea that gold was more profitable than sugar was actually a misconception, but people's beliefs can greatly impact their actions. Despite any divergence from reality, individuals' inclination to seek gold over sugar is likely to be heightened if they have the belief that gold yields more profitability. The widespread adoption of gold coins facilitated the procurement of commodities from other nations something that could have otherwise posed challenges in terms of accessibility.[27]

While gold's arrival may have helped with the balance of the trade deficit, it was not a complete solution to all problems. The everyday currency was still silver, as gold coins were too valuable for regular purchases in local markets. Gold coins were primarily important for international commerce, rather than regional or local trade.[28]

[26] Godinho, V. M. (2005). Portugal and the Making of the Atlantic World: Sugar Fleets and Gold Fleets, the Seventeenth to the Eighteenth Centuries. *Review (Fernand Braudel Center), 28*(4), 313–337. http://www.jstor.org/stable/40241758, p. 317
[27] Ibidem, p.325
[28] Ibidem, p.326

During the 18th century, Brazil had multiple fleets that aligned with the economic specialization of their respective regions. The fleet from Rio de Janeiro, in particular, was responsible for transporting gold, pieces of eight from Buenos Aires, and hides from the Spanish colonies in the South. However, the primary focus of this fleet was the transportation of gold. The assessment of gold shipments is an important topic that has found little inquiry if not only by one known publication to date, written over a century ago by the Viscount of Santarém.[29]

The influx of gold from Brazil to Lisbon began in 1695 and experienced a significant surge during the late 18th and early 19th centuries. Until 1755, the quantity of gold transported by Brazilian ships exhibited an average yearly fluctuation within the range of 14,000 to 16,000 kilogrammes.[30]

The issue of contraband must as well be taken into consideration, although it is difficult to determine its coefficient and lacks uniformity. As a matter of fact, the ships belonging to the monarch of England fortuitously arrived at Lisbon concurrently with the Brazilian armadas, often anchoring among the ships from across the Atlantic. Under the cloak of darkness, a substantial quantity of unregistered gold was clandestinely transported onboard the English boats. Furthermore, it was seen that several vessels, irrespective of their national origin, whether English or French, managed to effortlessly get substantial quantities of gold, even in the presence of heightened monitoring inside Brazilian harbours. By the year 1703, the quantity of gold mined from Brazil had exceeded the total yearly gold production of the Portuguese at El Mina and Guinea, and it also exceeded the amount extracted by the Spanish across the West Indies around the 17th century. Furthermore, after the first decade of the 18th century, the yearly Brazilian gold totals far exceeded the combined contributions of the two Atlantic sources and two Indian Ocean sources from the 1500s.[31]

The movement of gold and precious metals, to broaden our field of inquiry, throughout the early modern period had considerable impacts on the world economy. The introduction of gold and silver from the Americas as well as from Asia and Africa resulted in a notable exacerbation of inflation inside the European continent. As with the introduction of more valuable metals into the economic system, the buying power of currency saw a decline, resulting in an upward trend in the prices of commodities as well as services. Moreover, gathering gold and silver in Europe played a pivotal role in financing expeditions, colonisation efforts, and military campaigns. Furthermore, this policy facilitated the allocation of resources by nations towards industrial growth and infrastructure, hence playing a significant role in the emergence of mercantile empires.

[29] Ibidem, p.328
[30] Ibidem, p. 329
[31] Ibidem, p. 330

According to the analysis put out by Douglas Fisher, the socioeconomic shift experienced by Western Europe, whereby it transitioned from an agrarian-based economic system to an industrial one, was characterised by a momentous economic phenomenon referred to as the price revolution. This transformative event took place during the sixteenth and early seventeenth centuries. Although the exact degree of influence caused by the prolonged inflation is a matter of debate, it is apparent that a significant factor was the substantial influx of specie from the American colonies. The influx reached its highest point during the early 16th century until the occurrence of the Thirty Years War, which happened concurrently with a prolonged period of increasing costs. It is worth noting that the increase in prices in Spain and other European nations had a close correlation, even though the influx of specie mostly affected Spain. The onset of this phenomenon exhibited modest variations across various nations, however, a parallel surge in prices was seen across much of Europe during the period of fast entry of New World currency, which occurred between around 1525 and 1600. These price swings were sometimes marked by significant fluctuations.[32]

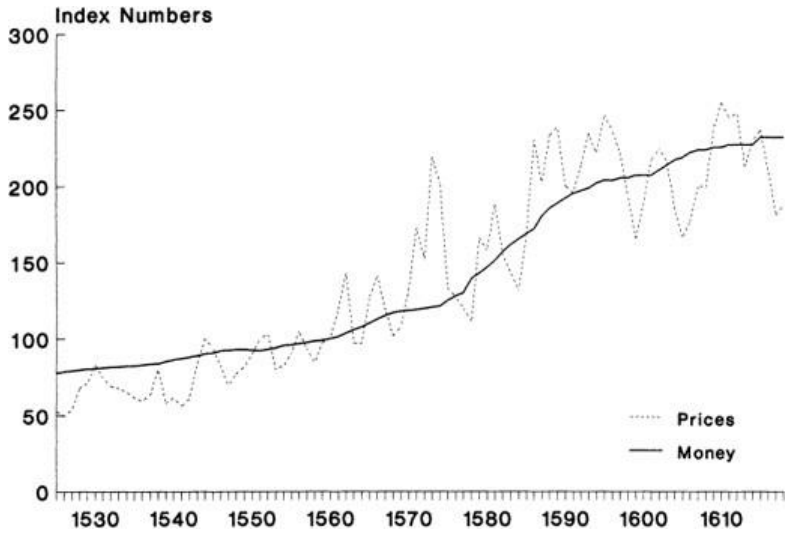

Figure 10 FRENCH MONEY AND PRICES, 1525-1618.

The ramifications of this inflationary phenomenon were multifaceted, resulting in beneficiaries experiencing adverse effects. Exporting countries had an increase in their earnings, while borrowers encountered a more favourable situation in terms of loan repayment due to the devaluation of their currency. Nevertheless, it is worth noting that fixed-income groups and salaried individuals saw a decline in their ability to purchase goods and services, resulting in social discontent in some areas.

The conventional explanation for the increase in prices, without taking into account the various complexities involved, is based on the classic quantity theory of money, supported by the

[32] Fisher, D. (1989). The Price Revolution: A Monetary Interpretation. *The Journal of Economic History*, *49*(4), 883–902. http://www.jstor.org/stable/2122742, p. 883

international specie-flow mechanism. The arrival of specie in Spain led to an increase in the Spanish price level and a trade deficit, as the demand for foreign products in Spain exceeded their own exports. This trade deficit was financed by specie, which then entered the monetary bases of other countries with surpluses with Spain, increasing their money supply and ultimately leading to an increase in their price levels. Consequently, the overall price level in Western Europe rose along with the money supply, with New World specie being considered as the driving force behind these changes.[33]

According to Omer Lutfi's article from 1970, the Price Revolution during the 16th century had a significant impact on the economic decline of the Ottoman Empire and the Near East. Evidence from Ottoman archives showed a more than fivefold increase in food and raw material prices, which were imported through trade with Europe across the Mediterranean. Barkan argued that the establishment of a strong Atlantic economy in western Europe was a major contributor to the decline of the Ottoman social and economic order. The combination of inflation and other internal factors led to a social and economic crisis in the Ottoman Middle East during the late 16th century, marking a pivotal turning point in their history.[34]

The Portuguese market, as well as foreign markets such as the English, Hamburg, Dutch, and even the French, benefited and suffered from the influx of gold. For instance, Labrousse's analysis of prices, wages, and revenue data for France reveals fluctuations and cycles of prosperity and depression. It is important therefore to note that gold crises occurred with regularity in intervals of three, six, eight, and ten years, namely in 1713, 1716-17, 1722-24, 1732, 1736, 1744, and 1754.[35]

During the early modern era, the exchange of gold beside having produced some relevant economic impacts, it also had significant social consequences for African societies and native populations in the Americas. These consequences were marked by disturbances, exploitation, and significant changes in customary ways of living. The high demand for people to work in the gold mines as well as in the plantations in the New World was the driving force behind the transatlantic slave trade.[36] In fact, according to John Horace Parry, “In the first half-century after the conquest, the Spaniards grew accustomed to an extremely lavish use of labour. They conceived ambitious building projects and carried them out with the same ferocious determination which they had displayed in the

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[33] Ibidem, p. 883-884

[34] Pamuk, Ş. (2001). The Price Revolution in the Ottoman Empire Reconsidered. *International Journal of Middle East Studies*, *33*(1), 69–89. http://www.jstor.org/stable/259480, p. 69-70

[35] Godinho, V. M. (2005). Portugal and the Making of the Atlantic World: Sugar Fleets and Gold Fleets, the Seventeenth to the Eighteenth Centuries. *Review (Fernand Braudel Center)*, *28*(4), 313–337. http://www.jstor.org/stable/40241758, p. 330

[36] Babacar M’baye (2006) The Economic, Political, and Social Impact of the Atlantic Slave Trade on Africa, The European Legacy, 11:6, 607-622, DOI: 10.1080/10848770600918091, p. 607

conquest itself. Later in the century, the development of mines created a great demand for pick-and-shovel labour, some of this demand was met by the import of negro slaves, but most of the work was done by the Indians."[37] European nations established trading posts along the West African coast to acquire enslaved individuals who were then transported to the New World against their will. This inhumane practice separated families, communities, and entire societies, leaving long-lasting impacts on the social structure of African nations. Additionally, the sudden arrival of European trade, technologies, and illnesses had a disruptive influence on African societies. Local markets were inundated with European goods, often devaluing local products and undermining traditional economies. The introduction of firearms also altered power dynamics among African groups, leading to conflicts and the consolidation of some states at the expense of others.

From the sixteenth to the nineteenth centuries, a large number of Africans were forcibly taken to Europe and the Americas as slaves. This was part of a global economic enterprise known as the Atlantic trade, which lasted for over 400 years. The Atlantic trade impacted millions of Africans from various regions including Senegambia, Sierra Leone, West-Central Africa, South-East Africa, the Bight of Benin, the Gold Coast, and the Bight of Biafra. While the effects of the Atlantic trade on the enslaved Africans are partially documented, those on the non-enslaved remain unknown. This trade brought about economic chaos and political disorders in Africa and arrested its development. It exploited Africa's technological, agricultural, and cultural skills for the West's development only. Additionally, it halted Africa's capacity to transform into a capitalist economy, starting a continuous process of economic exploitation and social and political fragmentation. Emphasizing more on the social impacts of gold trade, we point out that the Atlantic trade in this good gave rise to a system of semi-feudal classes in Africa that worked with Europeans to oppress their own people. These classes were made up of members of the African aristocracy and middlemen who helped capture and sell Africans, profiting greatly from the trade. However, despite their gains, it was the Europeans who benefited the most from the trade. They gained access to an unprecedented amount of human workforce and economic capital, which allowed them to develop their societies at Africa's expense.[38]

Although various forms of slavery existed in Africa before the arrival of Europeans in the 1400s, the impact of the Atlantic slave trade surpassed that of previous forms in terms of the immense loss of lives and resources it caused in Africa and the Black Diaspora. All three forms of slavery relegated Africans to an inferior social status and deprived them of their freedom, legitimizing their

[37] Parry, J. H. (2000). *The age of reconnaissance: Discovery, exploration and settlement 1450-1650*. Phoenix.
[38] Babacar M'baye (2006) The Economic, Political, and Social Impact of the Atlantic Slave Trade on Africa, The European Legacy, 11:6, 607-622, DOI: 10.1080/10848770600918091, p. 607-8

removal from their homeland and relocation in foreign territories. However, the Atlantic trade was different from African and Arab slavery in that it was based on a unique and rigid concept of bondage. Unlike the Arabs and Africans, Europeans had a theory of slavery in which conversion to the religion of the master or marriage with the master did not prevent a person and their descendants from inheriting the status of a slave.[39]

2.4 Sugar

The global output of crystallised cane sugar is estimated to be over 40 million short tonnes on an annual basis, positioning sugar cane as a very important tropical crop and a crucial contributor to the global food supply. This quantity accounts for more than 60% of the sugar eaten by the global population, and based on current global pricing, the yearly worth of the whole raw cane-sugar harvest exceeds 2.5 billion dollars. Despite the crucial nature of the crop, there has been a lack of study devoted to its genesis within the fields of botany and anthropology.[40]

The introduction of sugar cane to the Westerners can be attributed to the expeditions led by Alexander the Great. In the year 327 B.C., Nearchos, a military official serving in Alexander the Great's army, documented that the indigenous people living beyond the Indus River have the capability to produce honey from the sap of a plant species known as the "honey-bearing reed", without any assistance from bees. During the era of Pliny the Elder, the knowledge of cane sugar in Rome was attributed to the importation of goods from India to the port city of Alexandria. The cultivation of sugar cane was documented in South China about the year 200 A.D. and in Persia around 600 A.D. Following the Muslim expansion in the seventh century, the cultivation of sugar cane was brought to the Iberian Peninsula from Egypt, subsequently leading to the establishment of a sugar industry in Spain. The sugarcane plant was introduced to the Canary Islands from Spain, leading to the establishment of farms in the region. During the fourteenth century, the production of sugar was initiated by the Portuguese in the regions of Madeira, the Azores, and the Cape Verde Islands.[41]

The initial mentions of a sugar trade within the Mediterranean region can be traced back to Syria, Palestine, and Egypt during the aftermath of their conquest by the Arabs in the early 7th century.

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[39] Ibidem, p. 608
[40] Warner, J. N. (1962). Sugar Cane: An Indigenous Papuan Cultigen. *Ethnology*, *1*(4), 405–411. https://doi.org/10.2307/3772848, p. 405
[41] Ibidem, p. 406

The practice of cultivating sugar expanded throughout the Nile's valley and delta, as well as along the Levantine coast. It also extended into the Jordan Valley and other inland regions where irrigation was feasible. In the latter part of the 7th century, the Arab expansion covered North Africa, ultimately reaching Morocco in the year 682. Deerr and von Lippmann recount the introduction of sugar into the western Mediterranean shortly after the conquest, aligning with the observation that sugar followed the path of the Koran. Approximately two hundred years seem to have elapsed between the Arab acquisitions within the western part of the Mediterranean and the emergence of a prosperous sugar industry in that area. The growing of sugar in North Africa was reported by Ibn Hawqal, a prominent scholar of the 10th century. By the 11th century, sugar production had taken root around locations like Gabes and Djalula in Tunisia, as well as Ceuta in Morocco. The most significant production hub emerged in southern Morocco, specifically in the Sous region and adjacent valleys flanking the High Atlas Mountains. Spain's earliest recorded instance of a sugar industry is documented in the Calendar of Cordoba, a register of key agricultural activities dated to 961. Within Spain, the Mediterranean coast of Andalucia and the Guadalquivir Valley emerged as primary centres for the industry, although sugar cane was cultivated as far north as Valencia. Records also indicate the export of sugar from Sicily around the year 900, with Ibn Hawqal describing a flourishing industry half a century later.[42]

The expansion of sugar cane farming progressed towards the east over the Pacific region, extending its reach to the neighbouring Solomon Islands, including New Hebrides, New Caledonia, and subsequently encompassing Polynesia. The production of sugar cane expanded towards western regions, including the Asian continent, Indonesia, the Philippines, and subsequently the northern part of India. For a considerable timeframe, sugar cane was mostly consumed as a confectionery product, until around 3,000 years ago when individuals in India began the practice of extracting juice from the canes and manufacturing sugar. Over the course of centuries, the Indian people maintained complete secrecy about the entirety of the sugar-making procedure, thus yielding substantial financial gains via commercial transactions throughout the subcontinent. A major change occurred with the incursion of Darius I, the monarch of the Persian Achaemenid Empire, into India in the year 510 BCE. It was on this occasion that the delighted invaders imported agricultural and technological novelties to Persia and started the process of growing sugar domestically. Throughout the eleventh century CE, sugar played a substantial role in the commercial exchange between the Eastern regions and Europe. The production of sugar in Persia persisted for about one millennium, under a succession of kings, until the industry was decimated by the Mongol incursions in the 13th

[42] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 180

century. Around the year 632 CE, concurrently with Prophet Muhammad's campaign to propagate Islam globally, often referred to as the Holy War, an agrarian revolution was initiated by his companions.[43]

The rapid spread of Islam throughout the 7th and 8th centuries served as a spur for the propagation of the very major though little documented agricultural revolution. The emergence of this revolution came predominantly across India because it offered suitable environmental conditions, including high temperatures, abundant rainfall, and the availability of suitable crops. The first occurrence of this phenomenon took place within the eastern territories including the early Islamic world, specifically Persia, Mesopotamia, and perhaps even contemporary Yemen, where significant exchanges occurred with the Indian subcontinent. By the turn of the 11th century, the diffusion of this phenomenon had traversed the vast expanse of the Islamic realm, resulting in significant transformations to the economic landscapes of numerous regions. These regions encompassed Transoxania, Persia, Mesopotamia, the Levant, Egypt, the Maghrib, Spain, Sicily, the savannah lands flanking the Sahara Desert, portions of West Africa, as well as the coastal areas of East Africa. The implications of this phenomenon were extensive, impacting not just agricultural productivity and economic earnings, but also population dynamics, increasing urbanisation, labour allocation, interconnecting industries, introducing new culinary practices as well as dietary patterns, changing clothing choices, and several other multifaceted aspects of daily life.[44]

The core of the revolution was characterised by the introduction of several novel agricultural crops. The novel agricultural products, mostly discovered by the Arabs on Indian soil and sometimes in the territories of the defeated Sassanian Empire, which had acquired them as well from India, were afterwards brought into many climatic zones. These crops had a significant role in altering the way crops were grown. The Arab new dominions were preceded by the dissemination of several agricultural commodities, including rice, sorghum, hard wheat, sugar cane, cotton, watermelons, eggplants, spinach, artichokes, Colocasia, sour oranges, lemons, limes, bananas, plantains, mangos, as well as coconut palms. The cultivation of novel foods grew widespread across the Early Islamic World, and several of these crops had significant economic significance for various regions, both big and small.[45]

Given that a significant number of the novel crops had their origins in tropical locations such as India, Southeast Asia, and Central Africa, their cultivation was limited to environments

[43] Hancock, J. (2021, June 18). **Sugar & the Rise of the Plantation System**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1784/sugar--the-rise-of-the-plantation-system/
[44] Watson, A. M. (1974). The Arab Agricultural Revolution and Its Diffusion, 700-1100. *The Journal of Economic History*, *34*(1), 8–35. http://www.jstor.org/stable/2116954, p. 8
[45] Ibidem, p. 9

characterised by high temperatures. The Muslim world cultivated several summer crops, including rice, cotton, sugar cane, eggplants, watermelons, hard wheat as well as sorghum. However, in select regions with extremely hot climates, rice along with hard wheat would also be grown as winter crops.[46]

The newly introduced summer agricultural products, mostly indigenous to tropical regions, exhibited a pronounced need for water. A fitting example undoubtedly concerns the cultivation of sugar. Its growing along the banks of the Nile, indeed, demanded either the river's yearly flooding or an analogous manmade irrigation system, as well as an additional twenty-eight substantial waterings. In the case of Spain, on the other hand, sugar crops were irrigated every four or eight days.[47]

Furthermore, some crops such as sugar cane, Colocasia, coconut palms, and eggplants have shown the capacity to flourish in soil environments characterised by elevated saline levels, in contrast to cereals which had difficulties in such circumstances. These agricultural crops performed a crucial role in improving the productivity and fertility of the soil. Consequently, this led to the initiation of agricultural endeavours in wetland areas situated in coastal regions and at the confluences of rivers. This phenomenon also included territories that were sustained by mildly brackish springs and regions that had become salty as a result of millennia of irrigation. One notable consequence of this unique agricultural upheaval was a notable augmentation in agricultural earnings, characterised by both greater and more stable returns. The agricultural sector had a rise in total income as a result of many factors, including the expansion of cultivation on a larger scale, improved coverage of irrigation systems, intensified crop production, and a wider variety of crops being cultivated. Certain crops demonstrated much higher profitability compared to previously available options. In addition to its economic benefits, this novel farming approach also facilitated the establishment of a stable source of revenue. The rural community had diversified its sources of sustenance, reducing its dependence on a single crop that was susceptible to the whims of an unpredictable environment.[48]

The revolutionary approach used in agriculture necessitated a significant allocation of human labour. The implementation, maintenance, and operation of irrigation systems resulted in a heightened need for labour. Moreover, the practice of cultivating land that underwent more frequent cropping cycles necessitated an increased labour force to manage the tasks of planting, nurturing, and harvesting agricultural produce. Particular emphasis was necessary for certain recently

[46] Ibidem, p. 10
[47] Ibidem, p. 11
[48] Ibidem, p. 15

introduced crops, such as sugar, due to their much higher labour requirements in comparison to the crops cultivated under conventional agricultural methods.[49]

Numerous of innovative crops central to the agricultural revolution initially served as medicinal resources in the Islamic realm. These crops were documented in works such as Theophrastus' "Enquiry into Plants" and Dioscorides' "Materia Medica," as well as other classical texts on botanical remedies. Interestingly, minute amounts of goods like sugar and rice were imported into the ancient Mediterranean region for medicinal purposes, rather than being cultivated there, as historical records suggest.[50]

It was in this period that Sugar began to take over as the primary sweetener.[51]

A significant geographical manuscript, which has been recently uncovered, highlights that al-Mu'tasim, a Taifa monarch, introduced a plethora of uncommon plants to his garden situated in Almeria. According to this account, among these plants were bananas and sugar, although historical evidence suggests that these crops were already being cultivated in different regions of Spain.[52]

Across both ancient and modern continents, encompassing extensive tropical and semi-tropical regions, the recently introduced crops from the early Islamic era found a more suitable environment for cultivation compared to the Middle East and Mediterranean. Despite the significant transportation expenses, commodities like rice, cotton, sugar, and indigo, among other novel crops, began to traverse from Asia and the Americas into the Islamic world and subsequently into European export markets.[53]

[49] Ibidem, p. 16
[50] Ibidem, pp. 23-24
[51] Ibidem, pp. 25-26
[52] Ibidem, p. 31
[53] Ibidem, pp. 34-35

Figure 11 Jan van der Galle, Nova Reperta, "Saccharum," plate 12 (1580-1600).

Moving forward in our analysis of the rise and importance of sugar production in the Early Modern World, we highlight the attempts made by several players to enforce a sugar industry. This was the case at the beginning of the 15th century, as the Genoese, backed by support from the Portuguese monarchy, endeavoured to initiate an enterprise in the Algarve region. By the 1450s, reports indicated the cultivation of sugar cane had extended as far north as Coimbra. In the 1550s, Tuscany saw a brief trial of this endeavour. Moving into the 1560s and 1570s, Catherine de Medici made efforts to grow sugar in her gardens at Hyeres in Provence, a venture that was relatively short-lived.[54]

The 15th century was an important time frame as a shift in the monopoly of world sugar production occurred. In fact, the Portuguese emerged to be the dominant force in the global manufacturing of sugar, thanks to their massive exploration and colonisation efforts in the waters of the Atlantic next to the African coasts. In fact, the establishment of the initial plantations occurred after the Portuguese colonisation of the island of Madeira prompted by Prince Henry's discernment that sugar production constituted a pivotal factor in securing prosperity through his Atlantic holdings.[55] Undoubtedly, the sugar industry within the Mediterranean region can be regarded as a training ground for the settlers who ventured to Madeira, the Canary Islands, and tropical America. It holds a significant position in the continuum of spread and progression that has propelled sugar from its humble origins as a native garden plant in New Guinea to the status of an agro-industrial commodity in places like Jamaica, Hawaii, and various other regions across the tropics.[56]

[54] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 177
[55] Hancock, J. (2021, June 18). **Sugar & the Rise of the Plantation System**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1784/sugar--the-rise-of-the-plantation-system/
[56] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 177

In the aftermath of the Black Death, the cost of commodities that relied heavily on a significant labour force for their production experienced a notable upsurge. Sugar was not exempt from this trend. The upheaval brought about by war and plague led to Egypt, during the 14th and 15th centuries, no longer holding prominence as a primary sugar source. Meanwhile, in the western Mediterranean, the fostering of the sugar industry through support and investment managed to counterbalance the labour shortage. The decline of major producers like Egypt and Palestine left a void in the sugar trade that other nations sought to fill. Venice and Genoa, having lost their territorial influence in the Levant, actively extended their support to foster the growth of the industry in other locations.[57]

This made that during the 16th century, sugar production began to shift again, this time, towards the Caribbean islands controlled by the Spanish, particularly in Santo Domingo, and later to a lesser extent in Cuba and Puerto Rico. With the discovery of Brazil by the Portuguese in 1500, and by 1518, the first sugar plantation was established. This led Brazil to become the main supplier of sugar to European markets by the late 1500s, with sugar production reaching its peak in the Pernambuco and Bahia regions, producing around 15,000-20,000 tons annually in the 1620s. Barbados, a colony established in 1627, became as a prominent sugar producer by the 1640s, therefore introducing competition to the existing Brazilian sugar industry. During the latter part of the 17th century, the cultivation of sugar emerged as a crucial industry across many Caribbean islands. These islands included Antigua and Nevis, which were under British rule, Martinique and Guadeloupe under French power, and St. Dominque, as well as St. Kitts, which were under the joint administration of both the French and the British. After a period of settlement characterised by several challenges, British Jamaica emerged as the preeminent producer of sugar in the Caribbean region. During the 18th century, the growing of sugar underwent an important switch to St. Dominque, the French-controlled portion of the island of Hispaniola. This change resulted in the establishment of several sugar plantations, ultimately leading to St. Dominque's emergence as the most prosperous island in terms of sugar production. However, this dominance came to an end when the slaves successfully rebelled at the end of the century, creating a free nation by defeating the armies of France and Great Britain. Following the Haitian revolution, numerous sugar planters migrated to Louisiana and Cuba, transferring the entire plantation system of the Caribbean to these regions, where slavery continued to be prevalent. With the onset of the Civil War, the North was cut

[57] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 192

off from sugar supplies from Louisiana, prompting the newly formed United States of America to shift its sugar production centre to Hawaii.[58]

In the Americas, thanks to ample available land, a favourable climate, and an available workforce of enslaved individuals, the conditions were ripe for the thriving growth of sugar production.[59] This shift in the world sugar production centre inevitably brought about the waning of the Mediterranean sugar industry. In fact, this decline has historically been ascribed to the rivalry posed by more productive counterparts in the emerging European colonies situated in the Atlantic and the Americas. The introduction of sugar from Madeira to Europe occurred approximately around 1450, with its presence in Western Europe expanding by 1500. This expansion allowed for its integration into other markets, reaching as far as Byzantium and Chios in Greece The latter, a Genoese colony and trading hub located off the coast of Asia Minor, also became part of the distribution network for Madeiran sugar.[60]

In explaining the premature downturn of the industry in the eastern regions and its eventual downfall in the western areas, it's important to acknowledge additional factors beyond competition. These factors encompass warfare, the impact of plagues, the strategies pursued by the Mamluk sultans of Egypt, stagnation in technological advancements, and the degradation of the environment.[61]

By the year 1600, sugar had ceased to hold its position as the primary cash crop in the basin of the Mediterranean. However, sugarcane continued to be a subject of fascination in the gardens of Valencia and Sicily, persisting into the seventeenth century. Furthermore, it managed to survive as a minor cash crop along the southern shores of Spain.[62]

During the Early Modern Age, sugar cultivation had a significant impact on the environment, both in the Mediterranean area especially in the tropical regions where it was grown on a large scale, such as in the Caribbean and in some parts of Latin America. Two of the main environmental phenomena caused by sugar cultivation were deforestation and high fuel consumption. With regard to the phenomenon of deforestation, it must be said that intensive sugar cultivation required large agricultural land to grow sugarcane. This has led to large-scale deforestation of tropical forests to make room for plantations. The removal of natural vegetation has had a negative impact on local biodiversity, water resources and the balance of ecosystems. The loss of natural habitats has had

[58] Hancock, J. (2021, June 18). **Sugar & the Rise of the Plantation System**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1784/sugar--the-rise-of-the-plantation-system/
[59] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 194
[60] Ibidem, pp. 190-191
[61] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 191
[62] Ibidem, p. 193

lasting consequences on the native flora and fauna. The massive use and consumption of fuel, on the other hand, due to the processing of sugarcane, a phase that required a complex and energy- intensive process. The production of sugar involved several stages, including harvesting, grinding, boiling, and crystallization. These processes required a high consumption of fossil fuel, often wood to burn initially and subsequently coal, to feed the furnaces and boilers needed to extract sugarcane juice from sugarcane and refine it. This contributed to massive deforestation, as whole forests were often cut down to obtain firewood and coal. These factors, according to John Herbert Galloway, were the ones which significantly contributed to bringing the Mediterranean sugar industry into a declining trend. As, within the Mediterranean region, especially in areas with access to irrigation, land was both scarce and valuable. Consequently, the sugar industry found itself in competition for space alongside other crops. In addition to the competition posed by Brazil, another factor contributing to the industry's decline can be attributed to deforestation and shifts in climate. The rising phenomenon of deforestation has introduced additional complexities to the operations of the sugar industry. As the Mediterranean forests gradually dwindled, it resulted in scarcity and likely increased expense of fuel. The process of converting cane juice into a concentrated syrup by boiling, resulting in the formation of crystallised sugar and molasses upon cooling. Within the Mediterranean industry, the process included the use of cauldrons placed atop furnaces, which required substantial quantities of fuel for the boiling of the juice. During this phase of sugar production, the availability of fuel for the furnaces played a crucial role. By the era of the Arab conquered territories, the Mediterranean woodland had already seen significant depletion. The southern Muslim regions had a significant scarcity of wood due to the widespread phenomenon of deforestation. The development of several industries, like metallurgy and the production of pottery, glass, and sugar, which relied on the availability of fuel, experienced significant limitations. One example, as identified by Berthier, is that the absence of sugar planting in some irrigable valleys in Morocco may be ascribed to the scarcity of forest resources for fuel. The limited availability and high cost of fuel contributed to the preservation of sugar as a commodity associated with luxury. [63] Moreover, this deforestation led to adverse outcomes like hillside soil erosion and the accumulation of sediment in plains, thereby complicating the maintenance of irrigation systems. The trajectory of the Mediterranean sugar industry's rise and fall has also been associated with climatic shifts. This connection is highlighted by the fact that its establishment coincided with a notably warm period, peaking around 1000-1200. Conversely, its decline in western regions corresponded with the advent of the Little Ice Age, spanning approximately 1550-1700. During this warm or optimal period, temperatures were estimated to be about 1-2 degrees Celsius higher than present-day values to the

[63] Ibidem, pp. 187-188

north of 40 degrees latitude, and slightly less to the south. In the southern regions, this warm phase likely brought a relatively higher amount of rainfall than what is observed today. Assessing the precise impact of such minor climatic fluctuations on sugar cultivation proves challenging. While the threat of damage by frost during the winter season in the Mediterranean region. might have been reduced during the warm period, it is likely that it persisted, albeit at a lower frequency than in the subsequent cooler period. Recent discussions by scholars like Le Roy Ladurie, who focused on northern Europe, caution against attributing agricultural changes solely to climatic variations. To predominantly ascribe the rise and decline of the Mediterranean sugar industry to climatic shifts potentially underplays the roles of economic factors and significant historical events. These are gradual processes that unfold over extended periods, spanning many decades if not centuries.[64]

Moreover, the adaptation of new crops into the Western World during the Arab Agricultural Revolution in the Early Modern Age produced some environmental effects. For instance, Ibn al-Abbar recounts that the renowned Huerta del Rey, the King's garden in Toledo, served as an experimental farm where the adaptation of plants from the East took place. Here, novel varieties were cultivated.[65]

However, the introduction of crops particularly sugar, cotton, citrus fruits, and rice led to changes in land use and agricultural practices. The expansion of sugar cultivation, for example, often required large amounts of water and contributed to soil salinization and water depletion. The increased irrigation needed for these crops sometimes led to soil erosion and degradation. Additionally, the conversion of land for these new crops could lead to deforestation and habitat loss, impacting local ecosystems. While these crops brought economic benefits, their cultivation often had adverse consequences for the environment, including water scarcity, soil degradation, and ecosystem disruption.

Although sugar is currently regarded as an indispensable commodity across various sectors of the culinary and medicinal domains, serving not only utilitarian purposes but also frequently indulging our palates, the product's historical origins evoke a narrative that is both mysterious and unsettling. During the Early Modern Era, in particular, the origins of sugar production are intertwined with a sombre and unsettling aspect: the intricate connection between its cultivation and the reprehensible transatlantic slave trade.

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[64] Ibidem, pp. 193-194

[65] Watson, A. M. (1974). The Arab Agricultural Revolution and Its Diffusion, 700-1100. *The Journal of Economic History*, *34*(1), 8–35. http://www.jstor.org/stable/2116954, p. 31

During the timespan under consideration, the use of slave labour in the sugar industry was a stark and disturbing aspect of global economic development. Sugar's emergence as a coveted commodity in Europe, particularly during the sixteenth and seventeenth centuries, sparked an unprecedented demand. This insatiable demand for sugar prompted the establishment and expansion of sugar plantations, primarily in the colonies of the New World. To meet the demands of sugar production, the convergence of rising demand and labour-intensive cultivation practices led to the pervasive exploitation of slaves. In harrowing conditions, African slaves were forcibly transported across the Atlantic and condemned to a life of toil on plantations. The rigours of sugar cultivation, including the laborious tasks of planting, harvesting, and processing, subjected slaves to dehumanising conditions that were frequently characterised by physical brutality and epidemic disease. To maintain productivity, a constant influx of new captives was required due to the high mortality rates among these labourers.

Figure 12 Slaves cutting the sugar cane, plate IV of the series "Ten Views in the Island of Antigua". William Clark, 1823. British Library, London.

Throughout the 14th and 15th centuries, there was a scarcity of agricultural labour in the Mediterranean sugar islands, mainly due to the adverse effects of warfare and the devastating impact of the bubonic plague. The response to this shortage was effectively addressed by the increasing reliance on enslaved labour. Prior to the emergence of the Black Death around 1348, there was a notable increase in the presence of slaves in the regions of Crete and Cyprus. However, the significance of slavery became more pronounced in the following periods. The origin of these enslaved individuals was diverse, including individuals from Greece, and Bulgaria, prisoners

acquired during Turkish military confrontations, and Tartars relocated from the coastal regions around the Black Sea. The Mediterranean sugar sector saw significant changes in its design, leading to the emergence of a noticeable connection to plantation agriculture. The cultivation of sugar in many regions of the Mediterranean was significantly supported by forced labour, originally implemented via the corvée system, and later including the use of enslaved individuals. The convergence of sugar farming with the practice of slavery, a long-lasting connection that persisted until the 19th century, showed clear consolidation in the regions of Crete, Cyprus, and Morocco.[66] Berthier acknowledges the existence of enslaved labour in sugar production. A particular aspect of his argument for slave labour is based on place designations: the names of various places in sugar- growing regions contain the term "slave." Berthier comes to an end that the flourishing of the slave trade was just one of the reasons that led to the late sixteenth-century Moroccan trans-Saharan ventures.[67] Indeed, from the initial stages of the sugar industry in the Atlantic region, the primary workforce relied upon was comprised of enslaved individuals. The Spanish first compelled the indigenous Guanche population to engage in labour-intensive activities inside the sugarcane plantations. In response to the decrease of the Guanche population due to sickness and excessive labour, African slaves were introduced to assume the responsibility of tending to the crops. Upon the arrival of the Portuguese in Brazil during the first half of the sixteenth century, they expeditiously started the process of subjecting the indigenous Tupi population to labour in their mining operations and cultivation of sugar cane. Nevertheless, the Tupi people demonstrated a lack of competency for the regular, settled agricultural lifestyle and exhibited a notable resistance to being enslaved. Moreover, they were very susceptible to illnesses prevalent in the Western world and displayed a notable propensity for eluding capture by seeking refuge inside the impenetrable confines of the lush forest. The Portuguese response to this labour issue was resorting to the African slave trade, a practice that they had previously used to supply their Atlantic sugarcane cultivation enterprises situated along the African coastline. During the mid-16th century, the prevalence of African slavery became prominent inside the sugar estates of Brazil, while the subjugation of native peoples persisted until the seventeenth century. The conditions of life in plantations and employment were arduous and rigorous, characterised by an intense level of work. Individuals had reduced longevity due to prevalent diseases and excessive alcohol use. However, those who possessed exceptional resilience and endurance accumulated substantial fortunes, enabling them to adopt lavish lifestyles modelled after the British monarchy.

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[66] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 190

[67] Ibidem, pp. 189-190

The economic paradigm of sugar production, which relied on the forced labour of African slaves, enabled plantation proprietors and European nations to amass enormous wealth. Nonetheless, it also precipitated immense human distress, societal divisions, and ethical debates. The relationship between the sugar industry and the transatlantic slave trade exemplifies the morally contentious complexities of early-modern economic development, underscoring the glaring disparities between economic prosperity and the human cost it entailed.

The sugar trade throughout the Early Modern Age had significant and diverse effects on the economic structure of Europe. The Caribbean sugar plantations had great importance that reverberated across continents, creating a lasting impact on the world economy.[68]

The Age of Discovery indeed facilitated the dissemination of numerous new crops across the global landscape, several of which held considerable economic significance and opened diverse economic avenues for various nations.[69]

An instance of a colonial liaison was developed between the regions primarily engaged in cane production and cultivation, and the urban centres in Europe that specialised in manufacturing and refining. Crete and Cyprus were established as colonies. The island of Crete fell under the dominion of the Republic of Venice in the year 1204, while the island of Cyprus was acquired by Venice in 1489. Venice fostered the development of agriculture in its colonies situated in the eastern Mediterranean region, relying on them as sources of essential commodities such as wheat, wine, raisins, and several other crops, alongside sugar. During the 14th and 15th centuries, there was a significant rise in the significance of sugar, particularly in Cyprus, leading to the establishment of extensive plantations dedicated to its cultivation. An illustrative instance pertains to the Cornaro family's land located in Episkopi, which, as documented in 1449, was seen to have engaged a workforce of 400 individuals for the purpose of sugar production. Considering the renown and affluence associated with the Cornaro family, it may be inferred that their estate was likely of exceptional size. This observation suggests that at least one sugar estate in the Mediterranean region has a workforce equivalent in magnitude to the greatest plantations found in tropical America.[70]

The exchange of food items between the Old and New Worlds during the Columbian Exchange had significant implications for the course of world history. Alfred Crosby, a historian, highlights the importance of transferring food crops between the continents by stating that the union of these lands

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[68] Hancock, J. (2021, June 18). **Sugar & the Rise of the Plantation System**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1784/sugar--the-rise-of-the-plantation-system/

[69] Watson, A. M. (1974). The Arab Agricultural Revolution and Its Diffusion, 700-1100. *The Journal of Economic History*, *34*(1), 8–35. http://www.jstor.org/stable/2116954, p. 33-34

[70] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, P. 190

was a prerequisite for the population growth of the past two centuries and played a crucial role in the Industrial Revolution. The transportation of essential food crops from both worlds across the ocean made it achievable.[71]

The sugar trade had economic repercussions that extended beyond quantitative measures, as it stimulated the emergence of new economic paradigms. The sugar trade served as a catalyst for the emergence of merchant classes, bankers, and entrepreneurs, who played crucial roles in the growth and development of colonial economies. As a matter of fact, the accumulation of wealth in Europe was facilitated by the sugar trade, which in turn supported investments, served as a foundation for industrial growth, and financed large-scale infrastructural endeavours. In addition, the sugar trade served as a catalyst for technical progress. The need to effectively process, refine, and deliver sugar has spurred advancements in the fields of engineering, transportation, and logistics. These inventions not only revolutionised the sugar business but also established the foundation for further technical advancements.

Sugar came to market in an array of grades, available as powder, lumps, and loaves. Certain types of sugar were even adorned with hues and scents, incorporating violets or rose water. The process of refinement involved the thorough washing of sugar to eliminate residual molasses. Toward the latter part of the 15th century, significant shifts occurred in the geographical landscape of sugar refining. Initially, up until the late 15th century, sugar production was localized to the regions where it was cultivated, and the final product was exported. However, around 1470, there emerged a trend of importing sugar and refining it further within Europe. This practice initially commenced in Venice and Bologna, later expanding to include Antwerp and Holland. The 16th and 17th centuries witnessed the establishment of refineries across various cities in Northern Europe. This transformation, where the manufacturing phase of sugar partially moved from the producer's country to the importing country, yielded several outcomes. It led to a shift in employment from producers to importers within the industry, diminished the producers' inclination toward producing high-quality sugar, and established a relationship of dependency between the producer and the importer. The evolution of refining practices in Europe positioned the producer in a subservient or "colonial" bond with the refiner, a dynamic that has persisted with minimal alteration until the present day.[72]

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[71] Nunn, N., & Qian, N. (2010). The Columbian Exchange: A History of Disease, Food, and Ideas. *The Journal of Economic Perspectives*, *24*(2), 163–188. http://www.jstor.org/stable/25703506, p. 167

[72] Galloway, J. H. (1977). The Mediterranean Sugar Industry. *Geographical Review*, *67*(2), 177–194. https://doi.org/10.2307/214019, p. 188

The proliferation of refineries in many locations in Northern Europe throughout the 16th century had favourable outcomes in terms of employment and economic growth. The main objective of these refineries was the processing of imported sugar from colonies abroad, with particular emphasis on sugarcane-producing regions in the New World.

During the 18th century, sugar emerged as the predominant globally traded commodity, significantly influencing patterns of commerce and redefining economic dynamics. The influence of sugar on Europe was notably significant since it constituted a remarkable one-third proportion of the whole European economy. The unprecedented increase in the significance of the sugar trade had a transformative effect on the economic strategies at the time, leading governments to deliberately realign their policies in response to the surging demand for this highly sought-after commodity. The English Islands, which served as a significant hub for sugar production in the Caribbean, not only generated considerable quantities of refined sugar but also pursued a concurrent path of rum manufacturing. This distilled alcoholic beverage quickly acquired an international reputation, since British consumers enjoyed its flavour in many locations worldwide. The far-reaching impact of this expanding sector should not be underestimated, as it has resulted in significant economic gains and increased job prospects, spanning from the production of sugarcane through the process of distillation. In the meantime, the French took advantage of the circumstances to exploit the secondary outcomes of sugar production. In fact, significant volumes of molasses, a byproduct derived from the manufacturing of sugar, were sent to the British American colonies. In this context, the use of inventiveness and imagination resulted in the transformation of molasses into a precious product, namely rum. The conversion of waste products into a source of financial gain exemplifies the savvy economic choices of the era, making a substantial contribution to the economic expansion of the colonies and beyond.[73]

[73] Hancock, J. (2021, June 18). **Sugar & the Rise of the Plantation System**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/1784/sugar--the-rise-of-the-plantation-system/

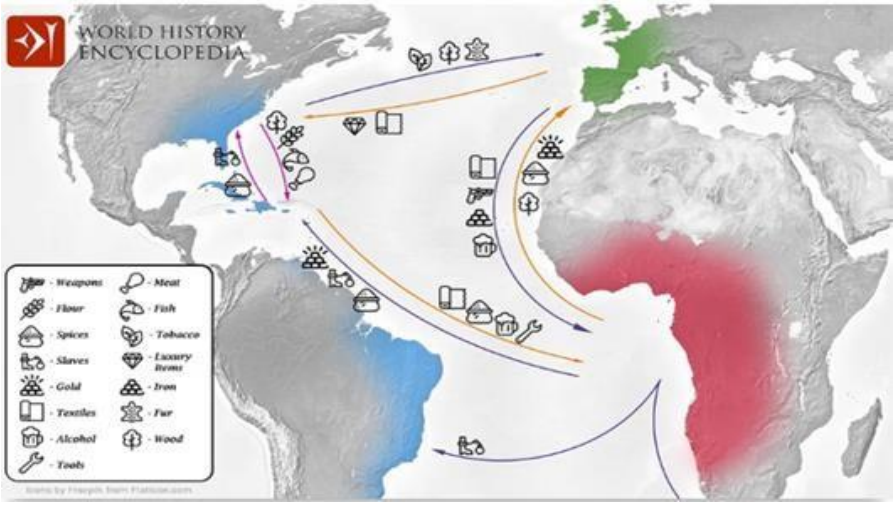

Figure 13 Map showing the flow of goods and enslaved people across the Atlantic from the 16th to the 19th Century CE, also known as the Columbian Exchange.

As a result of the extensive production of sugar in the Americas, there was a surplus of the commodity that allowed for its consumption by the common people of Europe for the first time in history. From 1663 to 1775, the annual per capita consumption of sugar in England increased by 20 times, and it rose another five-fold between 1835 and 1935. Sugar was initially consumed in tea and other hot drinks, providing an inexpensive and effortless source of calories for the growing urban working class in Europe. During the 19th century, the consumption of sugar further increased as processed foods such as cakes, biscuits, jams, canned fruits and vegetables, relishes, and white bread became more prevalent. The significance of sugar for the European masses cannot be underestimated. According to the findings of Hersh and Voth (2009), the augmentation in sugar accessibility throughout the period from 1600 to 1850 resulted in a remarkable enhancement in English welfare, estimated at 8%. Anthropologist Sidney Mintz (1985, p. 180) [74] even proposes that sugar played a crucial role in creating an industrial working class in the United Kingdom. He argues that sugar "by provisioning, sating and, indeed, drugging farm and factory workers, significantly reduced the overall cost of creating and reproducing the metropolitan proletariat." [75]

In conclusion, the sugar trade throughout the Early Modern Age had significant economic ramifications that brought about profound changes. Sugar's impact was pervasive across society, as it served as a fundamental component of global commerce, influenced many sectors, stimulated innovation, and provided a foundation for economic expansion. During this historical era, the significance of sugar underwent a transformation, evolving from a simple commodity to a catalyst

[74] Mintz, S. W. (1986, August 5). *Sweetness and Power*. Penguin. P. 180
[75] Nunn, N., & Qian, N. (2010). The Columbian Exchange: A History of Disease, Food, and Ideas. *The Journal of Economic Perspectives*, *24*(2), 163–188. http://www.jstor.org/stable/25703506, p. 178

for an economic revolution. This revolution had a profound impact on Europe's economic landscape, leaving a lasting influence that is still evident in contemporary times.

2.5 Cotton

The inception of cotton as a global commodity can be traced back to the Early Modern Age, a period stretching roughly from the late 15th to the late 18th century. During this time, global trade networks were burgeoning and novel mercantile routes emerged, both maritime and overland. Cotton's transformation from a localized crop to an international trade commodity was mainly attributed to its increasing demand in the growing textile industries of Europe. The Orient, specifically the Indian subcontinent, was the epicentre of high-quality cotton fabric production. In fact, the highest grade of Indian cotton textiles was renowned for their exceptional quality. During the 13th century, Marco Polo, a European adventurer, provided more details on the observations made by Herodotus about nine centuries before. Polo specifically highlighted the presence of very exquisite cottons along the coast of Coromandel, which he regarded as unparalleled in quality when compared to cottons found elsewhere in the globe. According to Edward Baines, a prominent newspaper owner and cotton specialist hailing from Leeds, the Indian fabric of the highest quality exhibited a level of perfection that might be described as quite unbelievable. Certain muslins produced by them may be seen as the artistry of mythical beings or insects, rather than human craftsmanship. These entities may be described as intricate formations composed of interwoven air currents.[76]

The Early Modern Age witnessed the seminal integration of cotton into the global trading systems, especially after Vasco da Gama discovered a sea route to India in 1498. The inflection point leading to an accelerated surge in the demand for Indian

Figure 14 Cotton cloth produced in Gujarat and traded to the Sulawesi.

[76] Beckert, S. (2015, November 10). *Empire of Cotton*. Vintage. P. 8.

cottons for apparel seems to have occurred subsequent to the year 1670.[77]

European traders began importing enormous quantities of cotton fabrics, leading to a surge in cotton's global popularity. Cotton from India, Persia, and the Ottoman Empire found its way into European markets, subsequently spurring textile production in countries like England, France, and the Netherlands.[78]

The cotton trade had profound implications on multiple societal facets, including the economy, and culture. Its influence was not limited to textile manufacturing but had ripple effects on the agriculture sector as well as labour practices. One of the most pivotal impacts was the burgeoning of the Transatlantic Slave Trade. Cotton cultivation was labour-intensive, and the European colonists in America sought enslaved Africans to work on cotton plantations. The extent of such a phenomenon is highlighted by William Darity through these set of rhetorical questions: "Is it not notorious to the whole World, that the Business of Planting in our British Colonies, as well as in the French, is carried on by the Labour of Negroes, imported thither from Africa? Are we not indebted to those valuable People, the Africans for our Sugars, Tobaccoes, Rice, Rum, and all other Plantation Produce?".[79] In fact, in Ronald Bailey's words: "It was upon the backs of this large black population that the cotton economy rested, both in the South and for the United States and the world."[80]

Furthermore, in accordance with Sven Beckert, the increase in cotton output had the effect of revitalising the brutal practice of slavery and precipitating an important influx of enslaved individuals from the northern regions of the United States to the southern regions. During the three decades following the invention of the gin, approximately 250,000 slaves were involuntarily displaced. Moreover, between the years 1783 and 1808, when the global slave business was terminated, roughly 170,000 slaves were introduced into the United States. This figure accounts for approximately one-third of the total number of slaves brought into North American soil since the year 1619. In its entirety, the domestic slave trade facilitated the coerced relocation of around one million enslaved individuals to the Deep South, mostly for the purpose of cultivating cotton.[81]

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[77] Brewer, J., & Porter, R. (2013, June 17). *Consumption and the World of Goods*. Routledge. P. 136.
[78] Ibidem, p. 134
[79] Darity, W. (1990). British Industry and the West Indies Plantations. *Social Science History*, *14*(1), 117–149. https://doi.org/10.2307/1171367, p. 117
[80] Bailey, R. (1994). The Other Side of Slavery: Black Labor, Cotton, and Textile Industrialization in Great Britain and the United States. *Agricultural History*, *68*(2), 35–50. http://www.jstor.org/stable/3744401, p. 39
[81] Beckert, S. (2015, November 10). *Empire of Cotton*. Vintage. P. 109

Hence, it is not fortuitous that William Rathone VI observed the interdependence between the growth of cotton manufacturing in Great Britain and the utilisation of violence in the transatlantic region. The cultivation of cotton resulted in the depletion of lands and served as the primary driver for the escalating importation of enslaved individuals. During his visit to the United States, Rathone conveyed to his father that the enslaved Africans and the various commodities in this context were intricately tied to the fluctuations in the cotton industry.[82]

Moreover, the cotton trade was instrumental in fostering the early stages of globalization. As cotton's significance grew, it played a role in the formation of international treaties and mercantile agreements. Indeed, as a result of these agreements, companies from England, the Netherlands, France, Denmark, and Sweden were granted permission by local authorities and Mughal emperors to establish manufacturing facilities along the Indian coasts throughout the 17th and 18th centuries.[83] The British East India Company, for instance, even gained special privileges from the Mughal Empire to trade cotton and other goods, reinforcing British influence in India and the surrounding regions. According to Parker, the cotton textile sector, in particular, saw significant advantages due to the fact that included a diverse workforce consisting of farmers, spinners, weavers, as well as merchants.[84]

The economic significance of cotton in global trade cannot be overstated. By the late 18th century, the cotton textile industry had transformed into a highly mechanized and centralized sector, owing much to technological innovations like the spinning jenny and the cotton gin. The aforementioned technological novelties had a crucial role in facilitating the onset of the Industrial Revolution, mostly in the United Kingdom, wherein cotton emerged as a fundamental component of industrial capitalism. The reasons for this shift stemmed from the objective of reducing expenses and enhancing operational effectiveness, prompting a succession of innovators to create machines that were more affordable, faster, and more solid than their predecessors.[85]

Cotton also played a pivotal role in colonial trade policies. The Doctrine of Mercantilism, prevalent in the Early Modern Age, endorsed the import of raw materials from colonies and the export of finished goods to them. Cotton was among the most sought-after raw materials, leading to colonial exploitation and resource extraction. This set the stage for imperial conflicts and power struggles as European nations sought control over cotton-rich territories.

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[82] Ibidem, p. 110
[83] Parker, C. H. (2010, June 23). *Global Interactions in the Early Modern Age, 1400-1800*. Cambridge University Press. P. 91
[84] Ibidem
[85] Cartwright, M. (2023, March 01). **The Textile Industry in the British Industrial Revolution**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/2183/the-textile-industry-in-the-british-industrial-rev/

Cotton's economic footprint expanded dramatically from the Early Modern Age into the 19th and 20th centuries. The United States, by virtue of its vast cotton plantations in the South, became one of the world's leading cotton exporters by the mid-19th century. However, this was not without its social costs, as it entailed a deeply entrenched system of racial segregation and forced labour. Cotton, in essence, became a catalyst for economic disparity and social injustice.

The turn of the 20th century witnessed an increasing diversification in the global cotton market, with countries in Africa, South America, and Asia stepping into the fold. Technological advances in cotton farming practices have also revolutionized its economic prospects, making it a multi-billion- dollar industry today.

In summary, the history of the cotton trade offers a multidimensional lens to view the broader contours of global goods and their impact on society, economy, and environment. From shaping international trade routes and industrialization to fomenting colonial ambitions and social inequalities, cotton has had a transformative role in shaping the world we know today. Its history is a case study in the complex interplay between commerce, culture, and power, influencing global dynamics across continents and centuries.

The environmental impact of cotton cultivation extends beyond the fields where it is grown. Cotton has long been praised for its versatility, softness, and absorbency. However, there are environmental concerns associated with it. Despite its natural origins, cotton is not as environmentally friendly as once thought. A significant portion of arable land worldwide is dedicated to cotton farming, resulting in a significant and far-reaching ecological impact. In the 1780s, it was observed that the cotton crop on the island of S. Croix was experiencing a growing susceptibility to adverse conditions such as drought and insect infestations, as indicated in a report sent to the Danish government. This phenomenon occurred as a result of planters' efforts to cultivate previously untouched land, which included the extensive removal of unproductive forests around their plantations. This phenomenon has altered the process of evaporation and intensified the force of winds. Many of the islands in the West Indies saw an early instance of a man-made environmental disaster, whereby the cultivation of cotton resulted in the depletion of arable land, leaving no untapped areas for further cultivation. The cotton output in the Bahamas, which exceeded 600 tonnes annually during the early 1810s, saw a significant decline to a mere 42 tonnes by 1832.[86]

Cotton farming heavily relies on chemical inputs. Pesticides and synthetic fertilizers, which have been integral to cotton cultivation since the rise of modern agriculture, have severe environmental

[86] Riello, G. (2016, March 1). *Cotton: The making of a modern commodity*. WRAP. https://wrap.warwick.ac.uk/id/eprint/79744, pp. 144-145

consequences. The excessive use of these chemicals not only contaminates groundwater but also leads to toxic runoff, harming aquatic life and ecosystems.

Soil health is crucial for sustainable agriculture. However, long-term cotton cultivation, especially monocropping, can cause severe soil degradation. Cotton plants extract a substantial amount of nutrients from the soil, and without proper crop rotation or sustainable farming methods, the soil's fertility diminishes over time. This creates a vicious cycle where farmers apply more fertilizers to increase yields, inadvertently worsening soil health decline.

Furthermore, cotton cultivation requires extensive tilling, which disrupts the soil structure and makes it prone to erosion. Over time, this can lead to desertification, particularly in regions with fragile ecosystems. For example, once-fertile cotton-growing areas in parts of Central Asia have experienced significant soil degradation, impacting local communities and economies.

Water usage and contamination are major concerns in cotton production. Cotton is notorious for being water-intensive, requiring vast amounts of water from planting to harvesting. Over-reliance on irrigation in regions with limited water resources has resulted in significant drops in the water table and the depletion of critical freshwater sources. The shrinking of the Aral Sea, which was once the fourth-largest lake globally, can partly be attributed to intensive cotton farming practices in the region.[87]

Another issue is pollution from cotton processing. Dyeing, bleaching, and treating cotton often involve chemicals that are harmful to aquatic ecosystems. Untreated effluents discharged into water bodies from cotton mills introduce toxins, disrupting marine life and affecting human populations that rely on these water sources.

The consequences of cotton farming on biodiversity are manifold. The extensive use of pesticides in cotton cultivation has led to a decline in beneficial insect populations, disrupting the ecological balance. Pollinators, essential for many ecosystems, face threats to their habitats and food sources due to these chemicals. Additionally, transforming diverse ecosystems into monoculture cotton farms reduces habitat variety, endangering many species.

In conclusion, cotton, as a globally consumed product, has significant environmental consequences. While technological and agricultural advancements have attempted to mitigate some of these impacts, the broader ecological effects of cotton cultivation and processing remain a concern. This

[87] *The true costs of cotton: Cotton production and water insecurity*. Environmental Justice Foundation. (n.d.). https://ejfoundation.org/reports/the-true-costs-of-cotton-cotton-production-and-water-insecurity, p.7

highlights the complex relationship between global goods and the environment, emphasizing the need for sustainable practices to ensure a harmonious coexistence.

Cotton, often referred to as 'white gold', has been a cornerstone of the global economy for centuries. The cultivation, processing, and trading of cotton have provided significant economic benefits and served as a primary source of livelihood for millions. Nowadays according to a report carried out by the IMF, Cotton exports, especially for low-income countries, as is the case with Burkina Faso, as well as developing nations, have played a crucial role in ensuring foreign exchange earnings and boosting economic stability. Additionally, cottonseed oil and other by-products contribute to the agrarian economy.[88]

Many countries have established networks of smallholder farmers who rely on cotton for their sustenance. These farmers are the backbone of rural communities, benefiting from direct crop sales. This ensures that wealth is distributed across the populace rather than being concentrated in urban centres or among elites.

The impact of cotton on the Industrial Revolution, particularly in Britain, cannot be denied. During the 18th and 19th centuries, cotton became a linchpin of rapid industrialization. The increasing European demand for cotton textiles led to the development of mechanized spinning and weaving technologies, such as the spinning jenny, water frame, and cotton gin.

These innovations accelerated textile production, making Britain the epicentre of the global cotton industry. Factories sprouted, urban centres grew, and the socioeconomic landscape underwent irreversible changes. The transition from a manual, craft-based economy to one dominated by mechanized industry was catalysed by cotton.

For many countries, the cotton trade has historically made a significant contribution to their Gross Domestic Product. From the vast cotton plantations in the American South to the expansive cotton fields of India and Egypt, the export of raw cotton and finished goods has filled national coffers. In the 19th century, cotton accounted for over half of all US exports, financing a substantial portion of the country's early economic growth.[89] Similarly, cotton exports have been vital for West African countries, the Levant, and parts of Central Asia, supporting their GDP, funding development projects, and ensuring economic resilience against external shocks.

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[88] *IMF Survey: Tackling Burkina Faso's Cotton Crisis*. (2015, September 28). IMF. https://www.imf.org/en/News/Articles/2015/09/28/04/53/socar022508b

[89] Rothstein, M. (1966). Antebellum Wheat and Cotton Exports: A Contrast in Marketing Organization and Economic Development. *Agricultural History*, *40*(2), 91–100. http://www.jstor.org/stable/3741087, p. 91

On the global stage, the cotton market has acted as a nexus, connecting economies and shaping international trade dynamics. The price of cotton has, at times, served as a barometer for global economic health, influencing trade balances and monetary policies. Fluctuations in cotton prices can have ripple effects across global markets, impacting sectors such as agriculture, textiles, finance, and commodities trading.

Moreover, the cotton value chain, from farming to finished goods, provides employment for approximately 350 million people worldwide. The growth of the textile industry, driven by cotton, has led to the development of ancillary industries, including dyeing, printing, logistics, and retail. As a result, cotton's influence extends deeply into the global economy, shaping consumption patterns, influencing labour markets, and even impacting geopolitical strategies.[90]

Cotton has left a vast and multifaceted economic imprint. From sparking industrial revolutions to anchoring entire economies, cotton has made an indelible mark on the global economic tapestry. Its journey, from humble fields to global trading floors, exemplifies the intricate dance of supply, demand, innovation, and commerce that has shaped the world's economic history.

Cotton, apart from its economic and environmental implications, has had a significant impact on society. Since its early days, the cotton industry has transformed societal structures and norms. The boom in cotton production and the subsequent rise of the textile industry can be closely linked to the pivotal societal shift of urbanization. As factories emerged in European and American cities during the Industrial Revolution, rural populations flocked to urban centres in search of employment. This transition gave rise to a new class structure, dividing societies between the industrial bourgeoisie and the working proletariat.[91]

Furthermore, the textile mills, which were dominated by cotton fabric production, became centres of cultural exchange. In fact, an aspect that appears noteworthy was that the introduction of textiles had a significant influence on European society from a cultural point of view, and on the manufacturing sector as well. These imports brought about many changes that not only challenged existing hierarchies but also led to societal revisions, resulting in a constant state of change and the generation of profits. The attributes of materials, namely cotton, provided a framework for manufacturers that would be attractive to both poor individuals and the fashionable elite. The

[90] Phelps, A., Gregory, R., Miller, I., & Wild, C. (2018). *The textile mills of Lancashire: The legacy*. Oxford Archaeology North, p. 32.
[91] Landes, D. S. (2003, June 26). *The Unbound Prometheus*. Cambridge University Press. P. 9

primary focus of fashion resided in the renewal of attire and furnishings, driven by a prevailing desire for change.[92]

Workers from diverse backgrounds came together, creating melting pots of traditions, ideas, and aspirations. However, alongside these cultural amalgamations, challenges such as overcrowded living conditions and workplace exploitation emerged, shedding light on the darker side of the industry.

One sombre chapter in the history of the cotton industry is its reliance on child labour. During the 18th and 19th centuries, the growing textile mills in Britain and the United States frequently employed children, often subjecting them to abysmal conditions. These young workers, some as young as six, endured gruelling work hours, minimal pay, and hazardous environments. Their nimble fingers were considered ideal for tasks like threading needles and repairing broken threads on looms. The acceptance of child labour in society was, in part, a reflection of the times, as child labour was prevalent across industries. During this time, a dominant imagery associated with the Industrial Revolution was one of gloomy, demonic mills consuming children. In fact, child labourers in early English factories endured a harsh existence.[93] However, the visibility of children in cotton factories, combined with emerging ideas about children's rights and welfare, eventually led to labour reforms. The public outcry against child labour in the cotton industry played a significant role in the introduction of legislation that aimed to limit and eventually abolish this practice. Moreover, the urban population would have seen a significant reduction due to mortality from disease, starvation, and labour-related illnesses or injuries, had it not been for the continuous influx of individuals from rural areas.[94]

[92] Lemire, B., & Riello, G. (2006). East and West: textiles and fashion in Eurasia in the early modern period. P. 34
[93] Galbi, D. A. (1997, October 15). Child labor and the division of labor in the early English cotton mills. *Journal of Population Economics*, *10*(4), 357–375. https://doi.org/10.1007/s001480050048
[94] N. Anderson, E. (n.d.). *Empire of Cotton: A global history. by Sven Beckert. 2014. vintage, New York, NY. 615 pp.: Ethnobiology letters.* Empire of Cotton: A Global History. By Sven Beckert. 2014. Vintage, New York, NY. 615 pp. | Ethnobiology Letters. https://ojs.ethnobiology.org/index.php/ebl/article/view/1068/529

Figure 15 The global South, North Carolina, early twentieth century. Lewis Hine.

The fluctuations in cotton production have often mirrored societal changes. The rise of cotton plantations, particularly in the American South, had profound implications for societal structures. The demand for labour on these vast cotton farms was a major driver of the Transatlantic Slave Trade. In fact, the African market served as a significant channel for this specific commerce linkage, facilitating the exchange of cottons, which were sourced from India as well as manufactured in Europe, in return for enslaved individuals who would be used on American plantations.[95] The institution of slavery during this period was rooted in racial prejudice and it created deep societal divisions that continue to resonate today.

Conversely, in regions like India, cotton production influenced societal hierarchies and caste dynamics. The textile artisans, once highly respected for their skills, found themselves marginalised as mechanized production took precedence.

Moreover, the role of cotton in fashion should not be underestimated. As cotton textiles became more accessible and affordable, clothing trends evolved, leading to changes in societal norms related to modesty, individualism, and self-expression. 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.[96]

Despite cotton's widespread use and global appeal, the industry has often been marked by significant social inequalities. Cotton farming, especially in developing nations, remains a sector

[95] Riello, G. (2016, March 1). *Cotton: The making of a modern commodity*. WRAP. https://wrap.warwick.ac.uk/id/eprint/79744, p. 140
[96] Ibidem

plagued by disparities. Smallholder farmers, despite producing a significant portion of the world's cotton, often struggle with issues such as indebtedness, lack of access to fair markets, and exploitation by middlemen. In fact, according to global historian Giorgio Riello, this era was marked by significant disparities in wealth and resources, evident in both intra-national and intercontinental contexts. Development economists contend that the primary concern is not in the self-interest of Western nations, but rather in the methods, incentives, and institutional frameworks that foster economic and social progress. The story of cotton textiles highlights how these opposing viewpoints might clarify why the USA's economy thrived while China stagnated, or why the building of cotton processing plants throughout India fell short of sparking industrialization, resulting in the emergence of an entirely novel form of Lancashire.[97]

These challenges are exacerbated by the volatility of global cotton prices. Fluctuations can have devastating effects on communities that depend on cotton, leading to cycles of poverty and deprivation. Furthermore, these communities face additional strains on their social fabric, including land ownership disputes, gender inequalities in labour, and limited access to education and healthcare.

In conclusion, cotton's impact on society is complex and multifaceted. It has shaped labour movements and urban cultures while also highlighting societal inequities and prejudices. Cotton's influence goes beyond being a mere commodity, serving as a testament to the intricate intersections of trade, culture, and human resilience.

[97] Riello, G. (2013). *Cotton: The Fabric that Made the Modern World*. Cambridge: Cambridge University Press. doi:10.1017/CBO9780511706097, P.28

CHAPTER III

3.1 The rise of a new set of global goods

The Industrial Revolution, a transformative epoch in human history, had a profound impact on society, economy, and the environment. It revolutionized manufacturing processes and global trade, leaving an indelible mark.[1] This research on the connection between the Industrial Revolution and global commodities will reveal the profound nature of these interactions.

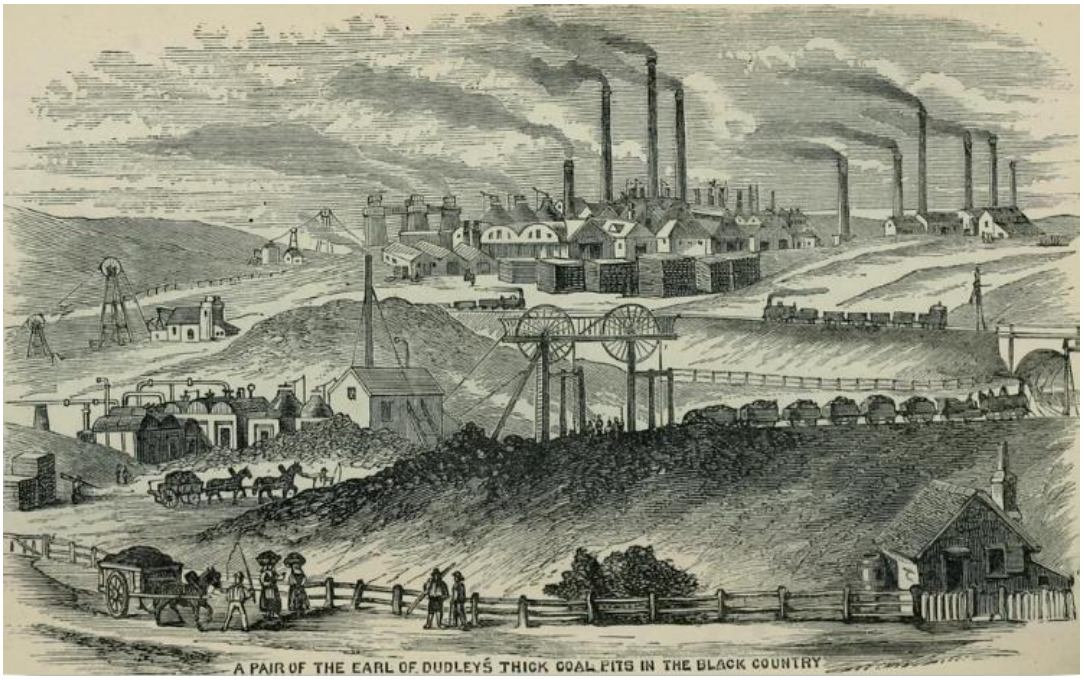

Figure 16 An illustration showing the increasing industrialisation and urbanisation of Britain during the Industrial Revolution. Griffith's Guide to the Iron Trade of Great Britain, 1873.

The Industrial Revolution, which began in Britain in the late 18th century and spread worldwide, marked a transition from manual labour to mechanized production. Powered by steam and later electricity, machinery enabled factories to produce goods at unprecedented rates. This led to an increase in production which necessitated more resources, linking the fate of the Industrial Revolution with the rise of global commodities.[2] Moreover, a significant shift in manufacturing

[1] Landes, D. S. (2003, June 26). *The Unbound Prometheus*. Cambridge University Press. P. 3
[2] Allen, R. C. (2017). The Industrial Revolution: A Very Short Introduction, Very Short Introductions. (Oxford: online edn. Oxford Academic, 23 Feb. 2017), https://doi.org/10.1093/actrade/9780198706786.001.0001 (Accessed 6 Sept. 2023).

goods occurred during this time. Before the Industrial Revolution, goods were handmade on a local or regional level, limiting their variety and volume for trade. However, mechanised manufacturing allowed for the mass production of goods in a shorter fraction of time. Textiles, for example, became widely produced commodities due to innovations like the spinning jenny, power loom, and cotton gin. Iron and steel, crucial for industrial machinery and infrastructure, also saw a surge in production, elevating their status in global trade. In Allen's (2017) view, the mass production of these goods required sourcing raw materials from various parts of the world. For instance, cotton was sourced from colonies like India and the American South, coal from mines in Britain and Appalachia, and rubber from the Amazon. The global demand for raw materials led to the establishment of a network of global commodities. Trade routes connected raw material producers to manufacturing hubs and to markets where finished goods were sold.[3]

The ripple effects of mass production and global trade were profound. Urban centres grew around factories, giving rise to the working class. The availability of a variety of affordable goods revolutionized consumption patterns, laying the foundation for modern consumerism. Economically, nations that embraced industrial methods became powerhouses of production and trade, accumulating unprecedented wealth. The exchange of commodities established economic interdependencies among nations, setting the stage for today's globalised world.[4]

However, the environmental consequences were equally significant. The relentless pursuit of raw materials led to aggressive extraction methods, often disregarding environmental sustainability. Deforestation, pollution, and habitat destruction became common collateral damage in the race to fuel the industrial sector. The factories themselves, with their billowing smokestacks, became symbols of environmental degradation, emitting pollutants into the air and water. In fact, according to David Fowler et al., during the first stage of the Industrial Revolution, there was a notable rise in the production and use of coal for combustion purposes within emerging urban centres. This surge resulted in a significant rise in the emissions of sulphur dioxide (SO2), nitrogen dioxide (NO2), ammonia (NH3), as well as smoke. During this era, the issue of air pollution has been primarily focused on its impact on human health. Partially, the emissions may be attributed to the progress of industrialization and the significant rise in emissions from low-height chimneys. The sources of emissions were further derived from household activities, mostly carried out by the

[3] Ibidem
[4] Stearns, P. N. (1997). Stages of Consumerism: Recent Work on the Issues of Periodization. The Journal of Modern History, 69(1), 102–117. http://www.jstor.org/stable/2953434 (Accessed 6 Sept. 2023).

expanding urban demography of the industrial workforce, who predominantly used coal as a fuel for heating and cooking purposes.[5]

In conclusion, the Industrial Revolution's relationship with global commodities highlights humanity's ability to innovate and reshape the world. While it brought economic prosperity and societal transformations, it also presented significant environmental challenges.

3.2 New patterns of globalization

As we investigate the history of global goods and their major influence, it is crucial to examine the concept of Cultural Commodification in the 19th century. This era witnessed the transformation of cultural artefacts, practices, and symbols into global commodities. Moreover, the 19th century was characterized by remarkable technological and transportation advancements, which fostered commercial and cultural exchange, often surrounded by the appeal of the exotic and the unfamiliar. During this time, transportation advancements, such as steamships and extensive railway networks, facilitated global connectivity. Coupled with colonial expansion, these developments enabled robust intercontinental interaction. A range of cultural exchanges emerged as people, ideas, and, most importantly, goods began to traverse borders like never before. Artefacts, as well as items with cultural significance, became objects of interest, curiosity, and eventually, commodities.[6][7]

The magnitude of such cultural exchange was such that in the 19th century, European salons were adorned with Oriental rugs, while Chinese porcelain graced American households. Indian spices and textiles found their way into European markets. These exotic goods not only elevated social status but also sparked a fascination with foreign cultures. However, the "exotic" was not merely an adjective describing the unfamiliar; it became a marketable category. The appeal of the exotic was harnessed to create demand, adding value beyond material worth. In this context, goods

[5] Fowler, D. (2020). A chronology of global air quality. Phil. Trans. R. Soc. A.3782019031420190314 http://doi.org/10.1098/rsta.2019.0314 (Accessed 6 Sept. 2023), p.7.
[6] Landes, D. S. (2003, June 26). *The Unbound Prometheus*. Cambridge University Press. P. 5
[7] Gill-Robinson, H. (2007). Culture, Heritage and Commodification. In: Kockel, U., Craith, M.N. (eds) Cultural Heritages as Reflexive Traditions. Palgrave Macmillan, London. https://doi.org/10.1057/9780230285941_12

like tea, silk, spices, and various cultural artefacts became symbols of cosmopolitanism and were sought after as 'trendy' or 'exotic,' often divorced from their cultural roots.[8]

This commodification of culture had a profound impact on societal norms. On one hand, it contributed to a more diverse cultural landscape within cosmopolitan cities, introducing people to lifestyles, practices, and perspectives from around the world. On the other hand, it perpetuated stereotypes and often stripped cultural goods of their original significance, reducing them to marketable items devoid of deeper cultural context. This marked the beginning of what we now recognize as cultural globalization—a complex process encompassing both the enrichment and erosion of local cultures.[9]

Cultural commodification of the 19th-century phenomenon is a crucial chapter in the narrative of global goods. It sheds light on a world that was growing closer yet struggling with the complexities that such closeness brings. It adds a cultural dimension to the impact of global goods, linking economic prosperity with questions of cultural identity and environmental sustainability. Examining this intense relationship provides us with a subtle understanding of the far-reaching effects of global goods and serves as an essential setting against which to analyse contemporary forms of cultural exchange and commodification.

During Contemporary times, one of the most pressing and complex topics that is somewhat connected to the phenomenon of commodification was undoubtedly that of natural resource exploitation. The time under examination, in fact, was a transformative period for large-scale resource exploitation. The extraction of precious metals, such as gold and silver from the Americas, financed European empires and fuelled the global market. This initial wave of resource extraction fundamentally altered patterns of globalization. The movement of goods, particularly precious metals, created new trade routes and monetary systems that were centralized around European powers. The mercantilist policies of the time reflect the economic strategies centred on the insatiable appetite for infrastructure and weaponry.[10]

The 19th century has seen the discovery and utilization of oil, a crucial resource for global economies, and the emergence of technology-driven mining of minerals like cobalt and gold. As for

[8] Hersh, Jonathan Samuel and Voth, Hans-Joachim, Sweet Diversity: Colonial Goods and the Rise of European Living Standards after 1492 (July 4, 2009). Available at SSRN: https://ssrn.com/abstract=1443730 or http://dx.doi.org/10.2139/ssrn.1443730

[9] Oshinsky, Sara J. “Exoticism in the Decorative Arts.” In Heilbrunn Timeline of Art History. New York: The Metropolitan Museum of Art, 2000–. http://www.metmuseum.org/toah/hd/exot/hd_exot.htm (October 2004)

[10] Scott, H.V. (2008), Colonialism, Landscape and the Subterranean. Geography Compass, 2: 1853-1869. https://doi.org/10.1111/j.1749-8198.2008.00164.x, p. 1855

oil extraction, it has led to climate change, ocean acidification, and environmental damage. The mining of these resources has also caused water pollution and soil degradation.[11]

As we deal with the appearance of new patterns of globalization, it is of crucial importance to say that what also made this change in the paradigm of globalisation possible was undoubtedly the transportation innovations of the 19th century.[12] In fact, it brought about a revolution in speed, efficiency, and scale, with steamships and railways leading the way. Before the advent of steam power, ships depended on the unpredictability of winds and currents. However, steamships changed the game by enabling ships to travel across vast oceans and rivers with unprecedented speed and predictability. While steamships transformed maritime transport, railways revolutionized land-based movement. Railways overcame geographical barriers, allowing goods to be transported from remote areas to ports in record time. This integration of regions that were previously isolated contributed to the development of global markets. Faster and larger-scale transportation of goods not only reduced prices but also enabled products from one corner of the world to reach eager consumers thousands of miles away. This specialization in production led to economic efficiencies and growth. These transportation innovations also had significant societal implications. Ports and railway hubs became vital urban centres, leading to a wave of urbanization as people sought jobs and opportunities. Society became more mobile, ideas spread faster, and a new cosmopolitan culture emerged. Railways also opened up previously remote areas for settlement.[13]

Additionally, the strategic importance of railway routes and maritime chokepoints, such as the Suez Canal, became crucial in geopolitical planning as nations sought to protect these vital arteries of global trade.[14]

In conclusion, the 19th century brought about new patterns of globalization in the form, as we have seen, of intense industrialisation process, cultural commodification, high resource demand and transportation innovations. During this period, in fact, innovations such as steamships and railways were not just modes of transport but also the foundation of global commerce and interconnectivity.

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[11] Smil, V. (2017, May 12). *Energy and Civilization*. MIT Press. Pp. 245-247

[12] Guillaume Daudin, Matthias Morys, Kevin H. O'Rourke. Globalization, 1870–1914. The Cambridge Economic History of Modern Europe, Cambridge University Press (CUP), pp.5-29, 2010, ff10.1017/cbo9780511794841.003ff.ffhal-03354889f

[13] Rodrigue, J. P. (2020, January 1). *The Geography of Transport Systems*. Pp. 35-38

[14] Bonin, H. (2010). Chapter 6. The canal and international diplomacy: The initial crisis (from the 1850s to the 1880s). Dans: , H. Bonin, *History of the Suez Canal Company, 1858-2008: Between Controversy and Utility* (pp. 157-169). Genève: Librairie Droz.

3.3 Technological advancements

The 19th century was witness to a significant transportation revolution that had a lasting impact on the field of international commerce. A succession of revolutionary innovations reshaped the ways by which people and commodities were transported across considerable distances, leading to increased contact between various societies and an explosion of global commerce.

The emergence of the steam engine marks an important turning point in the transportation revolution. This revolutionary steam engine concept developed by Scottish inventor James Watt, which received a patent in 1769, played a pivotal role as it enabled a number of applications within the sector of transportation. The use of steam power in locomotives and steamships redefined many aspects of transport and commerce, elevating them to unparalleled levels of speed and effectiveness. The introduction of steam-powered locomotives revolutionised land transportation by establishing railroads as an indispensable infrastructure, facilitating unprecedented connectivity between cities and regions. The use of steam-powered trains to accelerate the movement of resources and goods resulted in a notable decrease in transportation expenses, in turn stimulating industrial production and fostering global trade.[15]

The building of railroad systems across different nations and continents was another key development of the nineteenth-century transportation revolution. Railways transformed cargo transport, ensuring faster more secure, and cheaper transfer over incredible distances. Railways, by connecting previously isolated areas, promoted the transportation of raw materials to industrial regions and the delivery of finished goods to markets. While regions became better connected, the creation of railway networks boosted economic growth and extended commerce. As railroads expanded to new locations, they created new markets for commerce, enabling commodities to be exchanged on both a regional as well as global scale. Furthermore, railroads stimulated the rise of

[15] Cartwright, M. (2023, February 08). **The Steam Engine in the British Industrial Revolution**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/2166/the-steam-engine-in-the-british-industrial-revolut/

businesses such as mining, manufacturing, and agriculture, which helped to improve worldwide commerce.[16][17]

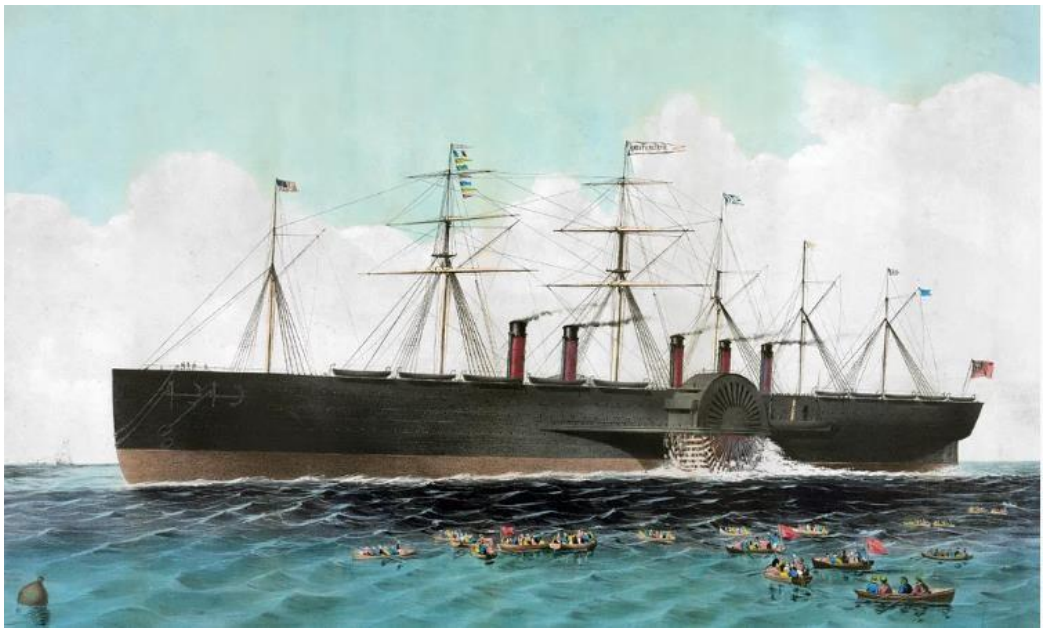

Figure 17 Steam-powered SS Great Eastern, Charles Parsons. Library of Congress, Washington D.C.

During the nineteenth century, the introduction of steam-powered ships revolutionised transoceanic commerce. Long-distance maritime commerce depended mainly on wind-powered sailing vessels until the introduction of steamships, making voyages risky and time-consuming. Steam-powered ships broke these obstacles, providing rapid and more secure ocean traveling. The invention of paddle-wheel ships and, subsequently, screw propellers provided constant and reliable transatlantic transport. Along with Isambard Kingdom Brunel's SS Great Western, which established regular transatlantic connections, Robert Fulton's Clermont, launched in 1807, marked an important milestone in steamship development. These advances in maritime transportation significantly decreased voyage duration, increased passenger and cargo safety, and promoted the growth of global commerce. The availability of efficient transoceanic means of transport created new markets and encouraged the movement of goods as well as ideas across continents, favouring international commerce.

[16] Cartwright, M. (2023, February 10). **The Railways in the British Industrial Revolution**. *World History Encyclopedia*. Retrieved from https://www.worldhistory.org/article/2167/the-railways-in-the-british-industrial-revolution/

[17] Allen, R. C. (2009, April 9). *The British Industrial Revolution in Global Perspective*. Cambridge University Press. P. 273

The transportation revolution of the 19th century was significantly influenced by the development and improvement of canals and inland waterways, alongside railroads and steamships. Canals, such as the Erie Canal in the United States and the Suez Canal in Egypt, served as vital arteries of commercial activity, effectively linking once-isolated regions, and facilitating economic integration. Canals have been recognised as a cheap route of transit for facilitating the movement of goods between hinterlands and coastal ports, meaning increasing economic growth and allowing commerce. Canals played a crucial role in contributing to the transportation of products by establishing links between areas endowed with abundant natural resources and industrial centres, as well as facilitating access to markets. This resulted in improved efficiency in the movement of goods, leading to reductions in both prices and time. The incorporation of inland waterways into transportation networks has significantly improved the movement of commodities and made stronger global commerce.[18]

The nineteenth-century transport revolution, fuelled by extraordinary innovations such as the steam engine, railroads, steamships, and canals, was critical in facilitating global commerce. These technologies improved transportation networks' speed, efficiency, as well as security, linking distant locations and permitting the flow of goods on a scale that was unprecedented. The transportation revolution pushed industrialisation, encouraged economic development, created new markets, changing the global commerce panorama. The legacy of these nineteenth-century technologies continues to affect current transport networks, highlighting their long-term effect on global commerce.

3.4 Cobalt

Amidst this revolutionary period, the importance of cobalt is often forgotten. As a crucial component in metallurgy and early manufacturing, cobalt not only revolutionized industries but also had wide-ranging impacts on society, the economy, and the environment. This section explores the complexities of cobalt extraction in the 19th-century colonies, shedding light on the intricacies of colonial resource extraction, socio-economic consequences, environmental degradation, cobalt mining, and labour exploitation. Let's examine the paper titled "Cobalt resources in Europe and the potential for new discoveries" by S. Horn and colleagues. According to Horn et al., operational copper mines in Poland hold approximately 4 million tons of cobalt resources. However, the current

[18] Rodrigue, J. P. (2020, January 1). *The Geography of Transport Systems*. Pp. 28-35

grades are considered low, with economically viable extraction requiring a minimum cobalt concentration of 0.008% Co.[19]

In the past, cobalt was extracted as a byproduct of copper mining in Germany during the period between 1441 and 1714 from the Kupferschiefer. Following World War II, cobalt, along with other metals like nickel and molybdenum, was recovered from processing plants in Germany. The Cheshire Basin in the UK also witnessed minor cobalt production in the 19th century, where it was found in secondary minerals alongside nickel. Although the Balkans and Turkey house 27 nickel laterite deposits, each containing over 10,000 tonnes of cobalt, only nickel is currently being extracted from these deposits. However, advancements in processing methods could potentially enable economic cobalt extraction. Throughout Europe, small polymetallic vein deposits have historically served as cobalt sources, but they are mostly considered uneconomical today. Nevertheless, new technologies might revive these deposits as local sources of cobalt.

The paper titled "One Hundred Years of Cobalt Production in the Democratic Republic of the Congo" by Andrew L. Gulley offers a concise overview of the significant historical events that have influenced the production of cobalt in the DRC. It covers the discovery of cobalt deposits in 1914 by Belgian explorers in the Katanga province, as well as the changing investment landscape in the early 21st century. In 1914, Belgian explorers discovered substantial cobalt reserves in Katanga, and Union Minière of Belgium became the dominant player in cobalt extraction in the DRC for many years. However, in the 1960s, the DRC gained independence and took control of its mining industries. The country experienced political instability under the Mobutu regime from 1965 to 1997, leading to fluctuating investment in the mining sector. In 1997, Laurent Kabila overthrew Mobutu and sought foreign investment to revive the mining industry. This attracted major investors such as Glencore, First Quantum, Nikanor, Katanga Mining, and Eurasian Resources Group between 1997 and 2006. These investors were drawn to the DRC's abundant cobalt reserves. From the mid-2000s, Chinese interest in the DRC's cobalt resources began to grow, driven by the increasing demand for cobalt in lithium-ion batteries. Chinese companies started investing in mining and processing operations in the DRC. In the late 2000s, China established multiple offtake agreements with DRC mines, consolidating a significant portion of the cobalt output. By 2016, Chinese corporations managed more than half of the DRC's cobalt production.[20]

[19] Horn, S.V., Gunn, A., Petavratzi, E., Shaw, R., Eilu, P., Törmänen, T., Bjerkgård, T., Sandstad, J., Jonsson, E., Kountourelis, S., & Wall, F. (2020). Cobalt resources in Europe and the potential for new discoveries. Ore Geology Reviews.

[20] Gulley, A. (2022). One hundred years of cobalt production in the Democratic Republic of the Congo. Resources Policy. 79. 103007. 10.1016/j.resourpol.2022.103007.

In the 19th century, the demand for resources drove imperial powers to explore colonial territories, tapping into abundant cobalt deposits and other minerals. The colonial framework facilitated a system where the benefiting countries gained disproportionately at the expense of the colonies. Cobalt was extracted in regions like the Belgian Congo, where harsh and degrading conditions epitomized the exploitative nature of colonial resource extraction. Cobalt mining in the 19th century had significant socio-economic repercussions. On one hand, the mineral contributed to technological innovations and fuelled economic growth in the colonizing countries. Industries such as metallurgy and later, electrochemical applications, thrived. On the other hand, the economic benefits rarely reached the Indigenous communities in the colonies. Social stratification intensified as the mineral wealth seldom translated into improved living conditions for the local population.

Figure 18 Copper-Cobalt mine in the Katanga Province of the DRC.

S. Horn and Andrew L. Gulley both agreed based on context that historic mining activities have left a legacy of environmental damage across, that extraction of cobalt resulted in severe environmental damage. Deforestation, soil degradation, and water pollution were common consequences of mining activities. The focus on rapid extraction often disregarded ecological balance and long-term sustainability. The adverse environmental effects were frequently irreversible, leaving lasting scars that affected the quality of life for local communities. Cobalt

mining in the 19th century relied heavily on rudimentary methods with limited technological advancements. Most extraction was performed manually, and the technology was typically imported from the colonizing countries. These practices not only led to inefficient extraction but also increased the risks associated with mining. Perhaps the darkest aspect of 19th-century cobalt extraction was the exploitation of labour. Indigenous people were often coerced into forced labour, working in hazardous conditions with minimal to no safety measures. Labor exploitation was widespread, and the well-being of workers rarely concerned colonial authorities or mining companies. The story of cobalt extraction in 19th-century colonies intertwines the ambitions of colonial powers with the suffering and exploitation of Indigenous communities. It is a multi-faceted narrative that sheds light on the complexities of global goods and their impact on socio-economic and environmental domains. As we examine the phenomenon of global goods from the Early Modern age to the present, the cobalt narrative provides invaluable insights into the cascading effects of resource extraction on society, the economy, and the environment.

Cobalt mining and production in Europe coincided with the Industrial Revolution. In the tapestry of the Industrial Revolution, cobalt deposits in the DRC have been strategically important for industrialization and military technologies since the early 1900s, when they were discovered and exploited by Belgium. During World War I and II, cobalt was critical for steel and chemical industries. Wartime demand dramatically increased US imports of DRC cobalt. After WWII, cobalt remained vital for jet engines and nuclear weapons. This droves continued US reliance on Congolese cobalt and intense competition with the Soviet Union over cobalt resources. a period that forever changed manufacturing, technology, and society, this metallic element played a crucial role in metallurgy and chemical processes, with multifaceted influences on 19th-century manufacturing, technological innovation, and economic development. Understanding the impact of global goods like cobalt on society,

Cobalt production and trade have impacted society globally, fuelling rapid economic growth but also environmental damage, unsafe working conditions, and human rights abuses, especially with artisanal mining. This highlights the complex trade-offs around extracting global mineral resources and the environmental damages connected to such activities. The 19th century was a crucible of innovation and mechanization, where small workshops evolved into expansive factories and machines replaced human labour. Technological advancements such as the steam engine, cotton gin, and metallurgical innovations were the pillars of this manufacturing renaissance. Cobalt, although less celebrated, played a critical role in this era of unprecedented industrial growth.

Cobalt possesses unique properties that make it highly durable and resistant to wear and tear. Its hardness, lustre, and high melting point made it ideal for strengthening other metals, particularly iron, and steel. As a vital alloying element, cobalt improved the quality of metals, providing better tensile strength, corrosion resistance, and operational longevity. This revolutionized various industries, including railways, shipbuilding, and construction, enabling the production of more efficient, longer lasting, and safer materials. Cobalt was, therefore, an essential component in the chain of metallurgical advancements that supported industrial transformation. Apart from its application in alloys, cobalt compounds played a crucial role in catalysis, a burgeoning field in the 19th century. Cobalt catalysis facilitated faster and more effective chemical reactions, reducing production costs and making chemical products more affordable. Cobalt-based blue pigments, known for their vibrant hues, became emblematic of the textile and ceramics industries during this period, contributing to economic growth in sectors beyond heavy industry.

In terms of technological innovation, cobalt was particularly important in the development of cutting-edge machinery and equipment. Its resistance to high temperatures made it essential in constructing steam engines, which were pivotal in the 19th-century industrial setting. Additionally, cobalt's electromagnetic properties contributed to the emerging field of electromagnetism, a technology that would later become integral to the electrical revolution of the 20th century.

In the papers "One Hundred Years of Cobalt Production in the Democratic Republic of the Congo, Cobalt Resources in Europe and the Potential for New Discoveries, and Climate Change and the Extractives Sector," by authors; Andrew L. Gulley, S. Horn, and Tony Addison, explore various aspects of cobalt production and its economic impact on different regions, with a focus on the Democratic Republic of the Congo (DRC) and Europe. Governments needed foreign investment to revive its copper-cobalt industry, which had suffered under rule likes the Mobutu's governance, aligning with China's "Going Out" strategy to secure global mineral resources, have seen companies invested heavily in the DRC's abundant copper-cobalt reserves since the 2000s, resulting in a significant production increase. However, the DRC government maintains control through contract reviews, renegotiations, and changes to the mining code, creating uncertainty for investors. Leading to many Western mining companies to withdraw, and Chinese companies in control of the DRC's cobalt market. Although cobalt production has grown, benefiting state revenue, on the other hand DRC still faces challenges such as poverty, inadequate infrastructure, governance issues, and an over-reliance on mining. The papers argues that the DRC needs better economic policies and

mineral wealth management to fully capitalize on its cobalt resources, hindered by political instability.[21][22][23]

In Europe for instance, exploring domestic cobalt resources could reduce Europe's dependence on imported cobalt, mitigating supply risks and supporting industries like electric vehicles. Public funding and incentives could stimulate private investment in cobalt research and development, creating jobs and fostering a competitive European cobalt sector. Localizing the cobalt supply chain could enable Europe to regulate environmental, labour, and ethical practices more effectively. Economic gains from domestic cobalt production, such as taxes and licensing fees, could revitalize struggling regions and mining communities. While new mining operations offer promise, strict environmental regulations are necessary to mitigate risks and avoid future liabilities. Establishing strategic cobalt reserves could buffer against market volatility, but this approach has its own economic implications. The paper concludes that domestic sourcing cannot fully replace cobalt imports, emphasizing the need for a balanced strategy that maintains international trade ties. Additionally, investing in cobalt recycling and material efficiency could create further economic opportunities.

Low Carbon Transition and Economic Development in Resource-Rich Countries, highlights a disparity between emerging economies with high production relative to reserves, such as Brazil, Chile, and China, and low-income countries where production lags available reserves. LICs require significant investment in infrastructure, such as power, rail, and ports, to capitalize on resources like cobalt and lithium for electric vehicles. Stable and supportive policy frameworks are crucial for attracting the necessary investment to exploit mineral wealth, which many LICs currently lack. If LICs can attract investment and develop their mineral reserves responsibly, they have the potential to benefit from the low carbon transition. The authors express concerns about equitable development within resource rich LICs during a resource boom and call for measures to ensure a widespread positive impact. Overall, the low carbon transition presents developmental opportunities for resource rich LICs, but effective governance is essential to ensure local communities also reap the benefits.

[21] Horn, S.V., Gunn, A., Petavratzi, E., Shaw, R., Eilu, P., Törmänen, T., Bjerkgård, T., Sandstad, J., Jonsson, E., Kountourelis, S., & Wall, F. (2020). Cobalt resources in Europe and the potential for new discoveries. Ore Geology Reviews.
[22] Gulley, A. (2022). One hundred years of cobalt production in the Democratic Republic of the Congo. Resources Policy. 79. 103007. 10.1016/j.resourpol.2022.103007.
[23] Addison, Tony. (2018). Climate Change and the Extractives Sector. 10.1093/oso/9780198817369.003.0022.

The impacts of cobalt usage in 19th-century manufacturing were far-reaching, as they drove economic development on an unprecedented scale. The enhanced metals and efficient machinery powered the Industrial Revolution, leading to unprecedented GDP growth for nations. As demand increased, mining operations expanded, creating jobs, and stimulating related industries such as transportation and trade. Cobalt became a global commodity, connecting economies and fuelling international trade networks. Moreover, the element played an indispensable role in the industrial rise of countries like Germany and the United States, where strategically leveraged cobalt-rich ore deposits drove national economic development. However, the extensive mining operations required to meet cobalt demands had significant environmental repercussions. Cobalt mining waste led to soil and water pollution, causing substantial ecological impacts. These operations were often labour-intensive and hazardous, raising concerns about worker safety. These challenges highlight the complex connection between technological advancements and their social and environmental costs, a tension that remains relevant in today's discourse on global goods and sustainable development.

Andrew L. explores the intersection of cobalt production, and its strategic importance in various contexts. Since World War I, cobalt has played a crucial role in military technologies, particularly for the U.S., serving key national security interests. During the late 1930s, the demands of wartime dramatically increased U.S. cobalt imports from the DRC, mainly for steel alloys and chemical industries. After World War II, cobalt remained important as it became integral to jet engines, nuclear arms, and various defence tools. This increased significance sparked a fierce rivalry between the U.S. and the Soviet Union over cobalt resources in Congo. However, strategically Cobalt’s importance in the U.S. military context was cobalt stockpiling from 1946 for a potential 3-year war. Although attempts have been made to reduce dependence on cobalt, it remains indispensable in lithium-ion battery cathodes used in several defence technologies, replacing cobalt in applications like jet turbine superalloys and weapon system magnets has proven challenging due to its unique characteristics. In the modern world, the DRC's vast cobalt reserves are strategically pivotal for major military powers, influencing global geopolitics, such as what S. Horn explores as a role of Cobalt in Military Applications, aiming Cobalt's distinct properties, such as corrosion resistance, magnetic permeability, and high-temperature endurance, make it crucial in military technology like jet turbines, magnets, and superalloys. Both military and commercial aircraft extensively use cobalt-based superalloys in jet engines due to their resistance to high-temperature creep. Samarium-cobalt magnets, known for their high-temperature reliability, are integral in missile guidance systems and precision-guided munitions. Cobalt-chromium-molybdenum alloys with excellent corrosion-resistant properties benefit naval components like propellers and ship

components. Cobalt binder-based hard metal tools are essential for crafting robust steels used in armoured vehicles, guns, and more. Cobalt-60, a radioactive variant, enhances the explosive yield and intensity in nuclear arms. Given its multifaceted applications, the Department of Defence considers cobalt an essential material to meet space, defence, and national security needs. In essence, the unique characteristics of cobalt make it irreplaceable in various military technologies, emphasizing the need for a stable cobalt supply chain for defence readiness.[24]

Tony Addison exposes the intersection of Cobalt's Relation to Military Technology, Cobalt's inherent strengths, such as corrosion resistance, high-temperature endurance, and robustness, make it indispensable in military tools such as missile parts, jet engines, and armour as stated previously. Aerospace and defence technologies often rely on cobalt alloys to produce superalloys and stainless steels suitable for extreme conditions. While the demand for cobalt in the defence sector may be overshadowed by civilian uses, it is undeniably significant and growing in demand. The dominant position of China in cobalt refining and the U.S.'s dependence on imported cobalt raise concerns within the U.S. Department of Defence, as this dependency poses potential supply chain vulnerabilities. The unstable political climate and governance issues in the DRC also intensify concerns about ethically sourcing cobalt for military applications and its impact on national security. Overall, cobalt stands out as a strategic mineral for advanced military and aerospace entities. The limited supply sources present challenges that defence planners are actively seeking to address.[25]

The firearms industry integrated cobalt to produce barrels and moving parts that resisted wear better than previous materials, enhancing accuracy and reliability. As these improved firearms became more widely available, they shifted the balance of power, enabling smaller factions to contend effectively in larger geopolitical struggles. Cobalt's incorporation also benefited naval technology, especially in the colonial context. Cobalt-enhanced steels were used in shipbuilding, resulting in faster, more resilient ships capable of carrying heavier artillery. With the race for naval dominance intensifying, cobalt played a crucial role in producing ships with a tactical advantage in naval confrontations. Moreover, the era witnessed a shift from wooden sailing ships to iron-clad steam-powered vessels. Cobalt, as an alloying element, contributed to the toughness of these new naval behemoths, making them nearly impervious to conventional weaponry and further fuelling the arms race on the high seas. Cobalt's influence extended beyond the battlefield and the seas; it permeated the geopolitics of the age. Nations with access to cobalt deposits held a strategic

[24] Gulley, A. (2022). One hundred years of cobalt production in the Democratic Republic of the Congo. Resources Policy. 79. 103007. 10.1016/j.resourpol.2022.103007.
[25] Addison, Tony. (2018). Climate Change and the Extractives Sector. 10.1093/oso/9780198817369.003.0022.

advantage, leading to conflicts over mining regions. The demand for cobalt drove exploration and colonization efforts.[26]

Cobalt's entanglement with 19th-century military technology offers a compelling narrative on the broader theme of global goods and their multifaceted impacts. While it propelled technological advancement and enabled nations to expand and protect their territories, it also presented challenges and ethical dilemmas that continue to resonate today. This intersection of technology, geopolitics, and ethics epitomizes the complex tapestry of global goods and their enduring influence on our world. Examining the multi-faceted impacts of global goods on society, economy, and environment, one cannot ignore the environmental effects of cobalt mining. Although cobalt has been vital for technological innovation and economic growth since the Early Modern age, its extraction comes at a significant cost to ecosystems and environmental well-being. As we enter an era where sustainability and ecological balance dominate global discussions, it is crucial to scrutinize the environmental consequences of cobalt mining, from deforestation and water pollution to broader concerns about mining practices and sustainability.[27]

The comprehensive study Andrew L. Gulley, S. Horn, and Tony Addison shed light on the environmental and social consequences of cobalt mining, particularly in the Democratic Republic of the Congo (DRC), where environmental consequences of Cobalt Mining, Copperbelt degradation, in the artisanal small-scale in DRC's Copperbelt region which has led to extensive environmental issues, including deforestation, land degradation, air as well as water pollution and salinization. All issues that continue to be of increasing significance in the areas. The contamination by Heavy Metals: Negligent disposal of mining by-products and pollutants has resulted in elevated levels of heavy metals, such as cobalt, copper, and arsenic, in the vicinity of mining areas. This has detrimental effects on both human health and local ecosystems. The oxidation of sulphide ores leads to acid mine drainage, which releases acidic waters containing metals into nearby ecosystems. This has severely impacted water quality, biodiversity, and local agriculture, according to Andrew L. account. Air Quality Concerns like dust pollution from cobalt processing worsens air quality, causing respiratory problems in communities near mining and processing centres. while Lax Regulation looking at the environmental damage as further exacerbated by weak regulatory oversight, ineffective enforcement of environmental standards, and limited comprehensive assessments and monitoring as all areas of policies lobbies which has done little to the communities surfing from these issues.

[26] Ibidem
[27] Ibidem

Remediation is needed to counteract the ongoing environmental degradation, the booming cobalt industry in the DRC requires innovative mining practices, technologies, and proactive policies, broader with these environmental implications like the Oceanic Mining Issues are ecological concern in this Cobalt mining environments. Ecosystem disruption, spikes in toxicity, and geochemical shifts, as stated by Jones et al. (2018). All Terrestrial Mining extraction of cobalt from land can lead to deforestation, soil erosion, and river siltation due to waste, according to Jorré (1936). Pollutants from Refining, smelting processes release pollutants, including sulphur dioxide, into the atmosphere and generate metal-rich slag waste, as reported by SME AG (2019). Challenges in Small-scale Mining: Artisanal and small-scale mining often face waste management issues, resulting in site contamination, according to Jervois Mining Ltd (2020). Potential for Mitigation by implementing improved regulations and updated practices, modern mines can reduce environmental damage. Additionally, recycling cobalt from various products has the potential to decrease the need for new mining.

Figure 19 A child working alongside adults at cobalt operations in the Democratic Republic of Congo.

On the Socio-economic level, Impacts of Cobalt Mining on Unregulated artisanal cobalt in the DRC is associated with numerous issues, including severe environmental harm, human rights violations, child labour, inadequate safety measures, and forced relocations. In the Democratic Republic of Congo (DRC), industrial mining involves large-scale firms that are connected to both

environmental and human rights issues. The mineral law needs to address these concerns. Advocates argue that including cobalt in conflict mineral laws, like those for gold, tantalum, tin, and tungsten, could help prevent practices that are already happening due to the increasing demand for cobalt, especially from the electric vehicle industry. If not addressed, this demand could worsen environmental and social problems. The DRC faces difficulties in properly procuring cobalt due to its unpredictable political situation and widespread poverty. Urgent Oversight needed to meet the growing demand for cobalt, a comprehensive reform of the DRC's cobalt supply chain is necessary, along with adherence to environmental and human rights standards. Responsible cobalt procurement from the DRC requires the implementation of sustainable mining practices, collaboration with local communities, and strict social safeguards.

To conclude, the importance of cobalt in today's world cannot be overstated, its mining has significant environmental and socioeconomic consequences. Striking a balance between demand and ethical mining and sourcing practices is crucial for a sustainable future.

3.5 Crude oil

The discovery and commercial extraction of crude oil in the 19th century was a transformative moment in history, reshaping economies, politics, and societies worldwide. Exploring the multifaceted impacts of global goods from the Early Modern age to the present, the story of crude oil's ascent offers valuable insights into the intersection of technological advancement, economic development, and geopolitical manoeuvring. Before the petroleum era, biomass, water, and wind were the primary energy sources. However, with the Industrial Revolution and the growing demand for efficient fuel, the limitations of these sources became apparent. As industrialists and innovators sought alternatives, the potential of crude oil gained recognition.[28] Crude oil had been known for centuries, used medicinally and as an illuminant. However, it was the process of drilling for significant quantities of oil that revolutionized its commercial potential. At the heart of oil's rise is Edwin L. Drake, often called the "Father of the Petroleum Industry." In 1859, Drake successfully drilled the first commercial oil well near Titusville, Pennsylvania. Using an innovative drilling method that prevented water from entering the borehole, Drake struck oil at a depth of 69 feet. This breakthrough not only validated large-scale oil extraction but also triggered an unprecedented oil rush in the region. Following Drake's success,

[28] Rodrigue, J. P. (2020, January 1). *The Geography of Transport Systems*. P. 35

regions with potential oil reservoirs quickly transformed. Forests, farmlands, and quiet towns became bustling centres of drilling activity, with derricks dotting the horizon. The early oil wells were basic, with entrepreneurs and speculators venturing into the industry with limited knowledge and experience. However, these initial efforts laid the foundation for a sophisticated global industry. As the potential of oil became widely recognized, refineries emerged, pipelines were constructed, and transport mechanisms were developed. The industry grew exponentially, driving technological innovations and creating a complex network of commerce, from crude extraction to the sale of refined products like kerosene. With the success in Pennsylvania, the search for oil became a global endeavour.[29]

Figure 20 Edwin Drake's oil well in Titusville.

By the late 19th century, explorations were taking place in various parts of the world, from the jungles of Borneo to the plains of Russia and the deserts of the Middle East. The pursuit of

[29] Pennsylvania Historical and Museum Commission Collection (2017). Edwin L. Drake and the birth of the petroleum industry / [text by Paul H. Giddens; edited and revised by S.W. Higginbotham and Donald H. Kent]. Second edition. Internet Archive

History.com (2010). Oil Industry. Retrieved from https://www.history.com/topics/industrial-revolution/oil-industry (Accessed 07/9/2023).

black gold became a defining narrative of the age, confirming oil's abundance and shaping the geopolitical dynamics of the 20th century, as control over oil resources became crucial for national and international strategies. The discovery and commercial exploitation of crude oil in the 19th century exemplify the broader theme of global goods and their profound impact on society, the economy, and the environment. The story of crude oil is one of innovation, entrepreneurship, and transformative change. As a symbol of global goods, it highlights the interconnectedness of technological progress, economic imperatives, and the complex geopolitical dance around valuable resources. The rise of the petroleum industry stands as a testament to humanity's relentless pursuit of progress, while also raising questions about sustainability and stewardship for future generations.

The complex tapestry of the 19th-century Industrial Revolution is woven with numerous innovations and transformative energies. Central to this epochal shift was the evolving role of energy sources, with crude oil emerging as a potent driver of industrialization. As we explore the impact of global goods from the Early Modern age to the present, understanding the synergies between crude oil and the mechanisms of 19th-century industrialization offers a panoramic view of technological, economic, and societal changes. The Industrial Revolution, which began in the late 18th century and extended into the 19th century, marked a period of rapid technological advancement and societal restructuring. Traditional manual labour and artisanal production systems gave way to mechanized factories, urbanization, and innovative transportation systems. As industries expanded, so did the search for efficient and reliable energy sources. While crude oil had various early uses, it was the refinement of kerosene that truly marked oil's entry into the industrial age. Before kerosene, whale oil was the primary source of lighting. However, it was expensive and environmentally harmful. Kerosene emerged as a cheaper and more efficient alternative, democratizing access to artificial lighting. Lamps burning kerosene illuminated homes, streets, and factories, effectively extending productive hours, and reshaping societal routines.[30]

Throughout the early stages of the Industrial Revolution, coal was the dominant energy source, powering steam engines, factories, and heating systems. However, as the 19th century progressed, the advantages of oil became increasingly apparent. Refined crude oil was more versatile than coal. It could be transported more easily, burned more cleanly, and had applications extending beyond mere combustion. While coal continued to play a significant role, oil began to carve out its niche, laying the groundwork for its dominance in the 20th century. The steam engine, a hallmark of the Industrial Revolution, initially relied heavily on coal. However, with advancements in engine design and the increasing availability of refined petroleum products, oil

[30] Duru, Onyekachi (2011). History of Oil and Gas, pp. 1-4. Available at http://dx.doi.org/10.2139/ssrn.2137976 (Accessed 6/9/2023).

started to be used in certain steam engines, especially in naval and transportation contexts. The transition was driven by oil's higher energy density and ease of use. For locomotives, ships, and eventually early automobiles, oil and its derivatives presented a more flexible and efficient fuel

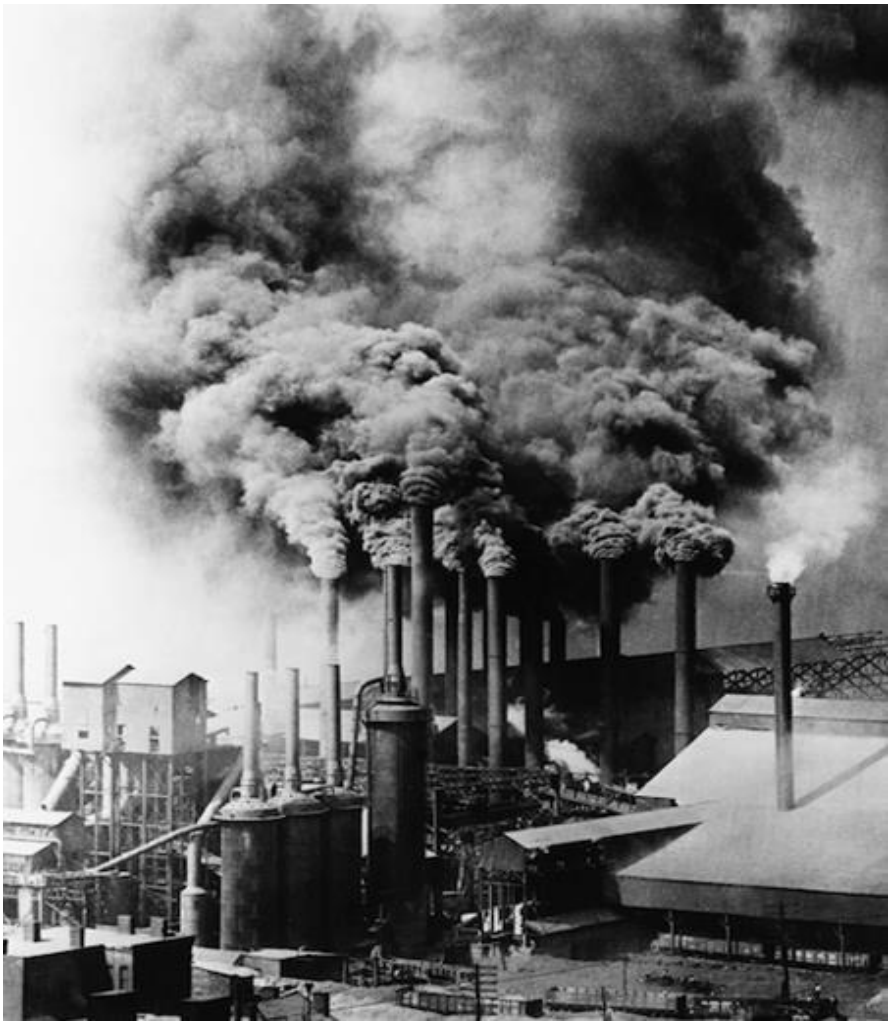

Figure 21 Smokestacks in Pittsburgh, Pennsylvania, 1890s © Bettmann/CORBIS.

option.[31]

The ascent of crude oil in the 19th century was both a result of and a catalyst for technological innovation. As oil exploration and extraction technologies improved, so did refining processes, ensuring a steady supply of diverse petroleum products for various applications. Innovations in drilling, pumping, and transportation made oil more accessible to growing industries. The availability of this new energy source, in turn, fostered further technological developments, from advancements in internal combustion engines to innovations in chemical engineering, opening avenues for products like synthetic dyes, plastics, and pharmaceuticals.

[31] Ibidem

Crude oil's role in the 19th-century Industrial Revolution vividly illustrates the symbiotic relationship between global goods and epochal shifts in society, economy, and technology. More than just an energy source, oil became a catalyst for change, reshaping industrial landscapes, influencing geopolitical dynamics, and altering everyday lives. Its story during this era serves as a compelling chapter in the broader narrative of global goods, encapsulating the promises and challenges inherent in human progress and innovation. The narrative of global goods throughout history reveals certain commodities that have had a transformative impact. Crude oil is undoubtedly one such catalyst of change due to its diverse applications. One of its most profound effects has been in the realm of transportation. By exploring this relationship, we can understand the intricate dance between technological progress, infrastructural expansion, and broader socio-economic repercussions.[32]

In the 19th century, sailing ships and coal-powered steamships dominated global shipping lanes. However, the transformative effects of crude oil were yet to be experienced in the maritime world. As the century progressed, the potential of oil as a more efficient fuel alternative became evident. Oil-powered steamships were not only more efficient but also required less manual labour compared to coal, streamlining operations, and reducing costs. Similarly, the railroad industry faced its own challenges and opportunities with the advent of crude oil. While coal-powered steam locomotives were common, the potential of oil as a fuel began to be explored. Oil-powered locomotives emitted fewer pollutants, reduced wear, and tear on rails, and required less refuelling time compared to coal. This efficiency led to faster transit times, reshaping commerce, settlement patterns, and even geopolitical strategies. However, the evolution of transportation was not just about using oil as a fuel; transporting crude oil itself presented significant challenges.[33]

The transportation of oil in barrels was inefficient and prone to leaks and spills in the 19th century. This necessitated innovations in transportation mechanisms. The introduction of oil tankers and pipelines provided solutions but also brought new challenges such as ensuring transport safety, mitigating environmental risks, and navigating regulatory landscapes. One of the most visible manifestations of the oil era was the development of expansive infrastructure. Pipelines emerged as the most efficient way to transport large quantities of oil over land. These interconnected pipelines connected remote oilfields to refineries and markets, transforming physical landscapes and having profound economic implications. Entire towns and cities sprouted along these transport routes, creating employment, fostering trade, and catalysing regional development.

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[32] Piccirillo, S. (A.A. 2014/2015). Crude oil: history, market analysis and effects on advanced economies. Tesi di Laurea in International finance, LUISS Guido Carli, relatore Pierpaolo Benigno, p. 79

[33] Madureira, N. (2010). Oil in the age of steam. Journal of Global History, 5(1), 75-94. doi:10.1017/S174002280999034

The transformative effect of crude oil on transportation extended deeply into the economic realm. Efficient transport of goods, facilitated by oil-powered ships and locomotives, bolstered global trade. The ability to transport oil efficiently, whether through pipelines, tankers, or rail, ensured a steady supply to industries, stabilizing prices, and economies. The ripple effects were manifold: from the rise of oil barons and mega-corporations to socio-economic shifts in oil-rich regions. Crude oil's impact on transportation evolution serves as a compelling case study in the interplay of global goods with societal, economic, and environmental paradigms. From the bustling docks of 19th-century ports to the sprawling pipelines of today, oil's journey is a testament to human ingenuity, ambition, and the relentless pursuit of progress. However, as we appreciate these advancements, it is also crucial to reflect on the challenges, responsibilities, and sustainable pathways forward in our ever-evolving relationship with this valuable resource.

In exploring the various effects of global commodities of the Contemporary Age, crude oil emerges as a significant element, not only as a commodity but also as a catalyst for societal transformation. Beyond industry and transportation, the wealth derived from oil has sparked profound changes in societal structures, hierarchies, and urban landscapes. This examination highlights how oil wealth has both driven and resulted from societal metamorphoses. At the intersection of industry, politics, and high society, the oil barons emerged as a new class of industrialists wielding immense power and influence, thanks to their vast reserves of oil wealth. Figures like John D. Rockefeller and others not only dominated the burgeoning oil industry but also left their mark on banking, philanthropy, and politics. These magnates represented a shift in the source of wealth and power, transitioning from land-based aristocracy to industrial-based capitalism.

Oil fortunes led to a shift in societal hierarchies, with traditional elites, competing with the wealth of oil magnates. This transformation was not only about wealth but also about influence and control. Oil magnates financed political campaigns, commissioned cultural landmarks, and set societal trends, becoming an integral part of high society. The accumulation of oil wealth, while bringing prosperity, also brought about stark disparities. On one hand, regions rich in oil experienced significant capital inflows, infrastructural development, and an improvement in living standards. On the other hand, the concentration of wealth often led to socio-economic imbalances. Monopolistic practices by oil barons further deepened the divide, resulting in calls for antitrust legislation and demands for wealth redistribution. For example, cities such as Houston, Baku, and Dhahran transformed from modest settlements into sprawling urban centers, largely due to their proximity to oil reserves. The oil boom acted as a magnet, attracting populations with the promise of employment, prosperity, and an enhanced quality of life. Infrastructure development, including

roads and schools, followed suit.[34] However, this rapid urbanization also presented challenges such as overpopulation, strain on resources, and environmental concerns. While the image of oil derricks and rugged oilfield workers often comes to mind when thinking of oil-related employment, the industry's impact on job creation extends far beyond that. From refining to transportation, and from research to marketing, the oil industry has spawned numerous employment opportunities. Additionally, auxiliary industries such as housing, catering, and entertainment flourished around oil hubs, further stimulating job creation.

The societal transformations brought about by oil wealth offer a fascinating perspective on the broader narrative of global commodities. As the world transitioned from the Early Modern age to our contemporary era, oil has not only served as an energy source but also influenced power dynamics, societal structures, and urban identities. Its story underscores the profound ways in which commodities can shape human societies, giving rise to prosperity, challenges, and above all, change. The impact of oil wealth serves as a poignant reminder of the intricate relationship between resources, economies, and societies in our shared human journey.

As we consider the various implications of global goods from the Early Modern era to the present, crude oil deserves special attention due to its wide-ranging impact on society, economy, and particularly the environment. While previous explorations have focused on the revolutionary role of oil in societal and industrial transformations, it is important to highlight the environmental consequences of early oil extraction, a topic that has often been overshadowed by its economic and societal benefits. Oil spills are among the most devastating environmental impacts associated with oil extraction. In the 19th century, primitive extraction methods often resulted in leaks and spills. Unregulated drilling, lack of containment measures, and inefficient transport systems not only led to wastage but also caused severe ecological damage, affecting both marine and terrestrial ecosystems.[35] Oil extraction during the 19th century was far less advanced compared to today's technology. The invasive procedures used at that time, such as 'wildcat drilling,' often caused significant land degradation. Large areas were stripped of vegetation and soil integrity was compromised, resulting in issues like soil erosion and desertification.[36] These areas often remained

[34] Piccirillo, S. (A.A. 2014/2015). Crude oil: history, market analysis and effects on advanced economies. Tesi di Laurea in International finance, LUISS Guido Carli, relatore Pierpaolo Benigno, pp. 79

[35] Sylves, Richard & Comfort, Louise. (2012). The Exxon Valdez and BP Deepwater Horizon Oil Spills: Reducing Risk in Socio-Technical Systems. American Behavioral Scientist - AMER BEHAV SCI. 56. 76-103. 10.1177/0002764211413116.

[36] Hinze, W. J., Von Frese, R. R., Von Frese, R., & Saad, A. H. (2013). Gravity and magnetic exploration: Principles, practices, and applications. Cambridge University Press.

uninhabitable and unproductive for years, posing significant concerns for local communities and agriculture.

The pursuit of oil frequently led to substantial deforestation as trees were cut down to make way for drilling rigs and related infrastructure. Forests act as carbon sinks and are crucial for biodiversity, so their loss had far-reaching consequences. Deforestation not only impacted local plant and animal life but also had broader ecological implications, including contributing to climate change, an issue that was barely acknowledged at the time but holds great importance today. Water bodies near oil extraction sites often became dumping grounds for pollutants. Hazardous waste, including heavy metals and toxic sludge, was released, contaminating both surface and groundwater. For example, the case of the Niger Delta, Nigeria. Additionally, accidental leaks often result in the pollution of rivers and lakes, affecting aquatic life, and making water unsafe for consumption and agriculture. The ripple effects of water contamination on ecosystems and human health are immeasurable and long-lasting.[37]

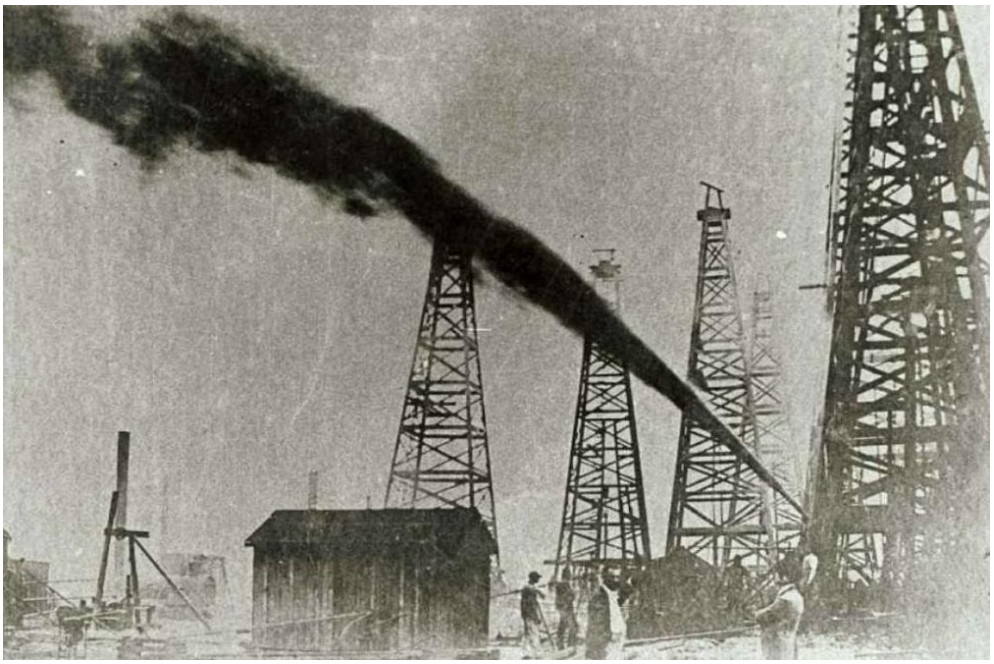

Figure 22 January 10, 1901, a drilling derrick at Spindletop Hill near Beaumont, Texas, produces an enormous gusher of crude oil, coating the landscape for hundreds of feet.

Environmental awareness in the 19th century was still in its early stages, often overshadowed by the excitement of industrial progress and economic prosperity. However, as the

[37] Ite, A. E., Ibok, U. J., Ite, M. U., & Petters, S. W. (2013). Petroleum exploration and production: Past and present environmental issues in the Nigeria's Niger Delta. American Journal of Environmental Protection, 1(4), 78-90.

detrimental impacts of oil extraction became increasingly evident, this period also witnessed the emergence of environmental advocacy.[38] Early environmentalists and certain sections of the media began to highlight the need for sustainable practices, even though their voices were often drowned out by the noise of industrialization.[39] The early environmental impact of oil extraction serves as a sobering contrast to its societal and economic achievements. While the 19th-century world was largely captivated by the transformative power of this 'black gold,' the environmental degradation it caused serves as a poignant lesson for the present and future. As we navigate the complexities of global goods and their numerous impacts, understanding the historical context of oil's environmental toll is crucial. It reminds us of the importance of balance and the pursuit of more sustainable approaches as we continue to harness natural resources for societal progress. This historical retrospection not only informs our current choices but also shapes our ethical responsibilities towards future generations.

3.5.1 Petroleum

Dealing with the complex and broad domain of global commerce inevitably leads to the powerful account of crude oil. From its discovery in the 19th century to the present, oil has not only fuelled machines but also shaped the global economy in unprecedented ways. This section explores the complex relationship between crude oil and the global economic landscape, highlighting the interconnectedness of nations, markets, and industries. Crude oil's emergence as a pivotal commodity in the 19th century facilitated the expansion of global trade networks. It opened up new maritime and land routes, connecting previously isolated regions. Ports specifically designed for handling oil cargos proliferated, leading to an increased flow of goods, people, and ideas. Essentially, oil became the foundation of global commerce, intertwining economies in mutual dependence. The fluctuating prices of oil have always been more than mere numbers in the market; they have served as indicators of global economic health. Booms and busts in the oil market, driven by geopolitical tensions, technological advancements, or supply-demand dynamics, have been reflected in global economic trends. High oil prices often signalled economic prosperity for exporting nations but posed challenges for importing ones, and vice versa.[40]

[38] Podhora, E. (2015). Lessons for climate change reform from environmental history: 19th century wildlife protection and the 20th century environmental movement. J. Envtl. L. & Litig., 30, 1.
[39] Fleischman, L. (2007). Elite Environmentalism: The Roots of the Modern Environmental Movement in the 19th Century Whig Philosophy of George Perkins Marsh (Doctoral dissertation).
[40] Piccirillo, S. (A.A. 2014/2015). Crude oil: history, market analysis and effects on advanced economies. Tesi di Laurea in International finance, LUISS Guido Carli, relatore Pierpaolo Benigno, pp. 6-26

Given its significant role, oil naturally became a major player in global commodities markets. The establishment of exchanges like the New York Mercantile Exchange (NYMEX) and later, the Intercontinental Exchange (ICE), allowed traders to speculate on future oil prices. This speculation, in turn, influenced extraction strategies, investment in research and development, and even geopolitical strategies. The economic narrative of crude oil has always revolved around the ever-changing balance between supply and demand. Technological advancements, successful exploration, and extraction methods impact supply, while global economic health, alternative energy sources, and industrial demands influence consumption. This delicate balancing act led to the creation of organizations like OPEC (Organization of the Petroleum Exporting Countries), which aims to stabilize oil prices by coordinating production levels among major exporting nations.[41]

The global significance of crude oil gave rise to intricate international partnerships. Nations formed bonds over shared oilfields, pipeline routes, and mutual economic interests. At the same time, oil dependency also bred competition and conflict. However, it has also fostered collaboration, knowledge exchange, and diplomatic dialogues, weaving a complex tapestry of inter- nation relationships, often driven by oil interests. Crude oil's role in shaping global economic dynamics provides a fascinating perspective on the broader narrative of global commerce. Its journey from being simply "black gold" to becoming the lifeblood of economies, the foundation of international partnerships, and the driving force behind global trade is a testament to its unparalleled significance. Exploring the economic impact of oil serves as a pivotal chapter in our collective story, illustrating the profound ways in which resources dictate, and are dictated by, the global economic landscape.

3.6 Gold

In the vast tapestry of global commodities that have left lasting imprints on human history, the allure of gold reigns supreme. Not only has its glitter fascinated individuals, but it has also driven mass migrations and economic upheavals. The 19th century, with its numerous gold rushes, stands as a stark testament to the transformative power of this precious metal, reshaping societies, economies, and environments. The discovery of gold at Sutter's Mill in 1848 ignited what is arguably the most iconic gold rush in history. As word spread, tens of thousands flocked to

[41] Shanghai International Energy Exchange (INE) (2020). Crude Oil Futures: Trading Handbook (2020 edition). Retrieved from https://www.ine.cn/upload/20210127/1611728659756.pdf (Accessed 17/09/2023).

California, reshaping its demographic landscape. Cities like San Francisco grew rapidly, as diverse cultures converged, creating a melting pot of traditions, but also giving rise to tensions and conflicts.[42]

Economically, the California Gold Rush was a game-changer. Entrepreneurs flourished, as did industries related to mining, such as tools, and infrastructure. The immense wealth generated played a pivotal role in expediting California's admission into the Union in 1850. When gold was discovered in Canada's Klondike region in 1896, it sparked another frenzied rush, albeit in a much harsher terrain. Aspiring miners embarked on gruelling journeys, navigating treacherous mountain passes and freezing waters. Dawson City, at the heart of the goldfields, became the epicentre of this rush, witnessing a transient period of prosperity. While the direct economic benefits of the Klondike Gold Rush were mostly localized, its broader impact reverberated through popular culture, immortalizing the struggles and dreams of those who sought fortunes in the frozen wilderness through literature and music.[43]

In the mid-19th century, a series of gold rushes in regions like Ballarat and Bendigo ignited Australia's own rush for gold. These goldfields attracted immigrants, contributing to Australia's diverse cultural identity. The wealth generated by gold significantly contributed to infrastructural developments, including railways and telegraph lines. Apart from their direct economic implications, these gold rushes triggered mass migrations, both international and internal. Dreams of prosperity led many to leave their homes. Such migrations drastically altered demographic landscapes, giving rise to new communities, and sometimes causing tensions between indigenous populations and newcomers.

Gold rushes undoubtedly generated immense wealth. However, it is important to note that these booms were often short-lived. Regions that thrived during gold rushes faced economic challenges once easily accessible gold became scarce. Nevertheless, the initial influx often left lasting legacies, with many regions diversifying into agriculture, trade, or other industries, ensuring sustained growth beyond the fleeting allure of gold.

The gold rushes of the 19th century serve as captivating chapters in the story of global commodities. They highlight the profound ways in which a single resource can catalyse societal shifts, economic transformations, and environmental challenges. The allure of gold, with its promise of prosperity, not only shaped individual destinies but also influenced the broader trajectories of regions, nations, and the global economic landscape. As we explore the multifaceted impact of

[42] Brands, H. W. (2002, January 1). *The Age of Gold*. Doubleday Books.
[43] Waltham, Tony. (2007). Klondike Gold. Geology Today. 23. 10.1111/j.1365-2451.2007.00639.x., pp. 220-221.

global commodities, the 19th-century gold rushes emerge as a shining testament to humanity's unwavering pursuit of prosperity and the myriad consequences that follow in its wake.

Figure 23 Matthew R. Isenburg, "Mining Scene on the American River, c. 1852" by George Johnson, one of the historic photos included in the exhibit "Gold Fever! Untold Stories of the California Gold Rush" at the Temecula Valley Museum.

Gold, aside from its appeal in jewellery, has historically been fundamental to global monetary systems. Its inherent value, rarity, and durability have positioned it as a key player in shaping economic policies, trade practices, and international relations. Within the broader exploration of global goods, the role of gold in moulding monetary systems provides a unique perspective on the intersections of trust, value, and global economic stability. Originating in the 19th century, the gold standard system involved countries pegging their currencies to a specific amount of gold. This ensured uniformity and predictability, guaranteeing that every printed note had tangible backing. As global trade expanded, the gold standard facilitated smoother international transactions, reducing the need for complex currency exchange systems, and ensuring that money, regardless of its origin, held universally recognized value.[44][45]

Gold's function as a value benchmark streamlined international trade. In an era of growing cross-border commerce, countries that adopted the gold standard could confidently engage in trade,

[44] Eichengreen, B., & Sussman, N. (2000). The International Monetary System in the (Very) Long Run. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.879428, pp. 67-68
[45] Eichengreen, B. (2012, September 27). *Exorbitant Privilege*. OUP Oxford. Pp. 14-15

knowing that their currency valuations, anchored in gold, remained relatively stable. This reduced exchange rate risks and fostered international economic cooperation and growth. While the gold standard provided economic stability, its inflexibility also proved to be its weakness. While it curbed rampant inflation, it also limited central banks' ability to implement flexible monetary policies during economic downturns. This meant that countries on the gold standard often faced prolonged periods of deflation and high unemployment during economic depressions.[46]

The essence of any currency lies in the trust it commands. By linking paper money to gold, governments and central banks conveyed a promise: each note could be exchanged for its equivalent value in gold. This fostered trust in paper currency, enabling its widespread acceptance and use. However, this tangibility also presented challenges. Economic booms, marked by gold discoveries or increased mining efficiencies, could inadvertently lead to inflation, while gold shortages could trigger deflation.[47] From its central role in the emergence of the gold standard, gold has been both a symbol of stability and a source of controversy. Investigating the vast landscape of global goods and their impacts, gold's monetary narrative offers invaluable insights into the evolution of global economic thought.

Gold, with its timeless and pivotal role in global economies, has been extensively mined for centuries. However, the methods used in its extraction and the relentless pursuit of this precious metal have caused significant damage to the environment. As we explore the world of global commodities and their consequences, it is important to shed light on the ecological costs associated with the shine of gold. Originating in the mid-19th century during the California Gold Rush, hydraulic mining involved using high-pressure jets of water to dislodge gold-bearing sediments. Although effective, this method greatly affected the environment. Entire landscapes were reshaped, with mountainsides eroded and large areas of land left barren. The displaced sediment and debris found their way into rivers, leading to widespread river siltation. The quest for gold also resulted in the clearing of vast stretches of forests, both to access gold-rich areas and to meet the infrastructure needs of growing mining towns. Deforestation, apart from depriving the Earth of its green cover, had far-reaching ecological effects. The loss of habitat led to a decrease in biodiversity, altered water cycles, and increased susceptibility to landslides and erosion. Hydraulic mining, as we pointed out, and other excavation methods caused significant sediment runoffs. These sediments,

[46] Eichengreen, B., & Sussman, N. (2000). The International Monetary System in the (Very) Long Run. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.879428, p. 68
[47] ibidem

carried into rivers, negatively impacted water quality and aquatic life. Riverbeds rose, changing the course of rivers and increasing the risk of floods for nearby communities.[48]

The extraction of gold, especially in those decades, heavily relied on chemicals such as cyanide and mercury. While these chemicals aid in separating gold from ore, their residual presence has severe environmental consequences. Water sources near mining sites often became contaminated, posing health risks to local communities and wildlife.[49]

When viewed from an environmental perspective, the story of gold is a sombre one. The price of its shine is paid for by devastated landscapes, polluted rivers, and silent forests. As we examine the phenomenon of global commodities and their intricate relationship with society, economy, and the environment, it is crucial to recognize that the actual cost of gold goes beyond market valuations. It is a cost borne by ecosystems, by communities living in the vicinity of mines, and by future generations inheriting a scarred planet. The narrative of gold mining underscores the urgent need for sustainable practices, harmonious coexistence with nature, and a re-evaluation of the real value of "precious" resources.

Gold mining has played a significant role in shaping societies, particularly in regions where it was discovered. Gold discoveries led to the emergence of mining communities in previously uninhabited or sparsely populated areas. Towns like Dawson City in the Klondike became bustling hubs, attracting entrepreneurs, and fortune-seekers from all over. These communities faced societal challenges such as a lack of infrastructure, transient populations, and uncertainty led to social volatility. Miners worked in terrible conditions, facing physical risks from mine collapses, explosions, and long-term health hazards like silicosis.[50]

In many colonial settings, Indigenous population faced systematic exploitation and was forcibly conscripted into mining activities. The pursuit of gold, indeed, often clashed with the rights and traditions of Indigenous populations. Prospectors overran lands considered sacred or vital to Indigenous livelihoods. In regions like California, the native population experienced displacement, disease, and violence. These communities, deeply connected to their lands, struggled with the environmental and societal disruptions caused by mining. In fact, the global gold rushes of the 19th century were also intertwined with colonial ambitions. Colonizers saw gold discoveries as opportunities to consolidate power and wealth, resulting in the exploitation of both the land and the

[48] Rawls, James J., and Richard J. Orsi, editors *A Golden State: Mining and Economic Development in Gold Rush California.* Berkeley, Calif: University of California Press, c1999 1999. http://ark.cdlib.org/ark:/13030/ft758007r3/, pp. 117-119
[49] Alpers, Charles & Hunerlach, Michael. (2000). Mercury Contamination from Historic Gold Mining in California.
[50] Waltham, Tony. (2007). Klondike Gold. Geology Today. 23. 10.1111/j.1365-2451.2007.00639.x., p. 221

local populations. Territories were annexed, local governance systems disregarded, and economic structures reshaped to serve colonial interests. While gold drove economic growth and technological advancement, it also reflected societal structures and inequities.[51]

The complexities of the gold trade in modern finance offer a panoramic view of the economic, social, as well as environmental implications of this global commodity. Historically, as we have discussed, this metal was mostly used as a foundation for international agreements. Its role in global networks underscores its significance but also necessitates a serious investigation of its social, environmental, and economic impacts. Thus, as we analyse the global impact of goods like gold, it becomes clear that they are not mere commodities but catalysts of great changes.

[51] Talbot, D. (2015). Greed and Genocide. California Indians and the Gold Rush. Retrieved from http://whereareyouquetzalcoatl.com/mesofigurineproject/EthnicAndIndigenousStudiesArticles/Talbot(2015)Chapter3.pdf, p. 63

CONCLUSIONS

Coming to the concluding section of this thesis, it is very important to reiterate how the early modern age was an important period for global trade and commerce. Indeed, exploration, colonisation, and the discoveries of new trade networks during this historical period played a crucial role in shaping the modern interconnected world. Furthermore, technological advances, such as navigation and shipbuilding, fostered global connectivity and supported large-scale commercial enterprises. This paper showed us how during the Early modern age, European powers established colonies and empires around the world, leading to the emergence of a truly interconnected global economy. Through this research, we have been able to show that the factors behind the expansionism of the great European powers were the desire for wealth and resources, religious motivations, the conquest of new lands, and the control of trade.

Based on this last point, we observed how during the time under consideration, European rulers implemented mercantilist strategies to regulate trade and establish maritime empires, leading to the expansion of state power and the establishment of centralised governments. Furthermore, we have seen that the factor that enabled these powers to control the spice and luxury goods trade, as well as the various trade routes, was their military superiority. Although, as we have seen, the expansionist stance in question was also a source of rivalry and conflict between the European powers themselves owing to conflicting interests. An example of this conflictual character is to be found in the Dutch East India Company (VOC), which had to contend with the British and French in Asia; Clashes which, as we have seen, led to its financial collapse. As a result, British and French traders established an extensive presence throughout South-East Asia and India, causing the Dutch to lose their position as the dominant nation in Asia and Europe.

In this concluding part of our research work, we cannot but underline that the emergence of an Atlantic economy, was central to the object of this paper, as it saw some European centres of the magnitude of Antwerp and London, to name only some, become the main trading hubs of the modern world. Yet, it must be remembered that all this was facilitated by the technological development that took hold in this particular era. Indeed, it is worth highlighting the crucial role played by the technological revolution of the Early Modern Age, as it enabled the expansion and exploration of new lands, a process also greatly facilitated, of course, by advances in cartography that greatly improved navigation.

Ports, moreover, as we have seen, were crucial poles of the Modern Era, as they played a prominent role in exploration, economic growth and social transformation. They emerged from medieval urban policies and were designed as trade-oriented towns. Ports became centres of cultural interactions, facilitating the sharing of knowledge, policies and technology.

Throughout Early Modern times, port cities underwent massive transformations and competed to become leading urban centres. Additionally, with the growth of international trade, we saw Mediterranean ports become integrated into a larger trading system: that of so-called 'free ports'. A phenomenon that stemmed from mercantilist policies and led to the organization and unification of the Mediterranean trading system.

As a result of the fervour in the commercial sphere during the Early Modern Age, certain goods such as gold, sugar and cotton emerged as valuable global commodities, which in addition to having produced profound impacts in economic, social as well as environmental terms, contributed greatly to shaping our current globalised world. In the case of gold, it played a crucial role in European expansion and wealth accumulation process, with transportation networks such as the Spanish treasure fleets and the Silk Road facilitating the movement of this commodity across continents.

As gold was discovered in abundance in other parts of the world, such as the Americas, the African gold trade experienced a decline. It was during this particular historical period that it was observed that the inflow of gold and silver into the Old World created inflationary trends and had an impact on the economy. Furthermore, from a social point of view, we tried to analyse the ways in which the transatlantic slave trade disrupted African societies, exploiting Africa's resources and creating a system of semi-feudal classes that oppressed their own people.

As for sugar, its cultivation began in southern China around 200 AD. Subsequently, it was the Arab expansion that brought sugarcane to the Iberian Peninsula, helping it to spread throughout the Mediterranean region and North Africa.

Owing to the Arab agricultural revolution, we started seeing new crops such as sugar, cotton, citrus fruits and rice being introduced to the Old World. This, as we have discussed throughout this scholarly piece, caused various environmental impacts such as changes in land use, depletion of water resources and soil salinisation. Moreover, the increased irrigation of sugar plantations has led to soil erosion, degradation, deforestation, and loss of habitats, affecting local ecosystems.

Through this paper, we observed how, from a social point of view, the demand for sugar in Europe during the Early modern age led to the establishment and expansion of sugar plantations, based on the exploitation of African slaves. Indeed, slave labour became increasingly important in sugar

production, contributing to the transatlantic slave trade. The forced labour of African slaves in sugar production allowed plantation owners and European nations to accumulate enormous wealth but also provoked immense human suffering and social disruptions.

With regard to the economic impact of this commodity in our research, it must be said that the Caribbean sugar plantations had a remarkable impact on the world economy, creating a strong bond between cane-producing regions and European urban centres. Furthermore, the Columbian exchange stimulated the emergence of merchant classes, bankers and entrepreneurs, leading to economic growth and dependence between producers and importers. During this period, sugar consumption increased, providing a cheap source of calories for the urban working class.

Turning to cotton, the last 'global' product addressed in this thesis for the Early Modern Age, it was initially a localised crop, which soon transformed into an internationally traded commodity due to its growing demand in European textile industries. The cotton trade, as we have stressed again and again throughout this paper, had profound implications for the economy, society, agriculture at large, and labour practices. The cultivation of cotton in America, indeed, gave rise to the enslavement of Africans and contributed to the transatlantic slave trade. Moreover, cotton played a role in both mercantile arrangements and technological innovations such as the spinning wheel and the cotton gin, facilitating the advent of the Industrial Revolution. However, cotton cultivation has had significant impacts on the environment. We speak of: soil degradation, desertification, drying up of water resources and pollution. Finally, from an economic perspective, cotton exports have provided economic gains to low-income and developing countries, which benefited rural communities.

With the advent of the contemporary era and thus the Industrial Revolution, we have been able to appreciate how this event enabled the mass production of goods, thereby boosting the demand for raw materials while linking producers to centres of production and markets. This new context led to the emergence of a new category of goods, which were fully, or at least to some extent, different from those we have felt worth considering in the early modern age. This new group of global goods played a crucial role in the new context of industrialisation, for not only did they feed this phenomenon, but they also led, as we have seen, to the creation of a web of global goods. These new sets of world commodities, however, like the ones already studied in this paper, have also brought with them environmental as well as economic and social consequences. An inherent tendency of this period that we have found useful to address is that of cultural commodification. Indeed, in the 19th century, the latter facilitated cultural exchange and the transformation of cultural artefacts into global commodities, while also leading to cultural exploitation and consumption of resources.

Resource extraction throughout the contemporary age, indeed, fuelled economic growth and expansion, yet also had irreversible environmental impacts. The discovery and use of oil and the extraction of minerals such as cobalt and gold have further impacted the environment and triggered geopolitical tensions. This last part of our research project exposed the way in which technologically advanced nations have continued to extract resources from the so-called 'third world' Regions, giving rise to new forms of economic colonialism, with consequent environmental damage and geopolitical tensions.

The global goods that emerged in the 19th century shaped lifestyle choices, social norms, and consumer behaviour. Exotic goods from the East symbolised wealth and refinement, breaking down class boundaries and challenging traditional class hierarchies. Additionally, the emergence of consumerism led to the democratisation of luxury, and department stores and advertising played a significant role in making global goods more accessible. The technological advances of this century have redesigned trade routes and accelerated economic globalisation, with a surge in global trade. However, economic hazards and vulnerabilities in the global economy have come to light, requiring risk mitigation and diversification of supply chains.

Cobalt mining, for example, has a significant impact on society, the economy and the environment. The Democratic Republic of Congo (DRC) plays a significant role in cobalt production, with Chinese companies handling more than half of the country's production as of 2016. However, as we have discussed, historical mining activities have caused environmental damage, including deforestation, soil degradation, and water pollution. Cobalt has played a crucial role in industrialisation and technological innovation, enhancing the quality of metals and contributing to the development of machinery.

The challenges of cobalt production in the DRC, as we have seen, include political instability, governance problems, poverty, inadequate infrastructure, and over-reliance on mining. However, as we have pointed out in this thesis, the exploration of domestic cobalt resources in Europe could reduce dependence on cobalt imports and create economic opportunities. Low-income countries need significant investment in infrastructure to exploit resources such as cobalt. In fact, just the responsible supply of cobalt requires sustainable mining practices, cooperation with local communities and strict social safeguard measures.

Another major factor that we have considered crucial to investigate in this research is undoubtedly the discovery of crude oil in the 19th century, an episode that transformed economies, politics and societies around the world during this period.

It was crude oil, indeed, that revolutionised the transport sector, reducing costs and promoting the efficiency of maritime and rail transport. This has led to regional development and economic implications, with the introduction of oil tankers and pipelines transforming many regions of the contemporary world. In addition, the efficiency of oil transportation facilitated global trade and stabilised prices and economies, and oil wealth triggered socio-economic changes in oil-rich regions, with the emergence of oil Barons as a new class of industrialists.

From a purely social point of view, the 19th-century oil boom, as we have seen, attracted the masses with the promise of jobs, prosperity, as well as a better living conditions. Of course, this was because the oil industry created numerous job opportunities, from refining to transport to the creation of ancillary industries around the oil hubs.

However, it should not be forgotten that from an environmental approach, the discovery and high consumption of this commodity has had numerous implications: we have raised the issue of oil spills, disasters that have caused severe ecological damage, land degradation, deforestation, and water contamination. Moreover, the delicate balance between crude oil and the global economy is so evident that fluctuations in oil prices serve as indicators of global economic health. Moreover, crude oil has led producing nations and those that make large use of it to complex international agreements and oil-driven competition, which has shaped international relations.

Finally, over the 19th century, the rise of gold mining due to frequent gold rushes had a profound economic and social impact as it reshaped societies and economies around the world. The discovery of gold led to labour struggles, social displacement, and forced labour, as well as limited rights for indigenous peoples. Moreover, colonial ambitions and the inequities of the gold rush also led to violence and exploitation.

Furthermore, what follows exemplifies the discourse about gold's paramount importance for the contemporary era, both positively and negatively; as this metal of secular effect, was used both to extinguish international debts, to finance trade deficits and to bolster currencies, thus providing alternative methods of investment. Additionally, gold has often served as the common currency for international agreements. Yet, as we all know, this metal has also experienced illicit use, i.e. as a commodity for illicit activities, shaping and reflecting the complexities of human civilisation.

Ultimately, and especially as we come to the end of this thesis work, we feel it is our duty to give a current picture that helps to understand how some of the goods examined in our paper are having even greater socio-economic and environmental impacts, due to the accelerated globalised

reality in which we live today. In fact, the topic of the impacts of global goods, the subject of this thesis, is an issue of great relevance today.

As far as the environmental discourse is concerned, an issue that has become pressing and central in international organisations and public opinion today, it must be said that the international exchange of goods facilitated by the accelerated phenomenon of globalisation has had devastating consequences for the planet, as it has led to increased greenhouse gas emissions and a warming of the Earth's surface and atmosphere. The United Nations Framework Convention On Climate Change predicts that these consequences will worsen as human activities increase atmospheric concentrations of greenhouse gases, affecting natural ecosystems and humankind. Moreover, the way we live today, our energy use, our mobility, eating habits, as well as our waste generation contribute to greenhouse gas emissions, as do the consumption of goods like clothes, electronics, and plastics.[1] Furthermore, transportation, such as cars, trucks, ships, and planes powered by petroleum-based fossil fuels, is a major contributor to greenhouse gases, mainly carbon dioxide emissions. This sector generates almost a quarter of the world's carbon dioxide emissions associated with energy production and is expected to significantly increase in the coming years. Industrial production, which uses non-renewable energy sources like coal, oil, and gas, is also a key contributor to greenhouse gas emissions. In conclusion, global goods are not only harmful to the environment but also pose significant environmental risks.[2]

Moreover, in the 21st century, the cobalt trade has been associated with humanitarian concerns, mostly pertaining to the use of child labour and the presence of dangerous working environments within the cobalt mining industry. The aforementioned situation gives rise to ethical considerations and poses a threat to the welfare of those concerned. In fact, according to a report from the International Labour Organization (ILO), Over one million young people work as child labourers in mines and quarries. This is a significant violation of children's rights that endangers their well-being and strips them of an education. This chokes both the economic as well as social development of impacted regions by limiting labour output for whole generations to come. This is also a commercial problem since many of the minerals extracted by children end into the world's supply chains such as transportation, the banking industry, construction, cosmetics, electronics, as well as jewellery. For example, child work is prevalent in cobalt and coltan mines, which are sources of minerals used in portable electronic devices as well as rechargeable batteries, including those used in electric vehicles. The Democratic Republic of the Congo (DRC), as we have already discussed in the sections above, is responsible for producing over 50% of the global cobalt supply. Unfortunately, inside the DRC,

[1] *United Nations Framework Convention on Climate Change*. (n.d.). Retrieved April 10, 2022, from https://unfccc.int/resource/docs/convkp/conveng.pdf
[2] Ibidem

there exists a worrying scenario wherein children, sometimes who are only seven years old, are engaged in hazardous labour under life-threatening circumstances. These youngsters are exposed to various forms of physical assault, and extortion, including threat of harm. The origin of this cobalt may be traced back to lithium batteries that are marketed by prominent international corporations. The presence of child work and forced labour in cobalt mining operations in the Democratic Republic of the Congo (DRC) has been extensively studied. In a study carried out in 2013 at three mining locations, a total of 931 individuals were questioned. The findings of this research revealed that 93 percent of the participants were identified as victims of various types of labour exploitation. While the existing study on this issue is mostly focused on Africa, it is important to recognise that this problem has global repercussions.[3]

As for gold, nowadays, gold is present in several electronic devices due to its exceptional electrical conductivity. It is quite likely that any electronic equipment used on a regular basis by individuals encompasses a diverse array of metals, including valuable metals like silver and gold. In addition, a variety of ordinary metals, including aluminium, copper, and iron, are used in the production of washing machines, TVs, fridges, and vehicles.[4] Today, in fact, gold is mostly to be found in printed circuit boards (PCBs) and electrical connections. Printed circuit boards (PCBs) serve as a fundamental structural foundation in the majority of electronic devices. They facilitate the assembly and interconnection of various components by the use of conductive pathways that are either deposited or printed into the board.[5]

[3] ILO. (2019). Child Labour In Mining And Global Supply Chains. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-manila/documents/publication/wcms_720743.pdf
[4] Schipper, I., de Haan, E., & van Dorp, M. (2015). Gold from children's hands: Use of child-mined gold by the electronics sector. Retrieved from https://www.somo.nl/wpcontent/uploads/2015/11/Gold-from-children's-hands-5.pdf
[5] Ibidem

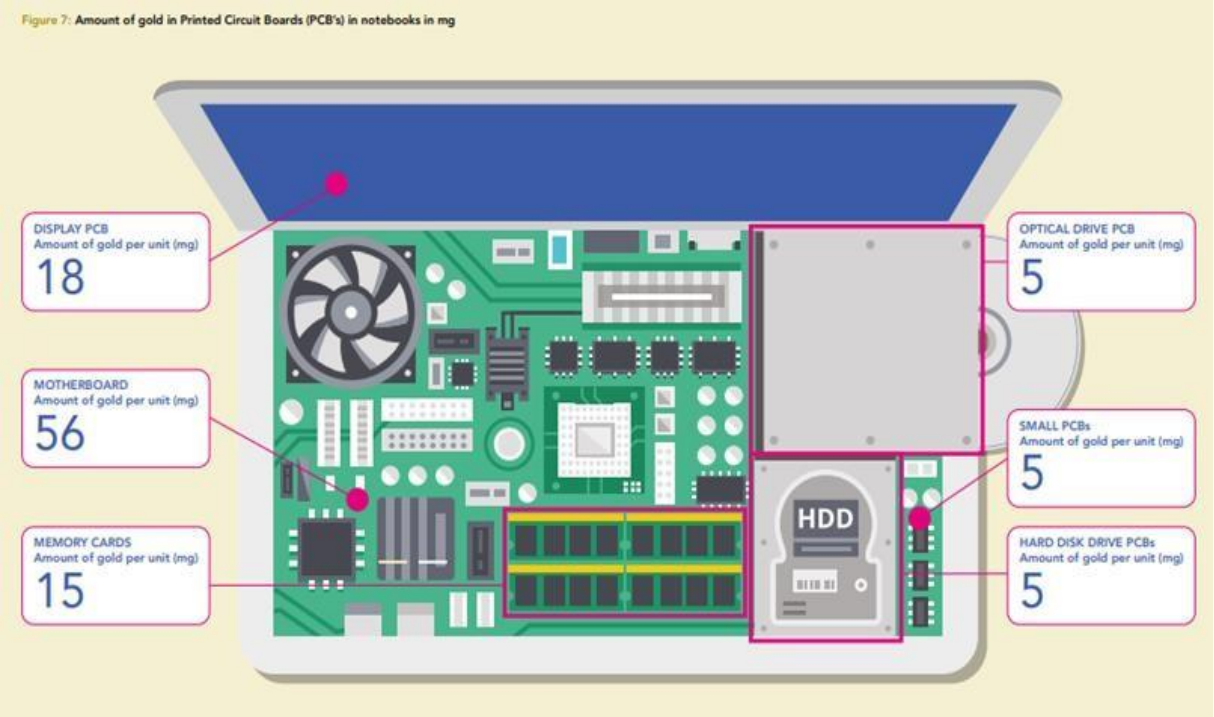

Figure 24 Buchert at all (2012), Amount of gold in Printed Circuit Boards (PCB's) in notebooks in mg.

However, this gold also comes at a price, a huge one, as according to research conducted by the International Labour Organisation (ILO), it has been shown that in Burkina Faso and Niger, around 30-50 percent of the labour in gold mines consists of minors. The majority of these children are below the age of 15, and a portion of them are subjected to forced labour circumstances. Furthermore, according to a survey conducted in 2015, it was estimated that around 20 percent of the gold miners engaged in artisanal mining activities in Mali were youngsters. In the Western, Central, and Ashanti Regions of Ghana, a significant number of youngsters are engaged in gold mining activities.[6]

[6] ILO. (2019). Child Labour In Mining And Global Supply Chains. Retrieved from https://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-manila/documents/publication/wcms_720743.pdf

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