

# **The Modern British Mercantilist System 1803-1914: changes in patterns of commerce, industry and warfare**

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## **Abstract**

This article argues mercantilism was not only a name for a diverse set of practices and reasoning as some historians and economists often portray it, but also a set of social and physical technologies. My objective is to reconsider the role of the mercantilist system as a main cause of British Empire rise to and maintenance as a world hegemony. In part one, I show how British stake for hegemony was since its beginning based on its capacity to organize and secure a large scale system of international commerce. This mercantilist system associated Britain's industrial development to service sector and military interests, like finance and transportation. In part two, I try to demonstrate how railway building was perfectly fit for answering industrial and service sector British interests. However, its spread also meant new opportunities for heavy industries to emerge. Countries like United States and Germany would take railways as a starting point to organize national economies in larger scales of production, distribution and management than it used to be possible in a world where maritime transportation was the sole technology for cost-efficient large-scale distribution. In part three, these new scales of organization coupled with military innovations are shown to have allowed for the expansion of modern imperialism by the end of the century. Meanwhile, however, British complex mercantilist system of international commerce never lost its hegemonic status. I conclude by arguing British Empire relative decline as world hegemony was rather a consequence of the changing nature of where and how economic competition and political rivalries took place, a shift from maritime to land-based large scale economies, than a consequence of the relative decline in its industrial primacy, as some historians argue.

**Keywords:** Mercantile System, British Empire, British Hegemony, Railways, Warfare

## **Introduction**

Academic interest on mercantilism has grown considerably in recent years. Outstanding contributions from Steve Pincus,<sup>1</sup> Lars Magnusson,<sup>2</sup> Philip Stern and Carl Wennerlind<sup>3</sup> restated controversial issues over the definition, periodization and validity of mercantilism concept. These authors agree it was not a coherent doctrine. What is conventionally understood as “mercantilism” was actually a diverse set of discourses and practices that cannot be properly understood without analyzing each case in light of its historical context.

My argument follows main tenets of contemporary historiographical debate on mercantilism by placing great emphasis on the context of the ideas and practices associated with it. To the extent that mercantilist writers were also practical men involved with the object of their writing, like business leaders and government officials, their thought was also inevitably linked to the activities they exercised.<sup>4</sup> Therefore, any arguments on the rise or fall of mercantilist ideas or practices should also tackle the problem of the rise or fall in importance of the type of activities and environments that enabled those discourses in first place.

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<sup>1</sup> Pincus, 2012.

<sup>2</sup> Magnusson, 2002; Magnusson, 2012; Magnusson, 2015.

<sup>3</sup> Stern e Wennerlind, 2013.

<sup>4</sup> Spiegel, 1991, pp. 95-97.

I argue the worldview conventionally named “mercantilist” is an economic rationality embedded<sup>5</sup> in sociotechnical<sup>6</sup> capabilities in large-scale transportation *and* violence. I also argue mercantilist practices and discourses are more likely to emerge as these socio-technical capabilities are stressed by a historical context of fundamental uncertainty.<sup>7</sup> At least from the 16<sup>th</sup> century until 1914 – although possibly beyond that period – this uncertainty was usually found along the possibility of armed conflict, but it could also involve severe economic crises or to a lesser extent the resulting disruption of radical technological innovations.

The *Modern British Mercantilist System* is the global scope British network that united the technical frontiers of transportation and weaponry along with the most effective organizational skills to control information over long distances, establish diplomatic and trade relationships, and guarantee funding flows. The present article is intended to contribute to current historiographical debate over mercantilism by offering a new perspective on how the modern British System was the main cause of British hegemony from early nineteenth century until the First World War.

The article is divided in three sections. First, I show from the start this system provided the distributive infrastructure for early industries to emerge and maintained a fleet of vast maritime power with cost-efficiency even in wartime. In part two, railway investment is shown to be perfectly fit to answer previous mercantile interests, but also an actor step by step changed the nature of the economic space where economic competition and political rivalries took place. In part three, the industrialization of arms producing causes a major change in how warfare played out, leading to a period of fundamental uncertainty, renewed interested in formal colonization and increased conflictive interactions worldwide, a decisive evidence that the accessible world had become too large for the modern British mercantilist system. I conclude with brief remarks on how the article arguments may provide some useful insights for current and classical historiographical debates.

## **1. The Modern British Mercantilist System and the Empire’s rise to hegemony**

By early nineteenth century, in Britain as in any other country, the vast majority of the population lived in rural areas and most economic problems centered on the productivity, product level and gains from agricultural production.<sup>8</sup> This geographically dispersed production depended heavily on costly and slow animal power for transportation, thus creating a context where private and state easiest strategies of accumulation pointed to the strengthening of cities and trade, as they were the nodal points where most available product could be traded and taxed.<sup>9</sup> In fact, historical technical and organizational limits made it easier to access international trade routes between major port cities or colonies than most rural areas inside the same country that did not have access to waterways.<sup>10</sup>

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<sup>5</sup> Dequech, 2003.

<sup>6</sup> “Sociotechnical capabilities” as a concept means recognizing “the quest for order and predictability necessary for the operation of any tool soon extends to the larger systems, including social, of which they are only a part.” Bousquet, 2009, pp. 11-12. See also Creveld, 2010, p. 315. As utilized here, it is no diferente than saying continued and effective operation of a given technology involves a larger set of social institutions than mere existing physical technologists.

<sup>7</sup> I use fundamental unertainty concept as defined in Dequech, 2011.

<sup>8</sup> Hobsbawm, 2010a. Prados de la Escosura also highlights these points, however utilizes them to criticize historians who give too much importance to industry and urban economies in England during the industrial revolution. However, to quantify agriculture’s relative share in the economy does not equal quantifying its dynamism, or even less so to prove big cities formation and development were not importante for capital accumulation and tax revenues. See Prados de la Escosura, 2004, pp. 1-12.

<sup>9</sup> Tilly, 1992. For an updated view on Tilly focusing on geopolitical economics, see Krpec e Hodulak, 2015.

<sup>10</sup> Hobsbawm, 2010a.

International trade was necessarily dependent on capabilities of provisioning adequate means of attack and defense to enforce security and property for market expansion as well as maintaining previously established relationships.<sup>11</sup> The desire for precious metals came from their function as the only means of payment accepted by private armies and mercenaries, who did most of the military efforts until late 19<sup>th</sup> century.<sup>12</sup> These security efforts could hardly move too far away from state or large trade companies' capabilities of providing order and predictability to complex flows of people and goods.<sup>13</sup> In other words, behind the mercantilist system lied a symbiotic relationship between capabilities required for accumulation of wealth and those required to maintain control over strategic resources for the purpose of maintenance or expansion of state power.

At least since late 17<sup>th</sup> century financial revolution,<sup>14</sup> the institutionalization of public debt funding ensured provision of funds for imperial obligations – at the time, hardly anything beyond military effort<sup>15</sup> –, and helped both institutions.<sup>16</sup> The British empire had a substantial advantage over continental countries, which depended more on what Kenneth Morgan named a “tributary and demographic” logic of obtaining tax revenues.<sup>17</sup> On one hand, it meant a substantial increase of British government bureaucracy (although still very small by today's standards.)<sup>18</sup> On the other hand, throughout 18<sup>th</sup> and 19<sup>th</sup> centuries, British public debt increases closely followed more severe military conflicts.<sup>19</sup> In 1697, total debt summed £16.7 million pounds. By 1815, this figure reached £744.9 million.<sup>20</sup>

That means over the 19<sup>th</sup> century the British Government was able to bring together such a large volume of funds to multiply 44 times the size of its debt. In 1815 its nominal public debt was three times larger than its own estimated national income.<sup>21</sup> No other contemporary or past European power had been able to make a similar move, much less without cracking creditor interests and confidence or lower classes support. In practice, this means important distinctive capabilities part of the mercantilist system, involving high finance and corporate<sup>22</sup> British trade, were able to provide additional breath the empire needed in periods of great budget pressure.

Meanwhile, commercial companies articulated flows of goods and information with colonies and foreign countries in a complex network of commercial transports capable of circumnavigating the world. Exclusive rights to use ports were reinforced (Navigation Acts); as well as, to a lesser extent, urban tolls (turnpike trusts); construction, purchase and use rights for canals and river ports; customs tariffs; privateering laws and the exercise of violence via gunboats; etc.

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<sup>11</sup> Data on insecurity impact in international trade can be found in North, 1968.

<sup>12</sup> For an approach on these subjects in transition from feudalism to capitalism, see Wallerstein, 1974, chap. 3.

<sup>13</sup> Horlings, 2005, pp. 94-95.

<sup>14</sup> Dickson, 1967; Kindleberger, 1985, pp. 75-95, 155-168.

<sup>15</sup> On the relationship between war-making and improved efficacy of tax institutions, see Dincecco, 2012.

<sup>16</sup> Rodriguez, 2002, pp. 30.

<sup>17</sup> O'Brien, 2002, pp. 254-258. However, I disagree with the author's conclusions on costs and benefits of overseas empire. When he asks the question of its benefits only in terms of economic gains, he loses what in my view is the fundamental question: how much would an empire be willing to spend to acquire enough power to extend it worldwide? If in Britain we are willing to even consider the possibility this global extension could be lucrative, it only makes it even more clear the overwhelming accumulation of sociotechnical capacities in military and commercial areas in the form of its mercantilist system.

<sup>18</sup> In 1690, British central government had 3,214 officials responsible for collecting federal government revenues and only 147 officials for all other functions. By 1815, tax collectors had grown to 21,112 and for other government functions, 3,486. See Hoppit, 2002, pp. 284.

<sup>19</sup> Benjamin and Kochin, 1984, pp. 587-612.

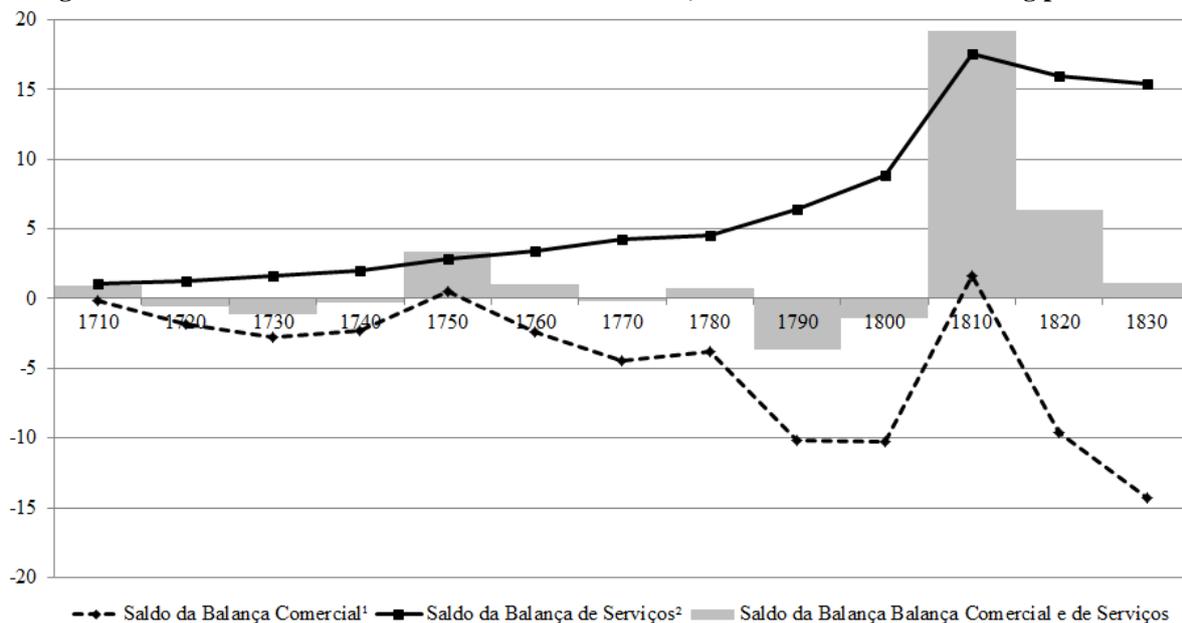
<sup>20</sup> Morgan, 2002, pp. 175-179.

<sup>21</sup> O'Brien, 2002, pp. 253-254; Arrighi, 1996, pp. 164-165.

<sup>22</sup> The corporation institution itself, with its sophisticated shareholder property and a division between shareholders and management has its origins close to the mercantilist system. See Ekelund and Tollison, 1980.

Much of the debate on so-called mercantilist practices focused on the “positive balance of trade” idea. However, from the viewpoint of merchant-bankers and other agents involved in international trade, the flow of goods direction is less important than their simple existence. Freight, insurance, amortization and interest payments could be charged more than once in per travel in an economy unimpeded by national boundary lines. From the perspective presented here, it's no surprise that numbers on international British trade throughout 18<sup>th</sup> and 19<sup>th</sup> century reveal growing trade deficits accompanied by a growing surplus in service account often superior to trade deficits, as shown in Figure 1. The period between 1800 and 1820 where war with France intensified and Napoleon attempted a continental blockade was precisely the period when Britain had its largest trade and services surpluses in 130 years.<sup>23</sup> An economy largely based on trade between port cities, including large Atlantic commercial networks, is what enabled this success.<sup>24</sup>

**Figure 1 – British Trade and Service Accounts 1710-1830, in millions of current sterling pounds <sup>25</sup>**



<sup>1</sup>: Trade balance aggregate net exports, tourist spending, losses by theft or smuggling, and gains or losses on selling vessels.

<sup>2</sup>: Service account adds freight gains, insurance and other related activities, commercial sector profits, and net interest payments and amortizations.

Merchant and Royal Navy ships embodied the symbiotic junction between large-scale transportation capabilities for commercial purposes and capabilities for violence through using state of the art guns and cannons. In this framework, merchant elites rent-seeking behavior during appears as a result of monopolist capabilities for direct or structural violence<sup>26</sup> held by these groups,<sup>27</sup> and not as a result of adhering to any coherent mercantilist doctrine. Guns and trade symbiosis can be seen with clarity by looking at British slave trade networks, which transported up to 80,000 slaves a year and strongly resisted attempts to stop their operations throughout the 19<sup>th</sup> century.<sup>28</sup> The British East India Company is also an extreme example of

<sup>23</sup> O'Brien, 2011.

<sup>24</sup> Cardoso, 2013, pp. 92-94. It is widely recognized Napoleon did not master this art, see Black, 2008, p. 74.

<sup>25</sup> Own elaboration from excellent data provided by Brezis, 1995, p. 49.

<sup>26</sup> Galtung, 1969.

<sup>27</sup> In this view, rent-seeking is understood differently than in Ekelund and Tollison, 1981, an approach duly criticized by Rashid, 2012, pp. 125-142. For details on the theoretical approach exposed here, see Cox *et al*, 2015.

<sup>28</sup> Lloyd, 2012, pp. 24-27.

accumulated mercantilist power. The company had no less than 115.400 personnel under its command in 1782 and expanded to 150.000 of them by 1805.<sup>29</sup> At the time, merchants, merchant corporations and banking houses were an indispensable source of strength for war and the balance power, a role they would continue to fulfill during the long 19<sup>th</sup> century.<sup>30</sup>

Elements we might call “competitive” were for smaller commercial units, including early steam engine factories.<sup>31</sup> Adam Smith himself recognized the differences between the principle of free trade and political process pragmatism would make the final adoption of free trade difficult or even impossible, an ambivalent position for which he was remembered as convenient by “neo-mercantilists” by the end of the 18<sup>th</sup> century<sup>32</sup> or late 19<sup>th</sup> century.<sup>33</sup>

In fact, in early 19<sup>th</sup> century, merchants (or merchant-bankers<sup>34</sup>) as the Barings and the Rothschilds were already in a high enough position to influence government policy and British business overseas, prestige examples of “gentlemanly capitalists”.<sup>35</sup> Between 1802 and 1803, the Barings had key positions to assist the sale of French Louisiana to the United States. It was the largest economic transaction on record and its ultimate goal would be to provide liquid assets for funding Napoleon’s war effort against Britain itself. The fact France needed British and Dutch merchant-bankers to finance this transaction was indicative of her financial and commercial sector relative weakness. Another example is the failure of Gabriel-Julien Ouvrard, an important French financier, in his attempt to carry the Spanish treasure of Vera Cruz from Spanish Mexico to Spain and France between 1805 and 1808. The Barings, with support from British mercantile class, were able to use their information, means of transport and favorable diplomatic relationships in the United States to redirect most of Mexico’s resources to British soil during wartime.<sup>36</sup> During the war, the Rothschilds ascended as a large banking and merchant house largely by their role as resource and money providers to finance landed resistance against Napoleon in Prussia, the Netherlands and Russia.<sup>37</sup>

The British mercantilist system was managing most of the country interactions around the globe, organizing hundreds of thousands of workers and soldiers, with innovative long distance ship maintenance warehouses, millions of pounds in value and more than twenty thousand vessels<sup>38</sup> that could cost up to 10 times more than a complete textile factory of the period.<sup>39</sup> While the organizational capabilities necessary to maintain such large and complex system had no serious contended in the world following French defeat at Trafalgar in 1805, early industries could only produce existing goods at lower prices, such as textiles. They did not significantly change weapon production nor combat skills, and depended on the mercantilist system to transport an important share of their products that aimed export markets.<sup>40</sup> In other words, they initially changed little besides their space of production. Commercial networks were larger, more expensive, and more able to convert their socio-technical capabilities in projection of geopolitical power. They were also more complex from an organizational point of view,

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<sup>29</sup> Black, 2008, p. 89.

<sup>30</sup> Kennedy, 1987, p. 113; Rosinski, 1947, p. 103.

<sup>31</sup> Even then with many conflicts, with constant attempts to control outward movements of machinery and specialized labour. See Jeremy, 1977.

<sup>32</sup> Crowley, 1990, pp. 357-360.

<sup>33</sup> Koot, 2012, pp. 187-220. Palen, 2014.

<sup>34</sup> As Roberts, 1993 says, these names changed with time but their functions remained very much alike. It is important to highlight how beyond economic and political determinants, British higher acceptance of different ethnicities was determinant for merchant classes choice of Britain as their country. See Chapman, 2002, p. 287.

<sup>35</sup> Chapman, 1984; Cain and Hopkins, 1986; Wechsberg, 2014.

<sup>36</sup> Marichal, 2007, pp. 154-183.

<sup>37</sup> Ferguson, 1999.

<sup>38</sup> Mitchell, 2007, pp. 419-420. In 1815, 21.861 navios. No other countries had statistics on this.

<sup>39</sup> “A new 74-gun ship fully outfitted might typically cost almost £50,000 in the 1780s; the largest factory in Britain in the 1790s cost £5,000.” Baugh, 2003, p. 238.

<sup>40</sup> Esteban, 1997, pp. 879-906.

requiring contact with different cultures, institutional trust to manage sites 6 months away from each other, keep fleets operational and transform this expensive structure in new cash flows.

Thus, the mercantilist system was a *modern* organization, not a mere archaic system of privileges and monopolies as it is sometimes depicted. Furthermore, for the purpose of competing with other countries and struggling for hegemony, British steam engine industrial production did not have a comparable revolutionary impact. Early factories were an appendix of the British mercantilist system. They provided large flows of goods for merchant and warships stay operating at sea for much lower costs due to the sale of these products. Even British agriculture, which commodified itself sooner than in other countries, also had a positive impact on the system as the most difficult and costly part for states to afford was the cost of keeping a fleet in constant operation, equipped with good sailors and preserving their health and nutrition.<sup>41</sup>

The decisive advantages that guaranteed British victory over France came from sociotechnical capabilities from the commercial-military system promoted by the convergence of interests between great British merchants, the Royal Navy and the landed aristocracy who exercised strong influence in parliament.

## **2. Railways from an industrial commerce to a mean of violence**

Until mid-1820s, manufacturing history in factories consisted in producing relatively simple and known goods, but at lower prices, larger-scale production and increased labour control. Early industries emerged in an internationally linked market system. They competed via prices against distinct provisioning systems, sometimes of low productivity and command over labour like the putting out system in rural areas of Europe, or of high productivity and control over labour, such as textile manufacturing in India.<sup>42</sup>

If early industrial production was responsible for bringing large sums of wealth to British territory (mainly urban one, although unequally between their cities), it did not immediately change how intensely dispersed and rural that territory was. Economic space was still articulated through waterways by means provided by merchants of major British port cities, often the same agents that connected Britain with continental Europe, the Americas, or merchant warehouses in Asia, Africa and Oceania. However powerful British productive capabilities were, maintenance of its scale depended upon foreign markets whose control was beyond reach of any factory and outside the sphere of influence of most industrialists, who were also underrepresented in parliament.<sup>43</sup> Finally, military applications of steam engine industrial output were limited and thus did not directly contribute to armed expansions or defense of British political or economic space.

This pattern begins to change in early 1830s, because none of these considerations was valid for railway investment. Locomotives, their cars, rails and the service they provided were new supplies to the world of commodities. By increasing the speed and reach of landed transportation routes, accelerating information exchanges essential for cultural flourishing and population concentration in cities, what generated its share of conflicts and protests.<sup>44</sup> In 1837, architect and British journalist George Goodwin mentioned “universal communication” when publicly arguing in favor of railways against their critics.<sup>45</sup>

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<sup>41</sup> Ibid, p. 235.

<sup>42</sup> On stagnation and decline of textile manufactures in England, see Twomey, 1983.

<sup>43</sup> Cain and Hopkins, 1986.

<sup>44</sup> The first steam railway dates from 1825 and the first public action against monopolista practices in railway businesses is from 1830. See Casson, 2002. For examples of railway criticism, see Jones, 2006, pp. 87-90.

<sup>45</sup> Godwin, 1837, p. 42.

Migration movements became even more important to the interstate system.<sup>46</sup> In culture, railroads changed society's relationship with time.<sup>47</sup> In management practices, minute precision controls necessary for railway organization, avoidance accidents and optimization of railway structure imposed new challenges for labour. Over the coming decades this pressure paved the way for large managerial hierarchies detached from conventional family organization, while also pushing radical innovations in communication, which would come with the telegraph.<sup>48</sup>

In railways, links between private industrial investment and active government actions in organizing, regulating and administering becomes much closer than in industrial factories. As in maritime transport, railways required close interaction between different public and private agents while in national territory<sup>49</sup> and, in late 19<sup>th</sup> century, between nation states when connecting cities, metropolises and colonies, as the passing of a railway put into conflict a wide range of antagonistic interests.<sup>50</sup> From the first transport with capabilities for large-scale landed distribution follows industrial economic space did not have to *necessarily* take place between major port cities and it could expand for landed areas hitherto inaccessible. Gradually, railways would break the quasi-monopoly maritime space held in carrying economic or political power.

British service sector found in railway investment a new expansion avenue for its prestigious connections, financial and commercial capabilities. Railroads took the decisive step to fuse new steam technologies with the sociotechnical capabilities previously accumulated by the modern British mercantilist system. The community of British merchants, with the characteristic prestige service sector inherited,<sup>51</sup> developed itself by taking advantage of opportunities offered by new formal and informal empire connections and businesses a more efficient industry and transport brought to the sector.<sup>52</sup> As a result, the trend of trade account deficits and service account surpluses observed in 18<sup>th</sup> and early 19<sup>th</sup> century Britain grew larger until the First World War, as we can see in Figure 2.

What was not immediately visible to contemporaries was that railways would completely change military action. In 1830 England, when Liverpool & Manchester Railway opened, it helped moving troops to repress a protest in Ireland by doing in two hours a route that would take two days marching on foot, with the advantage of troops not being tired upon arrival.<sup>53</sup> In 1842, new legislation allowed the immediate use of railways and for reduced rates when transporting for the military. In 1848, Chester and Holyhead line conclusion allowed the London and North Western Company to connect London to Ireland through junctions with other lines, thus making it possible to form a lucrative contract with a government interested in enhanced transportation to suppress regional political movements – Ireland was under serious social crises due to the Great Famine of 1845-1848.<sup>54</sup> However, these were uses for political repression to impose modern nation-state rule. Few observers in the 1830s and 1840s understood how mastering railways would be an essential sociotechnical capability for warfare between great powers and they did not convince many of their findings.

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<sup>46</sup> For a synthesis of this debate, see Pooley e Turnbull, 2005. For an alternative view, see Long, 2005.

<sup>47</sup> On changes in the relationship between time and space, see Buckley, 1966 classical book. For contemporary approaches, see Schivelbusch, 2014 and Ogle, 2015. For emphasis in the United States, see Smith, 1997.

<sup>48</sup> Great Britain did not manage to overcome family business structure. See Chandler, 1990, pp. 51-54. This was the case even when they went through large mergers and acquisitions, Ibid, pp. 286-291.

<sup>49</sup> Railways represented more than half of all great projects that needed government approval in the 1860s. See Casson, 2009, p. 46.

<sup>50</sup> Ibid, p. 285.

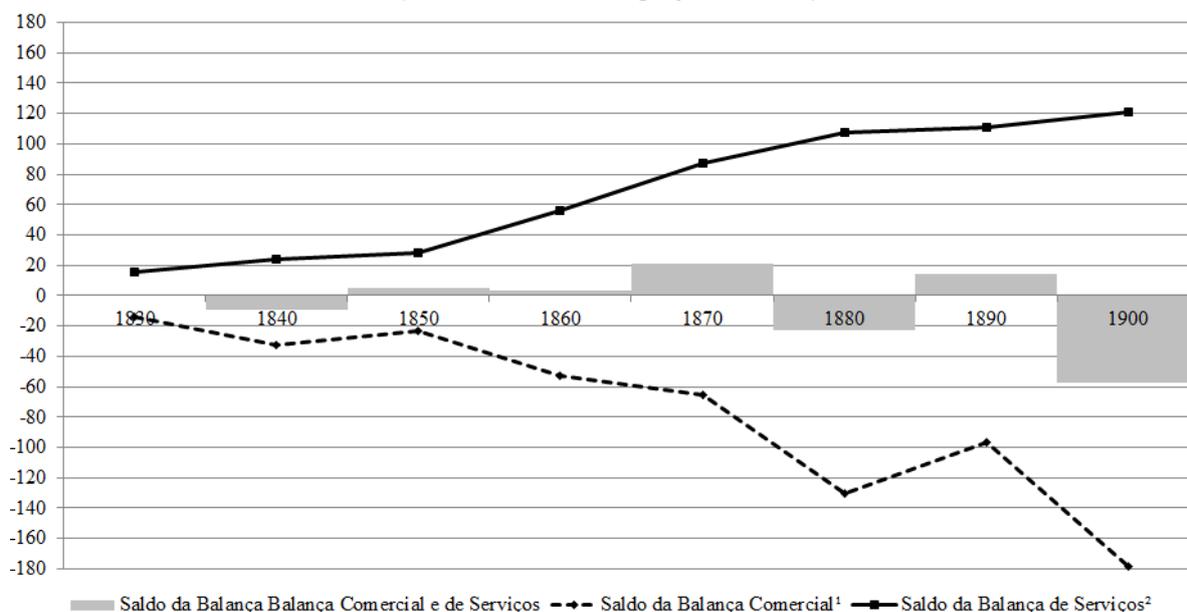
<sup>51</sup> For a dense reconsideration of Cain and Hopkins "gentlemanly capitalists" thesis, see Dummet, 2014.

<sup>52</sup> Chapman, 1984; Chapman, 2004.

<sup>53</sup> For more examples, see Wolmar, 2010.

<sup>54</sup> Casson, 2009, pp. 136-137.

Figure 2 - British Trade and Service Accounts 1710-1830, in millions of current sterling pounds<sup>55</sup>



Prussia was one of the first countries where awareness regarding military use of railways emerged more clearly. Friedrich Harkort, a Ruhr Valley eminent industrialist and railway entrepreneur, pioneering ideas were not been accepted in its time by Prussian military, however. In 1832, Harkort prophesized railway power in changing warfare dispute and proposed paths that would be of interest to the Prussian state to both “definitely” defend it from France and to connect Prussia to Ruhr region, then separated by several smaller states. The combined impact of forming the *Zollverein* (customs union) between German states, rapid railway expansion through German territories and examples of strategic positioning of railways aiming for war provided by Belgium, made it so ideas similar to those of Harkort would find a more receptive intellectual environment ten years later. Karl Eduard Pönitz’s pamphlet *Railways and Its Utilities from the Point of View of Military Operation Lines* caught military attention. German military greatest concern was the possibility of facing a simultaneous war on eastern and western fronts, a problem for which railways seemed to offer an effective solution. In 1843, Prussian general Helmuth von Moltke, future head of the Prussian Army, said “all development of railways is a military advantage; and for national defense a few million to complete our railways is much more profitably employed than in our strongholds.”<sup>56</sup>

As in British mercantilist system case, this conclusion derives from the essential importance of sociotechnical capacities in mass transportation and its close possible use as a means of violence and power projection. As Friedrich List noted in 1841, “England showed the world how powerfully the transport control increasing wealth, population and political power.”<sup>57</sup> As in the maritime mercantile system, that is an implication of the material fact that a singular technology (railroads) could be used to ensure and expanded markets while also improving flows of information, troops and weapons to larger scale than any other means of locomotion.

Controlling a railway was a decisive advantage to any army or economic group over those who could not access this same sociotechnical standard. Within the borders of a country, railways enabled integrating various internal markets into a single national market. In distant territories, it harnessed the possibility of deepening mercantile and military control previously

<sup>55</sup> Brezis, 1995, p. 49. For notes 1 and 2, see Figure 1 in page 5 of this article.

<sup>56</sup> Gates, 2001, pp. 60-61.

<sup>57</sup> List, 1856, p. 122.

restricted to waterways further inland. In the spaces of colonial domination, this took those economies a step closer to what can be called structural economic dependence.<sup>58</sup>

The speed, durability, safety and cost-efficiency brought by the railroad made it possible that a stronger British influence, hitherto restricted to port cities and areas near oceans and rivers, could grow beyond these limits. The economist and statistician Robert Baxter was right when he said in 1866 that in “a large number of cases the railways did more than cheapen trade, they made it possible” and they should be recognized as the agent who “in the last thirty years, changed the face of civilization.”<sup>59</sup> Gains from increased transaction and movement speed can be seen through many different lenses. As British thinker John Ruskin said 1867, “Time is money” (...) A thing of which loss or gain was absolute loss, and perfect gain.”<sup>60</sup> Another illustration of the increased scale and speed capabilities brought by rail is the jump from 180.000 tons of pig iron produced by metallurgical technique in Britain from 1800 to 6.6 million tons produced in 1873, i.e., an early century entire annual production was being produced and transported every ten days by 1873.<sup>61</sup> That would be an impossible task under early century sociotechnical capabilities.

However, it was during this systematic process of change that slowly and gradually<sup>62</sup> British Empire lost the essential sociotechnical capability it had at the beginning of the century after victory against France. The quasi-monopoly of the best and fastest ways of large scale transport, which were also the best and most expensive weapons available, and all associated management, organization and public and private diplomacy skills needed to direct them towards a global market expansion and defense strategy – what I call Modern British Mercantilist System. While industrial output had a strong and necessary dependency on waterways to ensure the necessary scope for mass production, British dominant influence was secured with impressive success and both formal and informal political projection of her and its staff interests followed the avenues of overseas connections.

While in Britain the railroad was born making use of previous capabilities of the British mercantilist system, in America and Continental Europe railroads were indispensable to the very beginning of industrialization.<sup>63</sup> In United States and Germany, industrial development was simultaneous to the development of necessary landed transportation distribution routes. Those countries could not rely on large and secure international markets assured by a powerful and overarching maritime mercantilist system – on the contrary, they had to “dodge” at least one such system controlled by the British. Thus, a significant part of the necessary connections to unify the territory in a national economic space had to be accomplished by land. In Germany and the United States, railways were less the apex of their previous capabilities than the basic assumption of a wide new range of industrial investments in larger scales of production and management that were fundamentally distinct from British family businesses.<sup>64</sup>

By 1875, global rail networks were responsible for transporting tonnage nine times greater than weight carried by waterways<sup>65</sup> – an incredible factor under 40 years of existence. It shows how different world economic space in 1875 was when compared to the early 19<sup>th</sup> century.

Reducing landed travel time and increased carrying capacities multiplied international trade in even greater proportion during this period. Long-distance maritime trade flows were restricted more by limited capabilities in land transportation than by maritime system

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<sup>58</sup> Galtung, 1971.

<sup>59</sup> Baxter, 1866, p. 588.

<sup>60</sup> Ruskin, 1867, p. 61.

<sup>61</sup> Mitchell, 2007a, pp. 494-496. Mitchell, 2007b, p. 375.

<sup>62</sup> There is also a background technological issue, like how chemical and metallurgy innovations and technical capabilities would be best utilized in countries like Germany and the United States. See Chandler, 1990.

<sup>63</sup> Dobbin, 1997.

<sup>64</sup> Chandler, 1990.

<sup>65</sup> Mitchell, 2007.

constraints.<sup>66</sup> Steamboats impact was much less abrupt than railroads': by mid-19<sup>th</sup> century, sailing technology achieved peak efficiency, so steamboats were not always preferred in terms of profitability and economic cost-benefit. However, they quickly stood out as prominent military investments due to autonomous ability to navigate against the current without relying on wind strength or direction. In 1841, British first steam warship, *Nemesis*, property of the East India Company, destroyed 15 Chinese warships in single combat during the Opium War in an emblematic showcase of gunboat diplomacy.<sup>67</sup>

The period known as *Pax Britannica*, especially the interval between 1846 and 1870, far from being an exceptional period of international peace,<sup>68</sup> was shaped by a new British dominant geopolitics British where war and the threat of war continued to be used.<sup>69</sup> The same sociotechnical capabilities involved in British mercantilist system also sometimes made it possible to resort to free trade – the context usually involved long-term security and inability to use dominant positions in international trade as a bargaining tool.<sup>70</sup> Where uncertainty was greater, or force or threat of force was necessary for enabling trade, these capabilities allowed application of practices seen as “mercantilist” despite any theoretical debates taking place in London. While Gladstone criticized Palmerston handling of the opium affairs with China and parliamentary and civil debate unfolded, military reinforcements were already on their way to China to wage the First Opium War, with great pressure from merchants who had their opium destroyed and additional government concerns over availability of silver to import Chinese tea.<sup>71</sup> Once the war started the important Yuan Wei laid out as British decisive advantages over China superior weapons and better means of communicating information.<sup>72</sup> Both of these are decisive sociotechnical capabilities part of the British mercantilist system. During the Crimean War, forced indebtedness, sending subsidies to foreign countries and economic embargoes were some of the British devices used against Ottoman Empire.<sup>73</sup>

Victory in most of these conflicts was relative ease, without needing large mobilizations or significant changes in average levels of military spending.<sup>74</sup> Sometimes they were initiated and solved by private contingents of soldiers. These factors probably help explain why there is so much resistance to seeing this epoch as belligerent.<sup>75</sup> Moreover, military expedients occurred in locations far from major cities where public sphere dynamics of information diffusion could not be easily controlled.<sup>76</sup> The moral devaluation of other peoples also corroborated for conflicts driving less attention.<sup>77</sup>

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<sup>66</sup> The complete path to import raw materials and export manufactured commodities involved four trips by land and two by sea. They were: raw material production → land travel (1) → export port → sea travel (a) → metropolitan import port → land travel (2) → industry manufactures raw materials for export → land travel (3) → export port → sea travel (b) → foreign import port → land travel (4) → final consumers in foreign countries.

<sup>67</sup> Hanes and Sanello, 2002.

<sup>68</sup> Gallagher and Robinson, 1966 list of conflicts, wars and invasions remains a necessary one.

<sup>69</sup> Mike Davis thesis on “British holocaust”, regardless of its controversial arguments on culpability of colonial administrators, highlights how powerful controlling means of distribution through international trade can be to redirect resources and potentially cause irreversible damages. See Davis, 2002.

<sup>70</sup> For example, Harley, 2004, p. 189, shows how in 1840, 17 of all 721 taxes were responsible for generating 94.5% of all public revenue in Great Britain. Revoking the Corn Laws was much more a move to rationalize an outdated tax structure than to change government economic foundations. Revoking the Navigation Acts also accompanied a contemporary reality of a significant part of all trade in British ports was already been done by foreign vessels.

<sup>71</sup> Hane and Sanello, 2002.

<sup>72</sup> Yuan, 1888.

<sup>73</sup> Anderson, 1964, 1967.

<sup>74</sup> Benjamin and Kochin, 1984.

<sup>75</sup> Parrott, 2012.

<sup>76</sup> Hanes and Sanello, 2002.

<sup>77</sup> McClintock, 2013.

Two main vectors results from changes brought by the railways. In British soil, the rule of elites linked to industrial capitalism did not grow as much as gentlemanly capitalists elite of financiers and great merchants connected to London, service sector interests, international trade and finance, public debt and the stock exchange, whose interests become even more actively defended by the British state.<sup>78</sup> However, in countries like the United States and Germany, new national economic systems with great expansionary capabilities and high landed integration, would make 19<sup>th</sup> century last quarter – the period classic called “imperialism” – an epoch marked by the international tensions emerged from a new pattern of connecting commerce, industry and warfare.

### 3. Weaponry industrialization and the British Mercantilist System relative decline

Decisive evidence a structural change had occurred in the interconnections between commerce, industry and warfare came along the American Civil War and the Franco-Prussian War. They showcased a new dominant linkage between industrial and weaponry capabilities.<sup>79</sup> Railways also turned decisive for war outcomes due to rapid and massive displacement of troops and supplies.<sup>80</sup> Justus Scheibert, a Prussian soldier who accompanied United States southern army, reported the importance of the railway system, the telegraph and fast transportation, highlighting the additional difficulties of coordinating them “as they occurred under the pressure of bullets.”<sup>81</sup> In northern army, the engineer Herman Haupt is recognized for his role United States Military Railroads, a government agency created in 1862 to manage the railway system according to war effort strategic needs. In doing so, he laid solid foundations for the science of logistics.<sup>82</sup>

But fundamental uncertainty brought about by the wars of 1861 and 1871<sup>83</sup> did not result only from the violent impact of new sociotechnical capabilities in transportation and management. Until the mid-1850s, innovation in weapon production was relatively slow paced. By the end of the decade however, repeating rifles,<sup>84</sup> encapsulated projectiles manufactured in serial production and the coming of gun factories – Colt factory in the United States is regarded as the first one in 1855 – overcame previous firearms many physical limitations. New weapons were easier to be repair, they made almost obsolete all reloading skills of previous soldiers and were also less susceptible to suffer damage from rain. Improved firearm technology increased power asymmetries between industrialized societies and those who had not accessed this apparatus. As British High Commissioner in China, James Bruce, wrote in his diary in 1858: “Twenty-four determined men with revolvers, and a sufficient number of cartridges, might walk through China from one end to another.”<sup>85</sup> Or as it appeared in speech of Captain Blood in the French poem *The Modern Traveller* in 1898 on the colonization of Africa, “Whatever happens, we have got / The Maxim Gun, and they have not.”<sup>86</sup> In light of so many innovations, it is

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<sup>78</sup> Cain and Hopkins, 1987.

<sup>79</sup> Wolmar, 2010; Wolmar, 2011.

<sup>80</sup> Their importance in Russo-Japanese war is very clarifying. See Patrikeeff and Harry, 2007.

<sup>81</sup> Scheibert, 2001, p. 13.

<sup>82</sup> Great emphasis on supply chain management. See Wolmar, 2010, Chap. 2 and 3.

<sup>83</sup> This periodization leaves Crimean War out. From my perspective, wars for controlling port cities in key maritime space positions were the usual state of affairs in emperors and merchantmen ambitions. They were completely within the historical boundaries of the British Mercantilist System that rised British Empire to Hegemony. Thus, it does not signalize a breaking point. On the importance of British navy, see Lambert, 2011 great work. For an alternative view emphasizing the growing role of landed warfare and British navy increasing falling behind, see Kennedy and Keating, 1976.

<sup>84</sup> Showalter, 1975.

<sup>85</sup> Hanes and Sanello, 2002, p. 211-212. Authors add the statement was probably close to reality.

<sup>86</sup> Cited in Hochschild, 1999, p. 75.

curious how 19<sup>th</sup> century transformations impact on international relations became an object of study only recently.<sup>87</sup>

Arms and ammunition factories, improved rifle technology and new machine-guns made it possible to arm a vast number of civilians and train them in a very short time due to diminished needs for manual skills, thus increasing warfare mobilization scale (and death tolls). However, owning the material conditions for this mobilization was not enough. Cultural elements were necessary to guarantee civilian support for warfare demands. By promoting the secular religion of nationalism,<sup>88</sup> States ensured available capabilities would meet the required soldiers.

With new transports, communications, management practices, weapons, all mixed under the umbrella of nationalist ideology<sup>89</sup> that dominated late 19<sup>th</sup> century, both the American Civil War and the unification of Germany mobilized all new sociotechnical capabilities brought about during the century. Shortly after the Franco-Prussian War, John Stuart Mill made a speech called ‘Our Military Expenditure’. Mill argued how wars were now waged by “nations in arms” where “no country can afford to keep a standing army great enough for the purpose [of defense]”. Mill also condemned the abolition of the privateering laws in the Paris Declaration of 1856 that meant in his words “we abandon one of our most effective defensive weapons--the power of attacking an enemy through his commerce.”<sup>90</sup>

If European desire for international arena conquest predates this period by several centuries, many of the old desires were impossible to be realized in practice. With railroads, specialized managerial hierarchies and new repeating rifles, any point at land could be imagined as within reach and, more importantly, could also be imagined as controllable – an extreme overshoot which had devastating impacts throughout the 20<sup>th</sup> century.

The radicalism underlying these structural changes became crystal-clear in 1871. But the historical context of fundamental uncertainty would be deepened by the financial crisis in Austria two years later, beginning what some contemporaries named the “Great Depression.”<sup>91</sup> In response, many countries resorted to protectionism.<sup>92</sup> In Bismarck’s German Empire, protectionism rise was related to pressure groups like commercial corporations.<sup>93</sup> In other words, all material conditions geared towards mercantilism rise as a practice and discourse were in place, a symptom we can see by the word rise from 1880 onwards.<sup>94</sup> In the competition between countries and national economic groups, it is important to point how the services sector was also crucial to United States and Germany to catch up with Britain in the decades before the First World war.<sup>95</sup> As we have seen, part of the service sector had a very close relationship with organizational skills, transport, information and finance, all of them related to fundamental capabilities necessary for war efforts.

Modern imperialism, or neo-mercantilism, thus emerges in late 19<sup>th</sup> century not as a *sui generis* movement, but as the tragic face of a chaotic interweaving of change vectors pointed so far. First, old institutional bounds between commercial links and military capabilities, mainly naval ones, for opening and securing new and far away markets. Second, the expansion of

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<sup>87</sup> Buzan and Lawson, 2013.

<sup>88</sup> Anderson, 2006; Hobsbawm, 2010b, pp. 137-160; Hobsbawm, 2012, pp. 125-158. It is important to remember cultural unification was also decisive in shaping the American Civil War.

<sup>89</sup> Wimmer, 2012 book brings important data showing how nationalism grew during this period and in general history it can be regarded as the main causal factor for wars breaking out. In the Balkans, as Clark, 2012, chap. 1 shows, nationalism had a highly explosive impact due to how borders were drawn in Berlin Congress (1873). In John Hobson, 2012 classical book, nationalism is depicted as an essential feature to “imperialist philosophy”. For an alternative view, see Crook, 1994.

<sup>90</sup> Robson, 1996, pp. 413-414.

<sup>91</sup> Saul, 1969; Kindleberger, 2011.

<sup>92</sup> O'Rourke, 2000.

<sup>93</sup> Böhme, 1967.

<sup>94</sup> Google Ngram Viewer, keyword “mercantilism” from 1800 to 1914. Link: <https://goo.gl/1yxY5x>.

<sup>95</sup> Broadberry, 1998.

reachable landed territory which could now be imagined as controllable due to new technologies, management hierarchies, scientific logistics, etc. Third, new ways of producing, organizing and utilizing military violence with greater scales of efficiency provided by warfare industry, military use of railways and large conscript armies. Fourth, competition pressures on corporate groups who resorted on state support as escape route to minimize problems faced in national or international economic spaces. And finally but not less important, the tendency to reinforce nationalist identities antagonistic to one another but necessary to manifest the structural capabilities of integrated nation-states. Berlin Congress Scramble for Africa<sup>96</sup> in 1883 appears as the result of this accumulation of new sociotechnical capabilities in weapons and transportation, together with fundamental uncertainty resulting from structural changes coming to the fore, a more intense nationalist ideology.

As American soldier John McAuley Palmer wrote in 1902:

“The strategic advantage of the savage consists only in his independence of communications; with communications established, the strategic advantage passes to the civilized soldier. Men cannot remain in a savage state in the vicinity of a rail road; they are compelled by irresistible influences either to accept civilization or to withdraw. The railroad brings the lumberman, the prospector and the trader, and these are closely followed by the planter. When the soldier has prepared the highway of commerce, his work is all but done. The soldier of commerce soon relieves him in the work of reconnaissance and exploitation.”<sup>97</sup>

Given British mercantilist system evolution up to this point, Hilferding’s “finance capital”<sup>98</sup> thesis does not lose its importance, but it does not appear as a late 19<sup>th</sup> century historical novelty. Strong financial interests were present since British 17<sup>th</sup> century financial revolution and remained decisive for services and transportation. It was monopolistic in the international arena since the great voyages, through the 18<sup>th</sup> century and only during the 19<sup>th</sup> century it divided itself into naval and rail oligopolies – both with restricted capabilities as monopolists that depended greatly on the economic space in which they were situated, as in railways projects to cross Africa or the Berlin-Baghdad railroad.<sup>99</sup> The greatest value African lands continued to be closely related to precious metals and advantageous geopolitical positions, not much different from earlier patterns of control over ports to achieve greatest control over the accumulation of resources.<sup>100</sup> Lenin’s imperialism as a “superior stage”<sup>101</sup> of capitalism also does not seem to capture these historical nuances. Monopolistic industrial companies that emerged at the time rarely needed new colonial raw materials. Financial elites as stated John Hobson<sup>102</sup> were also not the novel aspect. The new features are the most advanced sociotechnical capabilities in transport and military power that made rapid expansion of colonial conquest and dominion over landed areas that were previously inaccessible, and reactions against the uncertainty caused by the Franco-Prussian War, growing nationalism and post-1870 economic instability.

What happened was nothing short of a massive reconfiguration of world economic space. While the seas were still very important, large mobilization with boots on the ground and improved infantry weapons pointed to a relative decline in indirect control capabilities in economic spaces susceptible to maritime influence, thus reducing its ability to deter external threats or intervene in diplomatic matters. The rural world of necessarily dispersed production of wealth and necessarily dependent on port nodes to accumulate effectively was no longer the

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<sup>96</sup> Ver Mackenzie, 2002.

<sup>97</sup> Palmer, 1902.

<sup>98</sup> Hilferding, 2006.

<sup>99</sup> See Morris, 1918. The influence of railway megaprojects in shaping strategic geopolitics and diplomatic relations during this period also appears in Wolmar, 2010; Wolmar, 2011; Clark, 2012.

<sup>100</sup> White, 1891.

<sup>101</sup> Lenin, 1999.

<sup>102</sup> Hobson, 1902.

rule. Now, production could be more concentrated, several societies were more urban, new organizational capabilities allowed management of large flows of goods and people by land, as well as allowed the state and the army to imagine a much greater ability to effectively control previously inaccessible areas.

This new global distribution of economic and political spaces took place in an enlarged scale and was felt as a potentially permanent phenomenon. It placed rivalry between great powers at the center stage of concerns, pressing them to form also potentially permanent alliances. These alliances were greatly determined by the necessities of reducing uncertainty and costly military build-ups in distant colonial areas,<sup>103</sup> like the conflict between Britain and Russia over Afghanistan and northern India railways.<sup>104</sup> Diplomatic networks dense complexity, tensions between civilian governments and aristocratic emperors, the growing pressure of War Ministers on foreign policy, and hidden economic means of assuring allies, all contributed to make peace balance increasingly more difficult to predict and maintain. On the eve of World War I, even with British naval supremacy still well secured,<sup>105</sup> the British Empire's ability to exercise its hegemony, administer military conflicts and intervene in the European balance of power<sup>106</sup> had been severely reduced. It had always been based on maintaining an asymmetry of power in the seas through the mercantilist system. The empire that in early 19<sup>th</sup> century could influence almost unchallenged most key globe economic spaces found itself in early 20<sup>th</sup> century in a defensive position where its accumulation of territories became an accumulation of fundamental uncertainties and diplomatic unpredictability for which its sociotechnical capabilities could no longer provide the adequate means of action.

## Conclusion

Emphasis on mercantilism only as a theoretical scheme or discourse misses out important changes about the agents, organizational practices, technological means and the historical context necessary for defenses conventionally named "mercantilist" to emerge. If we consider the sociotechnical capabilities underlying the mercantilist system, it becomes clear how they were essential for British economic development during the 18<sup>th</sup> century, in nurturing nascent industry, helping a decisive victory against France, the British hegemonic rise, its adaptability to make use of railways and expand itself using its new connections, among others.

However, slightly different capabilities also made it possible for other countries' economic space to grow in scope through paths the British mercantilist system did not necessarily have privileged access. The spread of more efficient weapons technologies also caused a decrease in the relative importance of British quasi-monopolistic naval might that united military and transportation sociotechnical frontiers. As a result, the global arena susceptible to geopolitical

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<sup>103</sup> Clark, 2012.

<sup>104</sup> Wolmar, 2010.

<sup>105</sup> The British were the first to built the first dreadnought in 1903 and continued to maintain the largest fleet of such powerful vessels. The German Empire never came close to its objectives of having one warship for each 1.5 British ships. However, the British Empire did not have only Germany to worry about, but also France, Russia and the United States. In vessels less specialized in waging war, the British enjoyed a staggering advantage during the whole 19<sup>th</sup> century. In 1850, German states had less than 3.600 ships while the United Kingdom had over 25 thousand, 1.187 of them, steamships (the German states had only 22). No country or empire came close to the British in shipbuilding, even if in 1866 the fleet achieved its highest volume with almost 30 thousand vessels. Henceforth it modernized itself substituting sail ships for steam, increasing tonnage handled without increasing the number of ships. By 1913, Germany had less than 5.000 ships, half of them steamships, whereas the United Kingdom had 21 thousand, 60% of them steamships. For more statistics, see Mitchell, 2007.

<sup>106</sup> For an authoritative account of pre-World War One complex and chaotic decision structures and their relationships with shaping World War One conflicts, alliance formations and colonial struggles, see Clark, 2012. During the First World Way, railways would also prove decisive. See Bishop and Davies, 1972.

struggle between great powers grew more than proportionally to the growth of the British mercantilist system. Attempts to maintain control over this new reachable world – usually interpreted as “imperialist” or “neo-mercantilist” – are seen as actions of a previous system of control that now held stronger instruments to exercise its will: railways and machine guns, both understood as innovative sociotechnical capabilities since their premise was a complex social organization with large managerial hierarchies to be used effectively.

Pre-World War I chaotic period appears as a result of these more specific vectors. The decline of British hegemony does not result from a failure to follow US or Germany industrial productivity, but from its inability and almost practical impossibility of maintaining a technological and organizational quasi-monopoly in a system of transportation and weaponry (the British mercantilist system) at a pace equal to or higher than the technological diffusion of substitute systems. The perspective outlined here may be used and improved to instigate new working hypotheses regarding the importance of 18<sup>th</sup> century transformations to general economic history, the role of the service sector effects in economic and military history, transportation and weapons system relationship with economic history, and perhaps provide new insights to consider mercantilism in 20<sup>th</sup> and 21<sup>st</sup> century.

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