

## CHAPTER 7

# The Rise of the West

## 1. Introduction

The early modern era started with an explosion of the gunpowder weaponry. The destructive power of gunpowder made warfare more lethal and raised the economies of warfare. As warfare became more decisive again, massive pan-continental-size gunpowder empires replaced the fragmented geopolitical landscape of the medieval era. Another important technological change that characterized this era was the great advance in maritime technology and geographical knowledge. The world was on the eve of great geographical explorations and discoveries and the making of a truly global international political system. At the beginning of the early modern era, it was not clear which major Eurasian civilization will break free from the rough equilibrium among the major Eurasian cultures to forge ahead and become the leader in knitting the different regions of the globe together into a global system. In fact, why ultimately it was Europe which emerged as the victor in this race among the major civilizations is still puzzling scholars.

The chapter especially focuses on the splendid development of Europe and its sharp contrast with the dismaying performance of the other major Eurasian cultures. The European miraculous success and the contrasting surprising failures of the other major Eurasian cultures are what motivated the formulation of the original Hume-Kant hypothesis in Bernholz et al. (1998) and Bernholz (2004) as well as many other investigations, including that of North (1981, 1987, 1990, 1995, 1998) and Jones (1974, 1981, 1988, 1990, 2002).

In Europe, the large mass factor brought forth by the gunpowder military revolution together with a fairly even distribution of capability among the major contestants generated higher relativist concern. Contestants increased their state capacity competitively, leading to the rise of centralized territorial national states and great power politics, characteristics associated with the Westphalian system. In the other major Eurasian civilizations, however, the large mass factor brought forth by the gunpowder military revolution resulted in extreme concentrations of capability. Continental size empires reemerged on the geopolitical landscape. Powerful and long enduring imperial orders were reconstituted. There were lower relativist concern and hierarchical international orders (such as the Chinese tribute system) in these diverse lands.

Japan is of special interest here. The Hume-Kant hypothesis of Bernholz et al. (2004) is unable to explain the moderately good economic performance



of Japan under the unity of the Tokugawa regime. The Tokugawa Shogunate was another gunpowder empire. According to the Hume-Kant hypothesis, one would expect Tokugawa Japan to have performance similar to the other major Eurasian gunpowder empires of China, India, Persia and the Ottoman Middle East. However, the performance of Japan during the early modern era, though not as splendid as that of Europe, was above those of the other major gunpowder empires. The intermediate performance of Japan under the Tokugawa Shogunate could be explained if the effects of military decisiveness and distribution of capability within the Japanese system are taken into account.

Among all these diverse international political systems around the globe in the early modern era, only Europe had the propitious combination of a large mass factor brought about by the gunpowder military revolution and an even distribution of capability among the major contestants preserved by the fragmented multiple core area geography. The results were intense competition among the contestant for power, keen concern for balance of power, high relativist concern and, persistent and constant great effort to increase state capacity, economic might and military prowess.

## 2. The Gunpowder Military Revolution

Gunpowder was first discovered in Tang Dynasty China and was soon put to military use. Gunpowder was employed with devices such as rockets, primitive flamethrowers, and grenades launched from catapults. In particular, Song Dynasty China made regular use of cannon from the twelfth century onwards, first using bamboo cannons and then shifting to bronze cannons. The Mongolian tribesmen made excellent military use of gunpowder to conquer a far-flung pan-Eurasian Empire. Indirectly, economic exchanges among the major cultures were facilitated through the thriving intercontinental trade under the protection of Pax Mongolica and technology was inevitably one of the goods exchanged.<sup>161</sup>

Either through trade facilitated by Pax Mongolica or through wars, the technological advances associated with the use of gunpowder spread from the Mongolian Empire to the other major civilizations of the old world. Consequently, the gunpowder military technology transformed the geopolitical landscape of the various major Eurasian cultures, ended the fragmented medieval international orders and brought in larger political units such as the gunpowder empires

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<sup>161</sup> Refer to Anderson and Marcouiller (2005) for a theoretical treatment. Refer to Abu-Lughod, J. L. (1989) and Findlay and O'Rourke (2007) on the impacts of the Mongolian Empire on global economic exchanges.

and national states.<sup>162</sup> With the greater economies of scale in conflict created by the gunpowder military revolution, stable and hard to contest imperial orders returned to the old world for the first time since the collapse of the Roman, Gupta and Han empires almost a millennium earlier. In Europe, the Middle East, South Asia and East Asia, there were downward trends in the number of states and upward trends in the size of political units, caused by the greater economies of scale in warfare brought forth by the gunpowder military revolution.<sup>163</sup> This process began around 1200 AD and gathered momentum around 1400 AD.

The military use of gunpowder changed warfare in many ways. Gunpowder militarily forced advancements in not just weaponry, but also in offensive and defensive tactics, troop formation, logistics and military doctrines. Gigantic fleet navies were formed; mass infantry dominated armies replaced the medieval cavalry-centered military. The most immediate and important effect of gunpowder was felt in siege warfare, as the use of cannons reduced the defensive effectiveness of castles and fortresses. The speedy downfall of Constantinople—whose massive defensive walls which had shielded the Byzantine Empire and Europe from invaders from Asia for over a thousand years—in 1453 AD, under the artillery bombardment of the besieging Ottoman Turkish army, signified the dawn of the modern form of warfare centered on gunpowder. Consequently, defensive walls were made lower and thicker and lined with cannons. Defensive networks became larger and more expensive and siege warfare increased in scale.<sup>164</sup>

In the field, first the deployment of field cannons and then the use of personal firearms such as arquebuses, muskets and rifles made infantry the king of the battlefield again. The use of new tactics such as volley fire, first used by Oda Nobunaga of Japan in the Battle of Nagashino (1575) in which Nobunaga's arquebuses armed infantry delivered a decisive defeat to opponent's charging cavalry, and the Dutch in Europe a couple decades later, eventually rendered cavalry almost useless except for its use in reconnaissance. From then on it was the amount of firepower that an army could put into fighting that determined the outcome of warfare, as a larger force commanding greater fire power could easily overwhelm a smaller foe swiftly and decisively. Land battles became decisive again. Field battles grew larger in terms of both manpower and firepower. Large standing armies were raised to replace medieval cavalry, whilst at sea, the fitting of cannons to ships transformed naval warfare and made naval battles more lethal and decisive.

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**162** Refer to Stavrianos (1982, pp. 247, 254). For the early use of gunpowder in Europe and the Islamic world, refer to Goldschmidt (2002, Ch. 9).

**163** Refer to Parker (1996).

**164** Refer to Parker (1996).

In sum, the gunpowder military revolution made siege and field battles more decisive. In other words, it increased the economies of scale of warfare. There were increases in the size of the military and greater demands for manpower and resources. These larger financial and logistical needs in turn stimulated the formation of a huge, specialized and professional bureaucracy to service, support and control the military. Consequently, modern state and modern military replaced feudalism and its military system. Feudalistic small principalities and kingdoms gave way to large centralized territorial states and empires better able to exploit the economies of scale in warfare and able to finance the expensive war machines. There arose the gunpowder empires of the oriental world and the national states of early modern Europe.

### 3. The Gunpowder Empires

The gunpowder military revolution increased the economies of scale in warfare. Given an asymmetric relative combined military and economic efficiency among the contestants, a greater mass factor led to higher concentration in the distribution of resources and capability in the hand of the stronger contestant. The impact of these changes on China will be examined first, as the gunpowder military revolution started there.

China had a single dominant core area: the plains along the middle and lower stretches of the Yellow River and the Yangtze River linked up by the Grand Canal. This dominant core area contained the lion's share of China's population, industrial capacity and economic resources. Consequently, China had a highly asymmetric relative combined military and economic efficiency, as a political contestant occupying this dominant core area enjoyed overwhelming advantages in taxation, defense and other administrative and economic aspects against other contestants outside the dominant core area. The gunpowder military revolution therefore led to an extraordinarily high concentration of resources and capability within the Chinese system. It ended the pluralistic and contestable international political order of medieval China.

It was the Mongolian tribesmen with their excellent equestrian skills that initiated these mega changes in geopolitics. They were the first to extensively exploit the power of gunpowder for imperial pursuits. The Mongolians, being nomads who specialized on mounted warfare, largely used gunpowder in siege battles to bring down fortresses and had not fully exploited the potential of gunpowder in field battles. But the use of gunpowder weaponry in siege warfare alone was enough to confer great military advantage to the Mongols. Combining the new destructive power of gunpowder with tribal coherence and the mobility of the steppe people, the Mongolians enjoyed an extremely

formidable advantage in relative combined military and economic efficiency against all other contestants. The outcome of this combination of extreme asymmetry in state-building efficiency and a large mass factor due to the gunpowder military revolution was an empire larger than any previously known in the history of Eurasia and humanity.

The major states in the Chinese system of the time, Xia, Jin and Song China, were successively conquered by the Mongols, as were Tibet and the Tali Kingdom. Central Asia and Persia were captured early. In the Middle East, the Mongolian troops wiped out the Abbasid Caliphate, but the Egyptian mamluks defeated the Mongols at the Sinai Peninsula in the Battle of Ain Jalut (1260 AD) and stopped their advances. In Europe, the Mongolian Empire reached the Danube; in South Asia, Mongolian rule was established in Kashmir. The Mongolian Empire was the first pan-Eurasian empire and is the largest contiguous empire in the history of the world. Its emergence signified the beginning of more substantial political and military interactions among the major cultures on the pan-Eurasian level.

China was the first major Eurasian culture to enter the era of gunpowder and the first major culture to have a continental-size gunpowder empire. The Mongolian tribes combined the technological achievements of the military revolution of the Song China competitive state system with the mobility of the nomadic people to conquer the Chinese world and a world empire larger than all before. However, the economies of scale in the military aspect were not matched by the economies of scale in public administration. The Mongolian empire soon split into four successor empires which were separately ruled.

The Chinese part was known as the Yuan Dynasty, and it reigned for nearly a century (1279-1368 AD). It was succeeded by the indigenous Chinese Ming Dynasty, which governed for almost three centuries (1368-1644 AD). The Manchurian Qing Dynasty in turn replaced the Ming Dynasty and ruled for about three centuries (1644-1911 AD). Given the large mass factor and the high asymmetry in relative combined military and economic efficiency, the imperial order in the Chinese system was highly stable. Despite two dynastic turnovers and several major civil wars, the imperial order was reconstituted swiftly again and again. The lion's share of resources owned by the single dominant core area ensured that any contestant controlling it enjoyed overwhelming odds of victory against any rival. This imperial order lasted for over seven hundred years and was overthrown only when China was threatened and encroached upon by industrialized Western great powers. The First Opium War of 1839-1842 AD signified the induction of China into the modern world state system, and the centuries-old imperial order of China was thus ended when China was incorporated into the Europe-centered modern world state system around 1850 AD. The Middle Kingdom's geopolitical isolation ended, and from then on, China had to reckon seriously with the military threat of states other than those in its vicinity.

Given the large mass factor of the gunpowder military technology and the extremely high concentration of resources in the Chinese system, relativist concern was extremely low in comparison to medieval China. Furthermore, given the extremely high concentration of capability and the large mass factor, the power-induced risk attitude was very risk-averse. The extremely risk-averse attitude caused severe distortions in the economic decisions of the imperial regime. Together, the extremely low relativist concern and extremely risk-averse attitude and the consequent imperial complacency and conservatism led to a very drastic change in the fate of the Chinese economy and society, and a stark difference between the developmental achievements of medieval China, as attested by the Song Puzzle, and the developmental performance of China under the three consecutive gunpowder dynasties.

During the Mongolian Yuan Dynasty, the effects of imperial stagnation had yet to come into full play. The economic and cultural momentum of the medieval era and its pluralistic and competitive international order had not yet completely run out: China was still a place of economic prosperity and cultural creativity.<sup>165</sup> However, by the time the Ming Dynasty was established, that momentum had practically worn out. This downward trend was slowed, but not reversed, under the Manchurian Qing Dynasty. The Manchurian rulers were more on the alert and hard-working since they were governing a subject population of a different race and culture with far greater number and cultural sophistication. Nevertheless, the Manchurians inherited the Ming policies and mind-set.

The Mongolian Yuan Dynasty used only coercion to maintain rule. Their brutal but crude statecraft allowed cultural and economic vigor to maintain momentum. The merchant class retained their freedom and high status, whilst the Confucian literati were designated to a very low social standing: a situation which actually helped to free Chinese minds. However, once under the more perfected imperial rule of the indigenous Chinese Ming Dynasty and the heavily sinicized Manchurian Qing Dynasty, Chinese cultural and economic vigor subsided and largely disappeared.

The Ming and Qing Dynasties effectively used the imperial examination system to control Chinese minds. Scholars aspiring to a career in officialdom were forced to self-indoctrinate in Confucian teachings; the imperial examinations prescribed the use of eight-legged essays which emphasized formality and memorization in place of independent critical and creative thinking. On top of this, the imperial regime also prescribed official interpretation of Confucian texts in imperial examinations. Furthermore, during the Ming and Qing

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<sup>165</sup> Jones (1981, p. 160): "China came within a hair's breadth of industrializing in the fourteenth century."

Dynasties, the imperial regime sponsored monumental cultural tasks such as the publishing of encyclopedias, and these tasks helped channel the intellectual energy of the Chinese literati to uncreative works that posed no threat to the imperial regime. The imperial regime also made use of such opportunities to scan the vast amounts of literature, erasing and editing any documents deemed unfriendly to the imperial regime. These measures were backed up by the use of brutal political reprisal in response to publication of material even remotely unfriendly to the regime. Effectively, what modicum of intellectual curiosity or creativity that remained in the Chinese mind was crushed.<sup>166</sup>

Under the indigenous Chinese Ming Dynasty, China retreated into isolation.<sup>167</sup> The Ming Dynasty severely restricted and eventually banned both international contacts and trade. After initially expanding their navy, the Ming court subsequently allowed that to decay, retreating from the sea as the leaders became more inward-looking.<sup>168</sup> The famous overseas expeditions of the Eunuch Admiral Zheng He were the last manifestation of the Chinese vigor. After the brief ambitious overseas expeditions of Admiral Zheng He, the Ming court decided in 1480 not to continue Chinese maritime explorations. The Confucian literati, who were against overseas expeditions and foreign trade, defeated the eunuchs who were in favor of it. Bernholz and Vaubel (2004) comment that:

“After the rule of the Mongols from 1276 to 1367, the Chinese Ming Dynasty was characterized by the complete centralization of all power in the hands of the emperor and a powerful secret police. It adopted policies of reducing contacts between Chinese and foreigners and of stopping private ventures overseas because this would lead to centrifugal coastal centers of power. As the dominant recruitment subject, the Ming introduced a special type of essay which was rigid in form and elegant in style, but indoctrinating in substance and hostile to innovation in effect.” (5)

Under the Ming Dynasty, the merchant class lost much of its social status as well as its professional autonomy. The imperial regime re-instituted the official orthodoxy of Confucianism and emphasized the ideal Confucian economy: self-sufficient villages with minimal commercial networks or specialization of labor. The Confucian Ming Dynasty was hostile to mechanical

<sup>166</sup> Refer to Huang (1974, 1981) for an in depth study of the stagnation and decline of Ming Dynasty. Wesson (1978, p. 198) comments: “..... Commerce brings hand and brain together, as noted by Needham (1953), who saw the weakness of the merchant class in imperial China as the chief cause of the inhibition of science.....”

<sup>167</sup> Refer to Filesi (1972, p. 69) and Jones (1981, p. 205).

<sup>168</sup> Refer to Eberhard (1960, p. 342, note 250), Filesi (1972, pp. 32-3, 69, 71) and Jones (1990, pp. 10-11).

contrivances, demolishing, for example, the astronomical clock built in 1090 AD. The Jesuit Matteo Ricci found little indication in 1600 AD to show that mechanical clocks had ever existed in China.<sup>169</sup> The Chinese turned their minds away from technology and industry, with the Ming Dynasty refocusing Chinese energies back into agrarianism for reasons of internal security. These policies led the Chinese empire on a path of transformation from a highly advanced economy (developed during the Song Dynasty), into a conglomeration of self-sufficient villages.

The government of the Ming Dynasty was one of minimal governance: the ideal form of rule advocated by the Confucian literati. The service state was dismantled, and in its place was a central government that performed mostly religious or ceremonial functions and provided moral leadership. Effectively, state officials served more as hierophants than administrators. In fact, the Ming and Qing Dynasty governments bore a greater resemblance to the Catholic Church than to the governments of European national states.<sup>170</sup> It was astonishing that a continental-sized empire was governed mainly through the force of culture and especially moral teachings.

Practically, the state of the Ming and Qing Dynasties existed solely to serve itself and keep itself in power. Economic productivity, as well as scientific and technological advancement, suffered greatly.<sup>171</sup> Apart from the need to serve as a defense against inner Asia, the emperor kept an army primarily to safeguard his own interests. This included the defense of the Grand Canal, which solely served him by enabling his important assigned grain tribute to reach the court of Beijing. The emperor had a lesser need for a military budget than European monarchs, and that allowed him to be less dependent on the merchant class to finance his ambitions. The merchants consequently received minimal concessions.

The total budget of the central government was not large. At the end of the nineteenth century, it was only one or two per cent of the national income.<sup>172</sup> The investment on infrastructure was trivial, at around 0.03-0.06 percent of the national income.<sup>173</sup> The Chinese paid about 24 percent of their national income mostly to the local elite (and to the central elite), who made up about two percent of their number, in return for essentially only two services: defense and the coordination of irrigation and flood control. No other important services, such as civil policing, were provided. The Ming and Qing governments also failed

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**169** Refer to Gimpel (1977, p. 152).

**170** Refer to Stover and Stover (1976, pp. 135, 186).

**171** Refer to Wesson (1967, 1978), Huang (1974, 1981) and Jones (1981, 1988, 1990).

**172** Refer to Perkins (1967, p. 487).

**173** Refer to Stover and Stover (1976, p. 113).

to standardize weights and measures. In contrast, Lord Shang of the Kingdom of Qin during the Warring States Era of China had standardized weights and measures, and so had Napoleon of France of early nineteenth century Europe.

In sum, the Chinese empire of the Ming and Qing Dynasties was essentially an Asian revenue pump and nothing more, with no incentive to provide public goods and services to the society and economy for greater social welfare or for higher productivity.<sup>174</sup> The bureaucratic infrastructure of the state was kept small and cheap and was incapable of controlling the everyday life of the peasants or town dwellers. Although peasants and town dwellers were hap-hazardly exploited and neglected, they were not systemically repressed.<sup>175</sup> On the inefficiency and slackness of the Chinese gunpowder empire, Jones (1990) comments that:

“The survival of a lethargic government was probably assured by the relative absence of outside pressure... Notoriously, government did not provide much in the way of infrastructure or services... Government did not standardize weights and measures. Government did not provide commercial law or police... Government seems actually to have been withdrawing from participation in the economy in Qing times, preferring (for example) to let guilds carry out what we would consider, even what had once been considered in China, bureaucratic or legal functions. Certainly government did not mint enough money: token moneys had to substitute... Plenty of trade went on but there was a tendency for the market to work within the confines of personal acquaintance or the guarantees of native-place associations... We may find that the Qing economy, impressively expansible though it proved, failed to move from *extensive* to *intensive* growth because its political structure did not establish a legal basis for sufficient new economy activity outside agriculture... After the Song, China may not have recaptured, indeed may have moved further from, the successful organization of a compact, centralized state.” (17-21)

The situation in Japan was quite different. Western gunpowder weaponry was first brought to Japan through Portuguese, Spanish and Dutch traders. With the introduction of gunpowder weaponry, there were greater economies of scale in warfare in Japan. Japan subsequently entered its Era of Warring States. The size of infantry legions maintained by the warlords greatly increased and the intensity of warfare prompted tactical innovations. Japan actually became

<sup>174</sup> Refer to Jones (1981, pp. 206-209).

<sup>175</sup> Refer to Moore (1967, p. 173), Jones (1981, p. 207) and Stavrianos (1982, pp. 287-289).

a forerunner in the gunpowder military revolution. Oda Nobunaga invented the use of volley fire, predating its use by the Dutch by some two to three decades.<sup>176</sup> Oda Nobunaga died before he could truly unite Japan. His chief lieutenant Toyotomi Hideyoshi achieved a short-lived unification of Japan. After the death of Hideyoshi, following a brief civil war, unification was re-established by the associate and archrival of Hideyoshi, Tokugawa Ieyasu.

In early modern Japan, the Kanto region – the plain centered on present-day Tokyo, was the largest core area. It commanded a significant share of Japan's population with economic resources that were larger than any other core area. On top of that, the Kanto region was strategically located. It seated in the center of Honshu Island, the largest and most important of the Japanese archipelago. This strategic location gave its master, the Tokugawa Shogunate, the benefit of easily controlling all other major regions of Japan. Furthermore, the Kanto region was also moderately distanced from the cluster of population and economic centers surrounding the Seto Inland Sea (cities such as present-day Kyoto, Osaka, Kobe and Hiroshima). The detached location allowed the Tokugawa Shogunate the benefit to avoid embroilment in the intricate balance of power games among the power centers crowded in southwestern Japan. The Tokugawa Shogunate therefore enjoyed moderate military and economic advantages versus other contestants. With the larger mass factor created by the gunpowder military revolution, the Tokugawa Shogunate managed to achieve a higher concentration of resources and capability ended the highly fragmented and pluralistic political order of medieval Japan.

Japan after the gunpowder revolution had a moderately high concentration of resources and capability. About half of Japan's population was under the control of the Tokugawa Shogunate or its allies. However, there remained many highly independent feudal lords, though they were nominally under the authority of the Tokugawa Shogunate. These more independent lords could be found especially in the southwestern part of the country, centering on the Seto Inland Sea. The mass factor was moderately large under gunpowder military technology. Yet, given Japan's fragmented and multiple core areas geography, warfare was not as decisive as in China or the Middle East given the same military technology. The moderately high concentration of capability and moderate size of the mass factor resulted in a relativist concern that was moderately low yet considerably higher than that of China under the Yuan, Ming and Qing Dynasties. Furthermore, the moderately high concentration of capability together with the moderate size mass factor generated a significantly risk-averse power-induced risk attitude which caused substantial distortions in economic decisions.

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<sup>176</sup> Refer to Parker (1996).

Together, these two mechanisms caused imperial complacency and conservatism and a declining performance of the Japanese economy and society.

Under the Tokugawa Shogunate (1603-1868 AD), social and economic stability were maintained by strict segregation of farming and trade and a ban on private investment. The officialdom discouraged any contact between different parts of the country that did not use the closely controlled Five Highways. Foreign trade and contacts were also discouraged.<sup>177</sup> Under Tokugawa rule, the expanding Japanese overseas undertakings of the previous era of political fragmentation were outlawed. Like Ming and Manchurian era China, Japan had chosen isolation, and like China, this only changed when Japan was incorporated into the Europe-centered modern world state system. In Japan's case, this change happened with Commodore Perry's naval expedition to open Japan's doors by force, in 1853 AD.

The Tokugawa government's policy of international isolation, active discouragement of commercial investment, and restrictions on communications and trade between domains combined to restrain the development of domestic markets. Neo-Confucianism formed an important part of Tokugawa official doctrine, which stressed morals, education and hierarchy. The regime adopted an anti-merchant policy and fixed the social status of groups. Merchants, who were considered to be parasites living off the labors of others, found themselves at the bottom of this hierarchy. The shogunate repeatedly made attempts to stem the tide of urban expansion and merchant success by repatriating peasants, confiscating property, and exiling wealthy merchants. Furthermore, the shogunate diligently issued legal proscriptions against townspeople acquiring obvious signs of wealth in an attempt to force people (particularly those residing in Edo) to conform to the Confucian standards of their lowly status.

Yet, despite repeated efforts to enforce a strict social hierarchy, the position of the Tokugawa government steadily declined. Public finance was in constant decline, and the steady worsening of the public financial situation led to higher taxes and peasant riots. The merchant class grew more powerful, which led to increased breakdown in the social hierarchy as samurais became financially dependent on the merchants. Corruption, incompetence and decline of morals were widespread within the Tokugawa government.

An important reason for the decline of the Tokugawa government was that the political structure of Tokugawa Japan was highly decentralized and consequently the shogunate failed to truly control the regional economies and inter-regional economic flows. During the Tokugawa era, regional feudal lords still retained much political, fiscal and economic autonomy. There was,

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<sup>177</sup> Refer to Haywood (1997, pp. 230-231).

therefore, a certain level of political competition and a significant level of mercantilist competition between the different regions.<sup>178</sup> During the extended peace of the Tokugawa Shogunate, there were many improvements in farming technology and practice. Cash was diffused throughout the Japanese economy; inter-regional commerce led to regional specialization; the development of specialized crops further contributed to considerable growth of the domestic economy. All these advances happened despite central government policies and weakened the central government's position versus the regional lords and the merchant class.<sup>179</sup> Thus, although the political system itself weakened and stagnated through the years of the shogunate, in other ways Japan saw somewhat surprising advances.

The next case study is the Indian subcontinent. In South Asia, the Indo-Gangetic Plain of northern India was the largest core area. This core area had a significant share of South Asia's population and economic resources. There was therefore a substantially asymmetric relative combined military and economic efficiency between the contestant controlling this dominant core area and the many other contestants holding other smaller core areas. With the larger mass factor created by the gunpowder military revolution, there emerged in South Asia a higher concentration of resources and capability. The highly fragmented and pluralistic political order of medieval India was brought to an end.

It was the Delhi Sultanate that first ended the medieval fragmented order. The Delhi Sultanate used gunpowder weaponry in the latter part of its military campaigns and that destructive power enabled the sultanate to unite the northern Indian Indo-Gangetic plain whilst also briefly extending its rule to the Deccan highland.<sup>180</sup> However, it was the Mughal Empire that fully capitalized on the destructive power of gunpowder and cannons to establish a lasting continental-sized empire in South Asia. The reign of the Mughal Empire was officially from 1526-1858 AD, although it effectively ruled over most of South Asia from 1572-1707 AD.

The Mughal Empire reached its peak in the 17<sup>th</sup> century. Although its frontiers were occasionally pushed back, its power was largely unchallenged, and the Mughal Empire had a much higher degree of administrative penetration than that of the Delhi Sultanate.<sup>181</sup> Highly confident of the imperial power and stability established by Akbar, Mughal statesmen subsequently did not see any need for reform. Instead, the wealth of the empire was squandered in displays of splendors and luxury, making the Mughal courts among the most dazzling

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**178** Refer to Distelrath (2004, pp. 107-108) in Bernholz and Vaubel (2004).

**179** Refer to Jansen (2002).

**180** Refer to Kulke and Rothermund (1998, pp. 158-169) and Khan (2004).

**181** Refer to Kulke and Rothermund (1998, pp. 169,184-223).

of all the oriental courts. As its leaders played with their riches and neglected governance, the empire consequently declined.<sup>182</sup>

The deterioration of the Mughal Empire was not surprising. Given the large mass factor of the gunpowder military technology and the very high concentration of capability in the Indian system, relativist concern was very low. Furthermore, the very high concentration of capability and the large mass factor generated an extremely risk-averse power-induced risk attitude which caused severe distortions in economic decisions and bred extreme imperial conservatism. Together, the two mechanisms of imperial complacency and conservatism led to a very huge change in the performance of South Asian economy and society. The decline in performance from the highly fragmented and pluralistic medieval international political order of medieval India was very drastic.

During the long reign of the Mughal Empire it failed to provide any major services to benefit the economy.<sup>183</sup> The total tax revenue of the state was from fifteen to eighteen per cent of national income, largely collected as a land tax.<sup>184</sup> The bulk of this extracted revenue was consumed by the ruling elite, and almost none of it was spent on the provision of infrastructure or other public goods and services for social welfare or higher productivity. Furthermore, taxes were collected regardless of the state of the harvest. This callous practice often left the peasants destitute in the face of frequent natural disasters and state ineptitude and indifference. Notably, there was a horrific run of famines between 1540 and 1670 AD, even though the empire was at peace.<sup>185</sup>

The Mughal Empire had no written legal code. Neither was there any institutional design to harmonize contradictory orders issued by different rulers. Consequently, many orders were issued by one ruler only to be countermanded by the next. The efficiency of the empire therefore depended mainly on the character and ability of the Mughal emperors and more often than not, *de facto* power slid into the hands of serving officials. With no constitutional checks on the rapaciousness of these officials, the Mughal Empire became a typical predatory state that later proved itself incapable of standing up to the encroaching East India Company. Mughal India was colonized by Britain in the early eighteenth century and, like Japan and China about a century later, incorporated into the Europe-centered modern world state system.<sup>186</sup>

<sup>182</sup> Refer to Berinstain (1998, p. 73).

<sup>183</sup> Refer to Wesson (1967, p. 296) and Rothermund (2004, pp. 142-146) in Bernholz and Vaubel (2004).

<sup>184</sup> Refer to Maddison (1971) and Jones (1981, p. 198).

<sup>185</sup> Refer to Jones (1981, p. 187).

<sup>186</sup> Subrahmanyam (1989) and Nadarajah (1992) argue that the post Mughal Indian states system were on the verge of creating a modern high fiscal-capacity state in the

The next case study is on the eastern Mediterranean and Middle Eastern region, an area that was dominated by the Byzantine Empire and then the Ottoman Empire during the medieval and early modern era. In southeastern Europe, the eastern Mediterranean basin, and the adjacent parts of Middle East, the most important core area was the region comprising Greece and Anatolia, centered on Constantinople or Byzantium. This core region was the power basis of the Byzantine Empire, an imperial tradition that lasted well over a millennium. Besides the combined resources of Greece and Anatolia, which were quite substantial in the southeastern Europe, eastern Mediterranean and Middle Eastern regions, the power holding Greece and Anatolia also controlled the highly lucrative maritime trade route between the Black Sea, the Aegean Sea and the Mediterranean Sea. Constantinople itself controlled the choke point of the Straits of Bosphorus. In contrast, other major core areas in the region, for instance, the Nile River Valley or Mesopotamia, had comparable agrarian resources but lacked the control over the highly lucrative maritime trade route. The joint region of Greece and Anatolia therefore conferred upon its master a highly favorable and asymmetric relative combined military and economic efficiency vis-a-vis his rivals. Despite these geographical advantages, by the late medieval era, given the small mass factor and the cavalry dominance of the battlefield, political fragmentation was the norm and the Byzantine imperial power had dwindled to almost nothing and the empire barely survived.

The gunpowder military revolution then raised the economies of scale in warfare. Given the substantially asymmetric relative combined military and economic efficiency between the contestant controlling the Greece and Anatolia region and the many other contestants holding other core areas, the larger mass factor created by the gunpowder military revolution generated an extremely high concentration of resources and capability. The Ottoman Empire very successfully exploited the destructive capacity of gunpowder in its imperial pursuits, being one of the first to employ muskets and cannons. The walls of Constantinople, almost impenetrable for over a thousand years, were brought down within hours by cannon fire. The Ottoman Empire took over Constantinople, renamed it Istanbul and made it the capital of the empire. A new imperial power was ushered into the Middle Eastern and eastern Mediterranean region. The Ottoman Empire was the Islamic successor of the Byzantine Empire and soon proceeded to acquire the former extensive realm of the Byzantine Empire and beyond.

The Ottoman Empire was a very stable and uncontestable imperial order, reigning over most parts of the Middle Eastern region from 1280-1922 AD. The long

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case of Mysore at the dawn of European colonial expansion. The establishment of the British Indian Empire disrupted this process of war making and state making before it could give rise to indigenous modern states in India.

reign of the Ottoman Empire was roughly comparable to the combined duration of the Mongolian Yuan, Chinese Ming and Manchurian Qing Dynasties in China. At the peak of its power, the Ottoman Empire controlled the Balkan Peninsula, Hungary, the territories around the Black Sea, northern Africa (excluding Morocco), the Red Sea region, the Levant, Cyprus, Mesopotamia and the southern coast of the Persian Gulf, besides its core area of Greece and present-day Turkey. That was an empire larger than the Byzantine Empire at its peak under Emperor Justinian, and comparable to the Roman Empire at the height of its power. The Ottoman Empire achieved a very high concentration of resources and capability indeed.

Given the very high concentration of resources and capability in the Ottoman system and the large mass factor of the gunpowder military technology, the Ottoman Empire had a very strong risk-averse power-induced risk attitude and a very low concern for marginal relative capability. The highly risk-averse power-induced risk attitude caused the Ottoman authorities to be very conservative and the very low relativist concern made the Ottoman Empire extremely complacent. The Ottoman Empire was lethargic. It did not advance economically nor did it produce any significant cultural achievements.<sup>187</sup> The dismal performance of the Ottoman Empire was unsurprising. There was a stark decline in performance from the highly fragmented and pluralistic medieval international political order of the medieval eastern Mediterranean and Middle Eastern region under the Abbasid Caliphate and Seljuk Turks. Unlike European sovereigns who secured their positions by offering the service of justice, the Ottoman Empire offered very few overhead services to the proper functioning of either the economy or society. The Ottoman Empire, though of immense territorial size, had a small state without much capacity to penetrate and mobilize the society for its purposes.<sup>188</sup>

The Ottoman Empire failed to develop or maintain mercantilist policies, measures that would have been necessary to halt the economic penetration of European producers and to sustain state power in the international arena. For instance, embargoes on the export of strategic goods to Europe were not enforced as state bureaucrats were simply too inefficient and corrupt to enforce policies in the interest of the state. Consequently, the Ottoman regime even failed to procure essential war materials and food required by its own armies. From the eighteenth century onwards, the weakened Ottoman Empire was always on the defense on its European front, under incessant assault from the great European powers of France, England, Russia and Austria.<sup>189</sup> The lethargic Ottoman Empire was eventually referred to as the 'Sick man of Europe'.

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<sup>187</sup> Refer to Jones (1981, p. 189) and Kuran (2004, pp. 153-156) in Bernholz and Vaubel (2004).

<sup>188</sup> Refer to Jones (1981, p. 180) and Goldschmidt (2002, Ch. 9).

<sup>189</sup> Refer to Armstrong (2000, pp. 97-117).

In Central Asia and the Middle East, the most important area was the Iranian Plateau. This core region had earlier formed the power basis of the Achaemenid Empire, the Parthian Empire and the Sassanian Empire. The tradition of imperial authority and unity was well grounded in this region: this was a political tradition with a history of over a thousand years before the Islamic conquest. Compared with the surrounding regions, this core area had a share of resources which was quite substantial and dominant. After the Islamic conquests, given the small mass factor of medieval military technology, political fragmentation was the norm in this region.

As in the other major Eurasian cultures, the gunpowder military revolution enlarged the mass factor in the Persian system. Given the substantially asymmetric relative combined military and economic efficiency between the contestant controlling the Iranian Plateau and the other contestants, the larger mass factor generated a higher concentration of resources and capability. The Mongolian Ilkhanate was the very first empire in this region to exploit the destructive capacity of gunpowder in empire-building, and it started a new tradition of imperial unity and authority in the Persian system.

The Ilkhanate set up by Prince Hulegu reigned from 1256-1335 AD and was followed by a succession of empires: the Khanate of Tamerlane (ca 1370-1507 AD); the indigenous Safavid Empire (1501-1722 AD); the Afshar Dynasty (1729-1747 AD); the Zand Dynasty (1750-1794 AD) and finally the Qajar Dynasty (1795-1925 AD). The victory of Shah Ismail of Safavid Persia at Mervover Muhammad Shaybani of the Shaybanid Khanate of Uzbek on December 2nd, 1510 AD, was considered a turning point in the struggle between nomadic and sedentary civilized societies. The firepower of gunpowder weaponry defeated the horse power of cavalry and the sedentary society began to gain the upper hand against the nomads.<sup>190</sup> With the aid of gunpowder weaponry, civilization started to establish its dominance over the steppe again.

The Persian system after the gunpowder revolution had a very high concentration of resources and capability. Furthermore, the mass factor was very large, given the destructive power of gunpowder military technology. Consequently, Persian relativist concern was very low. The series of gunpowder empires starting with Ilkhanate were made more uncontested by the larger mass factor. Despite several dynastic changes, the imperial order swiftly and successfully reconstituted itself time and again. Furthermore, given the very high concentration of capability and the very large mass factor, the power-induced risk attitude was highly risk averse, which caused severe distortions in economic decisions. Together, the very low relativist concern and very risk-averse attitude

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<sup>190</sup> Refer to Grousset (1970).

resulted in imperial complacency and conservatism in the Persian system and caused a dismal performance in the Persian economy and society.

Imperial complacency and conservatism plagued Safavid Persia, especially after the decline of the Ottoman threat. Corruption and decadence were omnipresent. Almost unbelievably, the maintenance of the huge imperial harem swallowed up close to half of the state revenue. Once the external environment was quite peaceful, even the central standing army was not properly maintained. Funds were diverted for the consumption of the harem. The army largely existed only on paper, was good only for parade, and certainly had no capacity for war.

In many key regional posts, appointees from the central government who bought their positions replaced local tribal chieftains. The local tribal chieftains, who had been highly autonomous, were efficient in military affairs and once the pillar of the military power of the empire. These replacements strengthened the position of the central government but weakened the defense capacity of the empire, and led to excessive extraction from the local economy. Many regions suffered greatly and depopulated. Great concentration of wealth at the court led to declines in trade and revenues. The royal treasury was a bottomless pit: resources were extracted from the economy, without the provisions of public goods or services in return. Sale of offices and tax farming resulted in corruption, incompetence and excessive extraction; justice was neglected and public safety was not maintained. Highway robberies were common, famines broke out even during peacetime, and monetary stability failed to be maintained. Debasement of coins happened frequently and fueled inflation; a shortage in the money supply caused the economy to be under-monetarized and trade suffered.

Power ceased to reside with the weak and ineffectual Safavid rulers, and instead passed inadvertently to the imperial harem and the Shiite religious leaders. The practice of appointing princes as provincial governors was abandoned for fear of formation of political factions around them and the threats posed to the emperor. Scions were brought up in the harem, totally ignorant of the outside world. Incompetence in statecraft or military science and overindulgences in pursuits of sensual pleasures and neglect of duty characterized Safavid rulers. The Queen Mother and forceful wives and concubines of the emperor, as well as eunuchs, began to rule. Imperial harem factional politics drove the history of the dynasty while outside the harem the persecution of religious minorities by the Shia ulama tore the social fabric. All of the above factors cut the Safavid Dynasty off from its supporters.<sup>191</sup>

Persia remained in permanent decline from the mid 17<sup>th</sup> century onwards. As in the Ottoman Empire, there were occasional efforts made to reform or

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191 Refer to Foran (1992) and D'souza (2002).

modernize the state, the economy and the army in Persia. However, sustained efforts remained elusive. When threats were not as severe or the external environment became peaceful, the empire returned to its lethargy and complacency and conservatism regained its supremacy in politics. Throughout the long period of decline, the small state apparatus remained as a revenue pump for the imperial court and nothing more.

The Safavid Empire was replaced by the Afshar Dynasty of Nadir Shah. Iranian military power had a strong resurgence under the charismatic leadership of Nadir Shah, a military genius described by some historians to be Napoleon of Persia or the Second Alexander. The Afshar Dynasty briefly controlled Afghanistan, western and southern Pakistan, Iraq, the southern coast of the Persian Gulf, Georgia, Caucasus, and the southern part of Central Asia to the shore of the Aral Sea.<sup>192</sup> Nadir Shah also invaded Mughal India, raided Delhi, and carried off bounty and booty, including the famous Peacock Throne. At this time Peter the Great of Russia probed the Caucasus area, but Nadir Shah repulsed the Russian incursions. However, once the charismatic leadership of Nadir Shah left the scene when he was assassinated in 1747 AD, his empire quickly disintegrated and the long decline of Persia resumed and continued. When Russia under Catherine the Great renewed expansionist efforts into the Caucasus, Georgia and Central Asia, Persia failed to resist successfully. By then, Persia was too weak and Russia had become too powerful, and Persia, or Iran, became an appendix to the western-centered modern global state system at the end of the Zand Dynasty.

## 4. Eurasia

After the establishments of the late medieval and early modern gunpowder empires, the major non-European cultures turned isolationist economically, due to the lack of external political-military competition and an imperial attitude of conservatism and risk-averseness. Consequently, the Silk Road had stopped serving as a major trade route by around 1400 AD. The decline of trade among the major oriental cultures was compensated for by the increased overseas trading activities of western nations.

Almost contemporary with the gunpowder military revolution were a series of maritime transportation revolutions and the great geographical discoveries of the new world and new shipping routes, all of which knitted the different

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**192** Refer to Haywood (1997, pp. 214-215).

and distant cultures of the whole globe into one large community and a global state system. Western powers reached the shores of the major oriental cultures soon after the great geographical discovery of the new world and new trade routes: first came the Portuguese, Spanish and Dutch, and they were soon followed by the French and English. But they were not in a position to challenge the gigantic oriental gunpowder empires and their presence was not viewed as a threat. With the exception of India, which was incrementally encroached upon and conquered by Britain when the Mughal Empire was dissolving and India was in the depths of civil war, no major oriental Eurasian culture was overrun by another Eurasian power (including the Western great powers) before the industrial revolution. The gravity of political-military competition on a mega Eurasian or global scale still lay with the interactions among the major Eurasian cultures.

The pan-Eurasian international political system worked more forcefully with the coming of the gunpowder era. In the 13<sup>th</sup> century, there were attempts at a Franco-Mongol alliance with exchange of ambassadors and even military collaboration in the Holy Land. The targets of the alliance were the Middle Eastern Islamic forces, especially the Egyptian Mamluk Dynasty. After the Mongol Empire ended, the political and military interactions among major cultures subsided, since the mobility of the Mongolian tribesmen and other nomads had been taken out of the equation. Part of the reason was that as the gunpowder military revolution proceeded, it ultimately curtailed the power of the nomads and their cavalry, as infantry equipped with gunpowder weaponry ultimately regained battlefield advantage and warfare became less mobile.

The logistical constraint of pre-industrial technology restricted political-military interactions among the major oriental empires on the Eurasian landmass. The heavy weaponry of early gunpowder technology and the massive infantry legions faced considerable mobility problems, especially when traveling overland. Consequently, political-military interactions among the major Eurasian cultures over long distances during the pre-industrial gunpowder era were hardly more substantial than those during the medieval era. In the sea, on the other hand, there were significant advances in maritime technology during the late medieval and early modern era.<sup>193</sup> Political-military competitions among the major cultures on and across the sea were more significant than those of the medieval era, though not yet of a frequency and intensity substantial enough to affect the developmental performance of the major Eurasian cultures.

The Mongolian Empire, not satisfied with its imperial pursuits overland, had sent military expeditions across the sea. However, given the Mongolian

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193 Refer to Cipolla (1966).

unfamiliarity with maritime affairs, the Mongolian invasions of Japan in 1274 AD and 1281 AD ended disastrously. So did the Mongol invasion of Java in 1293 AD. Mongol invasions of Vietnam in mid and late thirteenth century through land and sea failed too. After the Mongol attempts, Japan invaded Korea twice under the Hideyoshi Shogunate: Ming Dynasty China intervened and Japan was defeated by the Chinese-Korean Alliance. The failures of these overseas military campaigns testified to the limit of naval power projection during the pre-industrial gunpowder era. Outside the Eurasian world, early and pre-industrial European projection of powers and conquests overseas were victories against societies of the Americas, Africa and Oceania, which were militarily much more backward—the Europeans of that time had little success against the other more advanced and established Eurasian major cultures.<sup>194</sup>

On the Eurasian land mass, the constraints imposed by pre-industrial logistical capacity restricted political-military interactions between China and the other major empires. Unlike the medieval era, when Tang Dynasty China had set up military outposts in India, after the gunpowder military revolution, China under the Yuan, Ming and Qing Dynasties had no substantial political-military interactions with India. During the medieval era, Tang Dynasty China competed with the Abbasid Caliphate over Central Asia. After the gunpowder military revolution, there was no political-military competition between China and Persia. During his last years, Tamerlane contemplated attempting to conquer China but died before any action was undertaken.

There were more political-military interactions between the Ottoman Empire and the Persian Empire, and between the Persian Empire and the Mughal Empire. However, the Islamic Ilkhanate, Timurid Empire and the Safavid Empire and later successors, were steppe-highland, desert-oasis powers with cavalry still playing a significant role. In contrast, the Ottoman Empire, like its predecessor the Byzantine Empire, was a Mediterranean power. Besides having a powerful navy, the famous slave-elite troops of the Ottoman Empire, the Janisaries, was infantry. On the other hand, the Sultanate of Delhi and the Mughal Empire ruled over tropical and subtropical forests and monsoon river plains which necessitated a difference in war craft. Nadir Shah of Persia invaded India but retreated after raiding Delhi. Differences in geography and mode of warfare as well as great distance and logistical constraints mitigated the intensity of conflict between the three major Islamic empires: the political-military interactions among the major Islamic gunpowder empires therefore failed to significantly affect their developmental performance.

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<sup>194</sup> Refer to Parker (1996).

The Ottoman and Safavid rivalry was the most important of the political-military interactions among the major oriental gunpowder empires. Shiite and Sunni animosity led to clashes between the Ottoman and Safavid Empires during the sixteenth century, specifically over the control of Mesopotamia. However, the core areas of both empires remained unthreatened. This was almost a repetition of the rivalry between the Roman and Parthian Empires and between the Byzantine and Sassanid Empires. With the subsiding of religious ferment within the Safavid Empire, the Treaty of Qasr-e Shirin (1639 AD, also called the Treaty of Zuhab) established a permanent peace between the Ottoman and the Safavid Empires. Furthermore, in the sixteenth century, extensive clashes with the Uzbeks and other powers in Central Asia caused the Safavid Empire to look to the north more often than to the west. The advance of the Russian Empire further reinforced this northern orientation of the Safavid Empire: Safavid Persia fought a prolonged war with the Russians during the 1720s. On the other hand, with the advancement of the European powers, the Ottoman Empire permanently focused on securing its influence to the west and to the north, warring incessantly with the Russians and Austrians and the other European powers. Political-military competition between the Ottoman Empire and the Persian Empire therefore was tempered by geography and geopolitics and had little significant impact on the developmental performance of the two empires.

In sum, the gigantic oriental gunpowder empires were largely non-competitive towards each other. They did not threaten the survival of each other, though there might be non-military contacts or minor or brief military contests. It seemed that the equilibrium would persist. Yet, concomitant with the gunpowder military revolution were the advances in maritime technology, which included the use of the compass and the building of better sailing ships for ocean going.<sup>195</sup> The geopolitically separated worlds of the different major cultures were coming to an end. The only major Eurasian culture that escaped the fate of being a gunpowder empire with its associated imperial complacency and conservatism was Europe. Europe had a competitive state system and the energy generated by that system was going to disrupt the rough equilibrium among the major Eurasian cultures. Europe was going to knit the different isolated geopolitical systems of the whole world, Eurasian and non-Eurasian, into one global international political system.<sup>196</sup>

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<sup>195</sup> Refer to Cipolla (1966).

<sup>196</sup> Refer to Buzan and Little (2000, Part IV) for the emergence of the modern global international system.

## 5. Europe

In contrast to the experience of the other major Eurasian cultures, the gunpowder military revolution failed to create a pan-European Empire and destroy the European pluralistic international order. Instead, the gunpowder military revolution increased the intensity of interstate political-military competition in Europe by furthering the rise of compact national states and eroding the two imperial powers in Europe, the Holy Roman Empire and the Papacy. The new technology altered the pluralistic but mildly competitive environment of medieval Europe and ushered in, not an imperial order but, a highly competitive state system.

Europe has a highly fragmented geography. Waters and mountains divide Europe into many easily defendable regions each with their moderate size core areas, with no single dominant core area retaining an overwhelming concentration of resources to wage a decisive war on a pan-European scale. The mass factor therefore was smaller in Europe than in the other major Eurasian cultures, given the same military technology. Furthermore, in Europe, partly due to the geographical and political fragmentation, there was no dominant linguistic or ethnic group. This cultural heterogeneity of Europe made unified political administration difficult and costly and further hindered any imperial pursuit. Last but not least, the existence of an offshore England as well as powers external to Europe (such as the Ottoman Empire, Russia and, later, America) also hindered the creation of a single imperial unity. Offshore England and the other external powers repeatedly ensured that all attempts to put Europe under one imperial design would be thwarted.<sup>197</sup> On this point, Montesquieu (1748) observes that:

“In Asia they have always had great empires; in Europe these could never subsist. Asia has larger plains; it is cut into much more extensive divisions by mountains and seas ... In Europe, the natural division forms many nations of a moderate extent, in which the ruling by laws is not incompatible with the maintenance of the state ... It is this which has formed a genius for liberty; that renders every part extremely difficult to the subdued and subjected by a foreign power.” (Book 17, Ch. 6)

On the other hand, all societies in Europe had access to and were familiar with the Greco-Roman tradition, especially after the Renaissance. Classical science and knowledge, including laws and statecraft, were therefore equally available

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<sup>197</sup> Refer to Powell (1999) on the alignment and stability of the international system. Refer to Wesson (1978, p. 111), Kennedy (1987, Ch. 1) and Hui (2005) for a comparative study of how the early modern Europe state system survived while the ancient Chinese state system failed to.

to all. This cultural similarity, together with the absence of a dominant core area, meant that all the major European states were quite equal in relative combined military and economic efficiency. Consequently, despite the larger mass factor due to the gunpowder military revolution, Europe retained its state system and maintained a highly even distribution of resources and capability.

The gunpowder military revolution started to affect Europe in the fourteenth century: cannon were used by the Florentine army as early as 1326 AD.<sup>198</sup> Gunpowder weaponry was first effectively used in the early fifteenth century during the battles of the Hussite Wars (1419-1434 AD). As in the other major cultures, the gunpowder military revolution increased the economies of scale of warfare in Europe. In Europe, from the sixteenth century on, there were series of innovations in military technology that increased the size of armies and the scale of warfare brought about by the use of gunpowder weaponry and associated new tactics, referred to as the military revolution.<sup>199</sup> Armies grew larger, with infantry equipped with gunpowder weaponry playing a more important role.

The gunpowder military revolution transformed the European states, economies and societies. Especially from the sixteenth century onwards, growth in the size of the armed forces and military budget was faster than growth in the size of the population and economy. Between 1530 and 1710 both the total numbers of armed forces paid by the major European states and the total numbers involved in the major European battles increased tenfold.<sup>200</sup> Large standing armies and navies emerged in the 16<sup>th</sup> and 17<sup>th</sup> centuries due to the use of gunpowder weaponry. The use of cannons forced the replacement of medieval forms of fortification by the larger and more expensive fortifications called trace Italian.<sup>201</sup> European states competed with each other to field larger and larger armies and navies, limited only by the resource extraction ability of the state and the size of the economy. Increased scale in warfare increased the financial burden of the state. To meet the requirement of fielding larger armies and navies and extracting more resources for military purposes, the European states resorted to many measures to outperform each other economically, fiscally and financially.<sup>202</sup>

The larger mass factor caused compact, centralized national states to replace their many competitors.<sup>203</sup> Feudalism was abolished. Absolutism became the guiding principle for monarchs. The increase in the economies of scale in appli-

**198** Refer to Haywood (1997, p. 168).

**199** Refer to Roberts (1956), Parker (1976, 1996), Duffy (1980), McNeill (1982), Black (1991), Dudley (1991, 1992), Tilly (1992) and Keegan (1993).

**200** Refer to Parker (1976).

**201** Refer to Roberts (1956), Parker (1976, 1996), McNeill (1982), Black (1991), Dudley (1991) and Porter (1994).

**202** Refer to North (1995, pp. 13-17; 1998, pp. 16-19).

**203** Refer to Spruyt (1996).

cation of violence and coercion reduced state costs in suppressing local feudal resistance, and facilitated the enforcement of property rights enforcement in centralized nation-states.<sup>204</sup> Consequently, the race for a larger economy and revenue to support the larger military led to a larger state and greater state intervention in the economy and the rise of centralized absolutist national states.

Organized around a major economic core area, the national states of England, France and Spain defeated the many surrounding feudal principalities and expanded at their expense. Alliances of cities, such as the Hanseatic League, or loosely organized empires, such as the Holy Roman Empire or the religious transnational empire of the Roman Church, ultimately lost out to the centralized and compact national states which had greater fiscal extraction capacity and greater combined relative military and economic efficiency. The rise of the national states and the diminishing relevance of the two imperial powers led to a more even distribution of capability and a pluralistic international order in Europe. Consequently, conservatism receded. First it was the Reformation which challenged the traditional authority and wisdom of the Church. Then further cultural liberalizations arrived, such as the Enlightenment movement. The spirit of scientific enquiry as well as creativity in arts and humanity prevailed over the conservatism of traditions and religious doctrines.

With the medieval even distribution of capability preserved or even enhanced, the larger mass factor of the gunpowder military revolution increased the intensity of political-military competition in the European system. Defeats in wars became more costly. Weaker states or principalities were weeded out at a faster speed. Large centralized sovereign nation-states advanced at the expense of the motley landscape of feudalism and the number of principalities declined as the gunpowder military revolution proceeded. The size of political units grew as the feudal order retreated, because the smaller princely states and the city-states were too small to exploit the greater economies of scale afforded by the gunpowder military revolution. By the late fifteenth century and early sixteenth century, with the French and Spanish invasions of Italy, the mini-state system of Italy ceased to exist independently and was subsumed into the European state system. With a greater mass factor, political and military contests within the European state system became more frequent and decisive.<sup>205</sup>

The gunpowder military revolution failed to create a pan-European empire. Attempts to unite or dominate Europe were thwarted again and again. Charles V the Holy Roman Emperor of Habsburg failed; so did Louis XIV, Napoleon, Wilhelm II

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**204** Refer to Tilly (1975, 1992), Duffy (1980), Hechter (1980), Cohen, Brown, and Organski (1981), Best (1982), Black (1991), Anderson (1992), Downing (1992), Porter (1994) and Parker (1996).

**205** Refer to McNeill (1982), Dudley (1992), Tilly (1992), Keegan (1993) and Parker (1996).

and Hitler. Instead, the more decisive new military technology locked the European sovereign nation-states in a seemingly perpetual and intense interstate rivalry, both on and off the battlefield. Consequently, a larger mass factor with a highly even distribution of capability generated higher relativist concern. Furthermore, there was no extreme power-induced risk attitude to distort decision making since the distribution of capability in the European international political system was highly even. Without the inhibition of imperial conservatism due to an extreme risk-averse power-induced risk attitude, the higher relativist concern generated by the intense European interstate power struggles ran free to propel forcefully the cultural and economic advancement of Europe.<sup>206</sup>

The absolutist states formulated forward-looking policies; statesmen, scholars and private individuals produced guidance for public policy and published exhortations to purposeful development such as "growth programmes" or virtual national plans. An example of the latter is Phillip von Hornick's *Austria Over All, If She Only Will* (1684).<sup>207</sup> Another good example is Friedrich List, who advocated the protection of infant industries to facilitate the industrialization of Germany as a counterweight to the economic dominance of England. The English measured themselves by their successful Dutch cousins. A seventeenth century tract on economic improvement was entitled, *How to Beat the Dutch without Fighting*.<sup>208</sup>

The European states' concern for fiscal strength and economic might led to the rise of many intellectual schools such as mercantilism, cameralism (which as the German counterpart of the French mercantilism), physiocracy and ultimately, classical economics. Amidst such a competitive international environment, mercantilism emerged as a school of thought and became popular, especially among the policy-making circles. Mercantilism proposed the subjection of all economic interests to the needs of the state or kingly power, and was especially concerned with the need to replenish and maintain the state war chests to finance the military.<sup>209</sup> France, under Louis XIV, applied mercantilism most thoroughly. The ideal model of mercantilist policy was France under Colbert, the Minister of Finance of France from 1665 to 1683 under Louis XIV. He improved the state of French manufacturing and brought the economy back from bankruptcy by raising tariffs, encouraging major public works projects, improving roads and canals, increasing the indirect taxes from which the privileged could not escape, establishing new industries, protecting inventors, inviting in workmen from abroad and prohibiting French workmen from migrating. He also founded the Academy of Sciences as well as other academies.

<sup>206</sup> Refer to Jones (1981, pp. 113-119).

<sup>207</sup> Refer to Wesson (1978, pp. 181-185), Jones (1981, p. 134) and Weiss and Hobson (1995).

<sup>208</sup> Refer to Coleman (1961, p. 45) and Wesson (1978, p. 182).

<sup>209</sup> Refer to Heckscher (1955), Wesson (1978, p. 136) and Webber and Wildavsky (1986).

French industrial output and economy grew considerably under Colbert and France became the dominant power in Europe.

The practice of mercantilism was not restricted to France. Most Western states embraced it to a certain degree, including Sweden, Courland, Denmark and Prussia. Colbert's policies also inspired those of the first treasury secretary of the United States, Hamilton.<sup>210</sup> Even the liberal and *laissez-faire* market-oriented Britain undertook enough state intervention in the economy for it to be labeled 'parliamentary Colbertism'.<sup>211</sup> Good examples were the Navigation Acts, which protected the British shipping industry. In fact, given the greater efficiency and fiscal capacity of the British state, Britain practiced mercantilism far better than any other European state, with the possible exception of France under Colbert.<sup>212</sup> This was perhaps not surprising, considering that London merchants held political power in the English parliament. This meant that commercial interests were able to press for the formation of courts to try and hence control backsliding officials. In contrast, corruption ran rampant on the European continent and greatly compromised state capacity. Britain became decidedly more protectionist in the era of William III, with expanded mercantilist policies to protect both home and colonial markets, in particular the infant linen and silk manufacturing industries.<sup>213</sup> Mercantilist policies helped to turn Britain into the dominant trader and military power globally.

An important cause for the rise of England was the early consolidation of the centralized national state. The centralized state of England aided the development of the capitalist economy through its early sponsorship of a legal framework friendly to the functioning of the market economy. Consequently, the English common law system developed precociously ahead of her European continental counterparts and with Anglo political and economic influence, spread to other parts of the world to become the most important functioning legal system today. On the other hand, the lack of or late development of a powerful centralized state in France, Italy, and elsewhere delayed and hampered development of capitalism on the European continent itself.<sup>214</sup>

Mercantilist policies helped national economies to modernize, with many of the policies explicitly designed to develop an industrial base. The mercantilist spirit caused the rise of the service state.<sup>215</sup> Rulers, whose pursuit of power and glory drove them to prepare for war, began to do so by actively improving

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210 Chernow (2004, p. 170).

211 Refer to Weiss and Hobson (1995).

212 Refer to van Klaveren (1969), Brewer (1989) and Weiss and Hobson (1995).

213 Refer to Davis (1965) and Weiss and Hobson (1995).

214 Refer to Tigar and Levy (2000).

215 Refer to Bronfenbrenner (1964, p. 363), Landes (1969), van Klaveren (1969), Anderson (1975), Rostow (1975), Tilly (1975, p. 73) and Jones (1981, pp. 134-9).

the economic base critical for power and war. Mercantilist-absolutist regimes introduced new crops, notably the potato, and encouraged settlement of new lands. Mercantilist-absolutist states intervened to help societies to cope with natural disasters and epidemics, as well as supply public services such as fire fighting and the management of lighthouses. They also took measures to codify laws and they established standard weights and measures and unified the coinage. For instance, the French Civil Code of 1804, directed by Napoleon himself, was the most famous of all efforts to codify the laws. The genesis of the modern law codes however was probably the Prussian code, directed initially by Frederick the Great, which was in effect until 1900.<sup>216</sup> All these measures reduced transaction costs and boosted the economy. In contrast, this drive to trade and govern well for the sake of greater wealth and revenue was conspicuously absent among the leaders of the oriental gunpowder empires or the ruling elite of the states of noncompetitive state systems in Southeast Asia, America, Africa, Australia and Oceania. Wesson (1978) observes:

“.....While Asiatic emperors have been quick to despoil riches as soon as they become tempting, European kings have been able to do so only under some restraint and at considerable ultimate cost to their power.....” (195)

The competitive international environment of Europe produced many diligent rulers, of whom Frederick the Great of Prussia was among the more famous. In contrast, the lethargic empires produced many rulers who had contributed next to nothing to their state or society. The Shen Zong Emperor of Ming China (1563-1620 AD), for instance, was absent totally from his court and had no involvement in the administration of his state for over thirty years.<sup>217</sup> Such contrasts give a good picture of the different effects that political military competition or the lack of it had on Europe and the other major Eurasian cultures.

Amongst European states, the constant jostling for power, position, and prestige in an insecure competitive state system generated an atmosphere propitious to improvement. Statesmen and public leaders were continually spurred by the need to improve at the price of their comfort, in marked contrast to the opulent courts of China or harems of Persia. Every advance of a rival was seen as a threat and a powerful goad. The entwined and competitive international system of Europe provided forceful prodding to keep European states and societies from complacency, preventing the rot of stagnation, decline and decay

<sup>216</sup> Refer to Kempin (1990, p. 113).

<sup>217</sup> Refer to Huang (1988).

that plagued the secure and entrenched gunpowder empires of the other major Eurasian cultures.<sup>218</sup>

In their efforts to outdo each other, the European states goaded each other into the great cultural, economic, political and social achievements that define the industrial and modern age.<sup>219</sup> The interstate rivalry caused the European states to try to outdo each other in almost all fields of human endeavor: overseas exploration, manufacturing, scientific enquiry, technological innovation, as well as improvements in law, public administration and the overall institution of the state. The effort of Cardinal Richelieu to create a great and powerful central government in France, the mercantilist policies of Colbert, the financial innovations of England such as the creation of Bank of England—all have their origin in the interstate great power rivalry of Europe.<sup>220</sup>

France was driven by its rivalry with England during the Napoleonic wars to promote manufacturing. In addition to the powerful stimulus of demand for industrial goods due to the war, another impact upon France's development was Napoleon's personal undertaking, in an effort to meet the British challenge, of the implementation of many policies and incentives to encourage inventions. Similarly, in her rivalry with Frederick the Great, Maria Theresa of Austria undertook many measures to improve the power of Austria relative to Prussia, including the modernization of laws and public administration. The best-known story of such leader-driven modernization is Peter the Great, who traveled through Western Europe, especially the Netherlands, to learn western secrets so as to strengthen Russia. His forceful westernization and modernization of Russia made it a great European power. The remark of Mokyr (1990) gives a good overall picture of Europe at the time:

".....Western technological creativity rested on two foundations: a materialistic pragmatism based on the belief that the manipulation of nature in the service of economic welfare was acceptable, indeed commendable behavior, and the continuous competition between political units for political and economic hegemony....." (302)

The intense interstate rivalry spilt over to cultural and educational arenas.<sup>221</sup> Shattering the pretensions of Spain in the sixteenth century inspired

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218 Refer to Gibbon (1932, Ch. 38, II) and Wesson (1978, p. 182).

219 Refer to Weiss and Hobson (1995) and Pollard (1998, pp. 223-237), Hartwell (1998, pp. 239-241) in Bernholz et al. (1998).

220 Refer to Rostow (1974), Kennedy (1987), North (1998, pp. 13-28) and de Vries (1998, pp. 209-221) in Bernholz et al. (1998).

221 Refer to Stomberg (1931), Roach (1969), Hale (1971) and Wesson (1978, p. 182).

Elizabethan poetry and drama, much like how it was when the Greeks had been uplifted by victory over Persia millennia before. At the beginning of the fifteenth century, the Florentines were uplifted by their successful defense of liberties, observed Baron (1955). But defeat as well as success could inspire change: the debacle of defeat in the Franco-Prussian War of 1871 AD led to increased self-examination efforts and reforms by the French, which also ushered in an efflorescence of art in France.<sup>222</sup>

More importantly, European states were quick to realize the importance of scientific and technological prowess and the education level of the population in determining the power of nations. Aiding this process of renaissance in learning and greater emphasis on knowledge was the use of the printing press, which facilitated the spread of information. In 1455 AD Johannes Gutenberg developed the movable type press, leading to the first printed books.<sup>223</sup> As education became available to the masses, vernacular languages replaced Latin and further aided the rise of sovereign nation-states, especially in post Reformation protestant Western and Northern Europe. Furthermore, competition between European states led to the revival of Roman law, which facilitated centralized administration. The nation-states in Europe therefore developed the characteristics of being well-organized, having strong governments, and possessing distinctive languages and strong national identities. In sharp contrast, the invention of the printing press, which made the spread of knowledge easier, led to a greater effort of censorship and not scientific or educational renaissance in the gunpowder empires of the Middle East, South Asia, and East Asia. Only until 1720 was the printing press used in the Arabian world. Differences in the international environment elicited totally different responses to new technology.<sup>224</sup>

In Europe, national education policy became a political necessity from the eighteenth century on, with education becoming more practical and science-orientated.<sup>225</sup> The Swedish Academy of Sciences, founded in 1739, for example, emulated English, French, and German models with the explicit aim of promoting national power, particularly economic power. Prussia (and Germany) and France (especially from the time of Napoleon) were big players in this race for scientific improvement.<sup>226</sup> After its defeat in the Franco-Prussian War, which ended French hegemony in continental Europe and resulted in the creation of a

<sup>222</sup> Refer to Kavalis (1972), Tilly (1975, 1992), Duffy (1980), Jones (1981, 1888), Kennedy (1987), Rasler and Thompson (1989), Porter (1994), Weiss and Hobson (1995) and Parker (1996).

<sup>223</sup> Refer to Haywood (1997, p. 145).

<sup>224</sup> Refer to Stomberg (1931) and Wesson (1978).

<sup>225</sup> Refer to Roach (1969) and Wesson (1978).

<sup>226</sup> Refer to Wesson (1978, pp. 119, 141-152).

unified Germany, France reformed its education system.<sup>227</sup> Germany in turn responded by spending more on science and education. The nineteenth century German research universities played an important role in the economic ascendancy of Germany in the late nineteenth century. They were so successful that they were emulated by many of the most prestigious universities in the United States and elsewhere.

The same great power rivalry prompted the European states to undertake geographical explorations. Henry the Navigator of Portugal sponsored overseas exploration and he was not alone among the European ruling elite to do so.<sup>228</sup> Two of the major objectives of Henry the Navigator were to surpass the other European sea powers and to outflank the Islamic world which not only posed a military threat but also monopolized the lucrative oriental trade. Through colonial activities and overseas trade, the European state system was expanded to every corner of the globe to become the modern global state system.<sup>229</sup> W. W. Rostow (1960, p. 6, 32) argues that industrialization was “given dynamism by the lateral expansion of world markets, (i.e. the new overseas territories) and the international competition for them” and that “the meaning and impact of this lateral innovation was heightened and given a peculiar turn because it occurred in a system of inherently competitive nation states.”<sup>230</sup> This expansionist energy of Europe contrasted sharply with the lethargy and isolationist orientation of the gunpowder empires in the Middle East, India, China and Japan. The Ming court of China, for instance, forbade further overseas expedition after the maritime undertakings of Admiral Zheng He. Taiwan was not colonized under the Ming Dynasty, even though it had been discovered for a long time and was within easily reached distance off the shore of China.

The destination of this metamorphosis was modern warfare, modern state and modern economy. Ultimately, Europe evolved as a group of states governing industrialized economies, with great industrial and technological power and mass participation in politics. These mass participation states organized and maintained massive armed citizen forces facing each other in long periods of militarized peace punctuated by large-scale conflicts. These changes affected naval warfare and subsequently aerial warfare too, which became even more expensive and more technology-intense, and had even greater logistical and financial demands on the state and the economy than land warfare.

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**227** Refer to Wesson (1978).

**228** Refer to Findlay and O'Rourke (2007) on how military conflicts and geopolitics affected international trade.

**229** Refer to Bernholz et al. (1998, p. 10).

**230** Refer to Findlay and O'Rourke (2007) on how control of long distance trade, overseas market and raw materials aided the Industrial Revolution in Britain.

Intense international competition for power and survival instilled a fierce nationalism in the mass citizen army. With the rise of nationalism after the French Revolution, European states switched from maintaining a mercenary army (incorporating a large proportion of foreigners) to an army drawn solely from its citizens. From this time forward, every able-bodied male citizen was a potential soldier and the whole nation was turned into a war machine. The scale of warfare could hardly increase any further. For instance, in the autumn of 1794, the size of the French army was reported to be 1,169,000, though its real size was probably 730,000, the largest army France had fielded to that time.<sup>231</sup> McNeill (1982) observes:

"This figure (the size of the French army at July 1793) was more than twice that Louis XIV had ever been able to put into uniform. Doubling of the army's size (on the basis of a population only about 30 percent greater in 1789 than in 1700) offers rough measure of the intensification of mobilization for war that the revolution wrought in France." (197).

Other European great powers at war with France evinced a similar increase in army size soon after amounting to total war.<sup>232</sup>

The expectation, preparation and experience of wars led states to enlarge their role in the economy, and that role came to include welfare provision.<sup>233</sup> Total warfare not only required a healthy population and contented workers for the war effort, it also needed a population that could reproduce abundantly to replenish the immense human losses the war generated. That brought in the modern welfare state, an example of which is Bismarkian social imperialism. Soldiers, when on reserve, were workers, farmers or other professionals and thereby contributed to the economy in peacetime and to the military during war.<sup>234</sup> The portion of the population not directly involved in combat was important to the military effort too, as they sustained the wartime economies and contributed to the logistic effort. As the masses were mobilized and organized for war and the industrial economy, their welfare became a major concern. Consequently, European states expanded their welfare programs to care for those now deeply involved in the war effort both on and off the field. A population well-trained and taken care of better supported the military effort and the industrial economy. Furthermore, such a population was less likely to cause civil or industrial unrest or be attracted to radical ideologies

<sup>231</sup> Refer to Best (1982) and Black (1991, pp. 625).

<sup>232</sup> Refer to McNeill (1982, Ch. 6) and Cohen (1985, Chh. 2, 3).

<sup>233</sup> Refer to Bird (1971) for the expanding role of the state in the economy.

<sup>234</sup> Refer Van Creveld (1977) and Cohen (1985).

and political actions.<sup>235</sup> They became more willing to make sacrifices for the purpose of the war effort.<sup>236</sup>

Comparison of 19<sup>th</sup> century European military forces with those of the rest of the world reveals a great discrepancy. The increasingly larger mass armies of Europe, primarily made up of conscripts and reserves, came to dominate the military scene. However, such large citizen armies were not for export to the other parts of the world. Asian rulers could not create such a structure, being too weak to either create or maintain armed forces on such a scale. More importantly, in Africa and Asia, states could not trust the general populace to not attack its rulers if it had the chance.<sup>237</sup>

From 1840 onwards, the industrial revolution influenced how war was conducted as war became industrialized.<sup>238</sup> The use of steam engines, steel hull ships and the railway increased transportation capacity. Machines replaced artisans in the mass production of arms. Arms production was now achieved speedily and in large volumes to supply the ever-growing mass armed forces.<sup>239</sup> A global, industrialized armaments business emerged in the 1860s.<sup>240</sup> The increased scale of warfare and industrialization of war in turn caused the rise of command technology: innovation was directed and planned with an eye on its military implications. States began to pour resources into education, research and development and changes in weapon design accelerated, with greater technological spillovers into the civilian sector.<sup>241</sup> This led to the industrialization of the military, as well as the militarization of industry and society. The state also assumed a greater role in industry.<sup>242</sup> An extreme manifestation of the increasing militarization of society and state was the rise of the highly militarized totalitarian states of Stalinist Soviet Union, Nazi Germany and Fascist Italy.

Industrial, scientific and technological communities related to the military became the pioneers of new technology. These new technologies included advances in steel metallurgy, industrial chemistry, electrical machinery, radio communication, turbines, fuels, optics, calculators and hydraulic machinery. The military-industrial complex quickly evolved into vast bureaucratic structures of a quasipublic character; and decisions of the big arms firms, whether technical or financial, began to assume public importance. The actual quality

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**235** Refer to Goldstone (1991).

**236** Refer to Porter (1994, pp. 158161, 179192, 236239).

**237** Refer to McNeill (1982, pp. 2567).

**238** Refer to Nef (1950), McNeill (1982), Lynn (1993), Weiss and Hobson (1995, Ch. 4) and Bousquet (2009).

**239** Refer to McNeill (1982, pp. 2356).

**240** Refer to McNeill (1982, p. 241) and Kennedy (1987).

**241** Refer to McNeill (1982, pp. 2378, 2924).

**242** Refer to Gerschenkron (1962) and Porter (1994).

of weapons produced by these firms mattered vitally to the rival states and armed services of Europe. Following the wars of German unification, states recognized that technical superiority might bring decisive advantage in wars. Each technical option in arms design carried a heavy freight of political and military implications. Scientific and industrial decisions of the firm concerned both the national interest and the financial future of the arms firm.<sup>243</sup> War had become truly industrialized as industry became no less truly militarized.<sup>244</sup>

Internal security and stability were very important for both war mobilization efforts and industrialization; organization and mobilization of the homeland and occupied territories for the war effort and industrial production required a great policing capacity. The rise of radical ideologies and unconventional warfare accentuated the need for policing capacity. The police force undertook new functions at home and abroad to facilitate the war effort and industrial production, including intelligence collection, counter-intelligence, subversion, surveillance, and the monitoring and manipulation of the population's political thinking and inclinations. Effectively, a professional, salaried and bureaucratic police force, specialized in the control of the civilian population, was established, thereby freeing armies to concentrate on external conquests and international wars. Initially, the army had done most of the work of internal control, but police forces made armies better able to focus on external threats.<sup>245</sup> In sum, to achieve greater national power, the state industrialized the military, militarized the economy and politicized the society.<sup>246</sup>

The transformation the European states went through placed them far ahead of the other major Eurasian cultures in all fields of human achievements, most notably in the possession of overseas colonies and trading opportunities.<sup>247</sup> Given their immense superiority, militarily and otherwise, every corner of the globe was turned into a stage for the Europeans to play out their power games during the 19<sup>th</sup> century. McNeill (1999) observes that in Great Britain in the latter part of the nineteenth century there was:

"..... a new "hard boiled" school of thought which considered the survival of the fittest to be the key to all history and human life, and believed that the future of the Anglo-Saxon race depended on how much of the earth they could seize and settle with British colonists." (480)

<sup>243</sup> Refer to McNeill (1982, p. 292) and Weiss and Hobson (1995).

<sup>244</sup> Refer to McNeill (1982, pp. 3589) and Keegan (1993).

<sup>245</sup> Refer to Chapman (1970), Liang (1992) and Tilly (1992).

<sup>246</sup> Refer to Clarkson and Cochran (1941), Nef (1950), Ardant (1975), McNeill (1982, Chh. 710), Rasler and Thompson (1989), Tilly (1992), Porter (1994) and Weiss and Hobson (1995).

<sup>247</sup> Refer to Manning and McMillan (1979), Ishizawa (1988), Clarida and Findlay (1991), Bhagwati, Panagariya and Wong (1995), Thompson and Modelski (1996), Durkin (1997) and Srinivasan (1998).

Almost unnoticed by the European populace, a series of colonial wars resulted in the significant expansion of the European colonial empires, especially those of Britain, France, and Russia (which expanded eastwards across the Eurasian continent to the Pacific Ocean) in both Africa and Asia.

The industrial revolution and the associated transformation of European states, economies and societies enabled European powers to conduct war with greater efficiency and on a larger scale. Enemies hereto impossible to defeat or subdue could now be easily and swiftly dealt with. The most prominent of these enemies were the two great far flung East Asian powers, unchallenged by Western powers, even in the early nineteenth century, namely China and Japan.<sup>248</sup> The economic might and logistical capacity conferred by the industrial revolution upon the Western nations made it possible for them to challenge both China and Japan. The First Opium War between Britain and China ended the self-imposed isolation of China, when a small British detachment swiftly crushed the forces available to the Chinese emperor. This was the most important demonstration of the superior strength of the European nations. There was from then on, only one geopolitical or international system and it was centered in Europe.<sup>249</sup>

This greater European war capacity rested not merely with more advanced military technology, but with the greater fiscal capacity of the modern state and ultimately, the greater economic might of an industrial society. Qing Dynasty China modernized her military, but not her fiscal regime or economy, and was defeated repeatedly by Japan and the Western powers. On the other hand, after the gunboat diplomacy of Perry ended the isolation of Japan, Japan westernized completely and modernized its political, fiscal, economic and social systems, besides of course its military system. Japan achieved parity in war efficiency with the Western powers soon after Japanese reforms started in 1870s, and was able to defeat China in 1894 and Russia in 1905.

## 6. Conclusions

A cross-sectional examination of the major Eurasian cultures reveals that the gunpowder empires were all stable and secure regimes that controlled an extensive territory or sphere of influence. Within their geopolitical niche, they were practically uncontestable and had nothing to fear, and as a result became conservative, complacent and lethargic revenue pumps. Consequently, the

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<sup>248</sup> Refer to Parker (1996, pp. 153–154) and McNeill (1999, Part III).

<sup>249</sup> Refer to Porter (1994, pp. 1467).

developmental momentum of these diverse lands, a momentum that had accumulated under the medieval fragmented and decentralized political environment, died out. These gunpowder empires remained largely stagnant until forcefully incorporated into the Europe-centered modern world state system. Long periods of peace in their international environment caused the failure of China, Japan, and the other gunpowder empires to produce modern states.<sup>250</sup> Asian trade was shrinking throughout these centuries and the gunpowder empires in synchronized decline.<sup>251</sup> Elvin (2004) describes the puzzle this way:

“Why did major technological creativity fade away in late-imperial China (though skilled fine-tuning and small inventions did not vanish)? Why did the great creativity in medieval Islam, exemplified by Ibn al-Haytham (Alhazen) in optical science and Ibn Khaldun, apparently die away in later centuries?” (34-35)

In sum, the gunpowder military technological revolution significantly affected geopolitics and economic performance of the major Eurasian cultures. The gunpowder military revolution caused a significant increase in the economies of scale in warfare and led to the emergence of gigantic continental size empires in the major oriental Eurasian cultures each with a dominant core area. In contrast, in Europe with her fragmented and multiple core areas geography, the state system was preserved and the gunpowder revolution served mainly to intensify political military competition between the European states. Differences in political military competition brought about by the gunpowder military revolution explains the splendid and explosive advances of the pluralistic and competitive European system and the dull and dismal performance of the oriental major gunpowder empires.

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**250** Refer to Parker (1996).

**251** Refer to Wesson (1967, 1978), Simkin (1968, pp. 258-9) and Jones (1981, p. 170; 1988).

**Musket, Map and Money:**

How Military Technology Shaped Geopolitics and Economics

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