

**EON****Journal of Arts, Humanities and Social Sciences****Volume 01: Issue 03, August 2023****Original Research Article**

# **THE NOT-SO-GREAT DIVERGENCE: ASIAN AND WESTERN WORLD ECONOMY BEFORE 1815, AND BEYOND**

Nathan M. Moore<sup>1</sup>

Received: 24.07.2023

Accepted: 01.08.2023

Published: 12.08.2023

## **Abstract**

Here is an examination of Chinese institutional change and why the debate necessitates a new approach toward studying global economic divergence, one which focuses on a separation of mathematical evaluations rather than technological advancement. Great Divergence discussions and debate are historiographical disciplines that examine state formation in East Asia and its cultural evolution in juxtaposition with parts of Western Europe. The advent of steam power and other technologies in production and transport allowed Britain and other parts of Europe to extend their momentum past Malthusian restraints and separate themselves from “poorer” countries, or so it was largely held in academic circles. But recently, the “California School” of historians like R. Bin Wong, Kenneth Pomeranz, and Andre Gunder Frank contend that China shared several surprising similarities in proto-industrial development with their Western counterparts throughout Eurasia as late as 1750. Dynamics of political, economic, and cultural change that have been taken up by historians of Early Modern industrialization favored a Eurocentric approach to history. So, who is right? My article will add impetus to a new argument by focusing on separate commentary from historians studying Europe’s transition to an Arabic numeral system and China’s insistence on traditional numeric methods. Modernity originated from a new abacus based on a ten-place system calculating numbers as large as 1027, the year some purport it to have first been taught in Europe. Contemporary literacy materials are built on similar education standards. Before 1815, state formation in Europe and China resembled each other because of this and in the years after, Big History settled what had been lost when Chinese labor migration and diaspora to the New World made a hybrid world economy unmistakable.

**Keywords:** Abacus, Emanation, Great Divergence, History of Science, Literacy, Temporality

<sup>1</sup> University of California, Los Angeles  
Email: nathanmmoore@ucla.edu

Understanding the Great Divergence in a new modern, conceptual framework requires historians to advance making a multiethnic society reasonable and add economic integration to the Great Divergence debate. A new rhetorical mode of discourse will go beyond comparing commonly held differences, and rather delve into a classification of key characteristics related to technologies, such as the abacus that arrived in Europe after being in Asia and Rome for centuries. The Great Divergence then did not separate the world as much as it also united it into multiethnic patterns and revived traditional perspectives with the colonial expansion of Asian migrations. Sino-Mauritians are the most glaring example (Carter & Kwong, 2009). Later after the eighteenth century, Sino-Americans arrived in their first wave to the United States. Mahjong, like the abacus's influence, is a Chinese game that spread throughout the world by the early twentieth century when maritime trade among Chinese Americans began. Merchants and other laborers arrived in the United States around 1815. The ancient abacus's use reiterates a striking point as a political forecasting device, which is that global trends did not favor one fragmented nation-state over another but suffered from the analysis of ethnocentric pattern reductions (Brown, 2012). *Abacus and Mah Jong* by Marina Carter and James Ng Foong Kwong make economic consolidation a valuable historical model after Chinese settlement around the world united diffuse techniques in global trade. Fundamental aspects of our reality, which had been brought upon by the spread of the early abacus and games like Mahjong were inherently Asian.

Of the many comparisons that can be made between Europe and China, a fundamental factor must be considered first, and it is ecology or the difference between the heaven beads and the Earth beads for Chinese abacuses. It was, according to the multi-faceted work of Kenneth Pomeranz, a mix of ecology, environment, and human nature that led Europe out of its development slump in the centuries before 1800 (Pomeranz, 2021). By the time the West had acquired its New World territories, making way for resource-laden fields of coal, slave labor, and agency in the global market, China was languishing in its interior probably due to inferior calculations. This is due in part to the Yangzi Delta that provided an inverse effect to so much international trade. Instead of scouring for overseas resources, they would produce what they needed within their territory. Europe, on the other hand, learned from the abacus to begin complex calculations on paper, without the confusion of heaven and Earth beads. In Russia, the schoty, Russia's version of the abacus, did not divide between heaven and Earth (Moon, 1971). Authors Robert Brenner's and Christopher Isett's article, "England's Divergence from China's Yangzi Delta: Property Relations, Microeconomics, and Patterns of Development," adds to the argument that Europe's divergence from China was not an aberration in history, but a mere facet of Malthusian terms (Brenner & Isett, 2002). The perspective they take contests with the "California School" and suggests that China's comparability was just part of a dual Malthusian pattern both China and Europe shared. Europe was better at its movement of gears and wheels, and of bones (Li Di & Williams, 1992). This explained Europe's divergence through data that began as far back as the Medieval period.

During the middle of the twentieth century, education and literacy materials were being distributed to educate young Americans about recent contact with the Chinese through missionaries, letters, and diplomatic correspondences that explained technological acumen in the region which had existed since those Medieval times. Missionaries were still using the abacus to calculate their accounting duties. One of the most notable was the American Board of Commissioners for Foreign Missions. One of their promotional films was *Letter from China* in the 1940s distributed by Periscope Films. The film takes place in Fuzhou, China. The film shows Fuzhou through a "Letter to Dad" from Reverend E. Walter Smith as he occupies a rural airfield and a Douglas DC-3 plane brings missionaries to the Fujian Province. Another film, *Children of China*, was produced in the early 1940s by Encyclopedia Britannica with Dr. L. Carrington Goodrich of Columbia University. One emphasis of each of these films was to show how empirically similar life was in China to the West. Additionally, educational reform in the United States relied on diversifying its curriculum with information such as this (Zhang, 1996). Without a uniform national standard for mathematics education, it was common to fund reform policy with "transformative research" techniques.

Making a new Great Divergence literature based on a history of calculating devices means examining what already exists on the issue and how it can be incorporated into



present research discussions. With Europe's access to slave labor, resource-rich peripheries, and mercantile expansion, the East had no obvious counterpart. If we consider Pomeranz's depiction of North China's hinterlands where rival Mongolian steppe people kept them engaged in an isolated rivalry, the most China's late imperial regime could point to as a comparison would be these rival frontier peoples. South China's Guangzhou region also continued a legacy of regional development – rice to the south and dry-farming in the north. Yet, the “Origin and Development of the Chinese Abacus” by Shu'Tien Li demonstrates that like many Chinese customs, the design and function of the abacus remained unchanged for around 1,300 years (Li, 1959). Japanese modifications and European alterations were next in line. In the Yangzi Delta, China had direct non-market access to their means of production. The English experience of a Smithian dynamic of economic evolution was driven instead by land scarcity. This preceded the Qing period of landlords, who lost the effective ability to vary rents with supply and demand and use the abacus for accounting. Whether it was East Asian “paddy zones” or colonial American “cotton belts” of production, valuations thrived in either case. In turn, peasant property was heavily taxed, and the average size of household plots in China remained below 5 acres due to population growth (Brandt et al, 2014). Such degrees of taxation get assumed to justify peasant poverty as a feature of Chinese society, but Thomas Rawski has done comparative studies showing that the Chinese were relatively undertaxed compared to other parts of the world despite having similar living standards; this is one reason for statistical difficulties in the modern era.

To further critique the “California School's” Sinocentric view, Brenner and Isett assess Pomeranz's use of the “global conjuncture” concept by focusing on separation rather than conjuncture. Separation is what the Great Divergence principle relies on most, but Brenner and Isett shift that separation as far back as the late Medieval period instead of relying on Chinese parity with the West. Between 1430 and 1550 the grain-buying power of Europeans declined sharply. It did not return to 1350 levels until 1840 or later (Pomeranz, 2002). Similarly in the history of the abacus, we can shift its origin to as far back as the Babylonians in 600 BC (Melville, 2001). The word abacus itself comes from the Phoenician word abak, meaning sand (Menninger, 1969). The Chinese numbers compare well with Europe, as Pomeranz accurately describes, but Pomeranz also writes that the rice-buying power of day laborers' wages fell from 1100 on and returned to prominence between 1500 and 1750 (Vries, 2010). What is more important is acknowledging the virtues of state formation in the comparison between the West and East. Unlike Europe, China was not only following a tradition of ecological change at home, but it was also having an inverted response to global trade, hence its lack of peripheral territories. It is clear from archival records as late as the 1940s that state-initiated efforts to formalize the practice of local governance began in the last decade of the Qing dynasty. The Guomindang regime strengthened these efforts with limited success. Only after 1949 did the new communist regime succeed in extending the reach of the state to local society at the village level and got more publicity in the form of U.S. missionaries and films.

Ancient history tells us a story of capitalism exemplified by a Mesopotamian “Silk Road” but what more can it say about India? From as far back as China's Han Dynasty, 206 BC, there was an effort to standardize the currency, expand market relations, and promote long-distance trade carried out by merchants. But it was also Hindu base ten that arrived in Spanish logarithms between the tenth and fifteenth centuries (Kepf, 1961). Wilhelm Schikard wrote letters to Johannes Kepler about using calculation and mechanics in tandem. A calculator such as Schikard's also relied on John Napier-type logarithms that made colonial expansion a feature of accounting (Taton & Flad, 1949). China's preponderance for an authoritarian centralized state has been less examined under these auspices. Capitalism worked in Europe, but it stagnated in China due to timing. Historians have discussed China's “commercial revolution” in the eleventh and twelfth centuries when pathbreaking technological innovations: gunpowder, the compass, and the printing press happened. Much of this was continued when China was ruled by the invading Mongols and then later by the Ming dynasty (Kocka, 2017). In the late twentieth century another “commercial revolution” spawned an analogous cascade of development in China with innovative technology (McCord, 1993). Europe was fortunate enough to have access to resource-laden market dynamics when it did, and it did, by accessing the reservoir of New World territories during its Industrial Revolution phase. This inevitably persisted by influencing their beliefs about world markets from a European point of view. Prasannan Parthasarathi

in *Why Europe Grew Rich and Asia Did Not: Global Economic Divergence, 1600–1850* trusts upon Eurasian pressures and a preponderance of Indian and Chinese cultural exchanges with Britain, whereby Bengal and South India grew into its unique literature and economy (Parthasarathi, 2011). Indians were not yet a dynamic migration power, but today stands as the highest-earning ethnic group in the United States.

To understand why China did not achieve a comparable Industrial Revolution, historian Victoria Tin-bor Hui harkens back to the Warring States period in Chinese history beginning in 656 BC. During this time in China, there was a system of sovereign territorial states like Europe in the Early Modern period, AD 1495–1815 (Hui, 2005). In both cases, this formative period witnessed war, the formation of alliances, the development of a centralized bureaucracy, the emergence of citizenship rights, and the expansion of international trade. Partition theory is akin to the Great Divergence in that comparable to number theory or combinatorics, a positive integer of  $n$  also is a sum of positive integers that differ only in their order.  $1 + 3$  or  $3 + 1$  get the same result. Using an e-abacus diagram, researchers can plot the separate references a digital humanities scholar can decode, deciphering what English letter coincides with a Syriac language letter, one of the oldest languages in the world (Ali et al., 2020). The common Sinocentric perspective maintains that China was destined to have authoritarian rule under a unified empire, it is just a matter of finding out when it began. To put this into context, some adages have a meaning diluted by time, such as “Middle Kingdom.” Hui points to the correct use of the Chinese word *Zhongguo*, which refers to the “Middle Kingdom,” but is defined as “central states”: *Zhong* means central, and *Guo* means states. Informal checks and balances are necessary to create accurate comparisons. Furthermore, these checks and balances encourage accurate comparisons with Europe that make “time” a variable that needs to be considered. Hui does this by avoiding the common parallel of Early Modernity and instead compares Early Modern Europe to ancient Chinese history. The ancient Chinese system emerged from the ruins of a prior feudal order. Zhou formed a feudal hierarchy after conquering Shang around 1045 BC, and the Zhou hierarchy eventually crumbled in 770 BC after a barbarian attack forced them to relocate to Loyang from Hao, eastward. Independent Guo began to keep court chronicles (*Chunqiu* or Spring and Autumn Annals). Historians of China generally date the beginning of this multi-state era to 770 BC. Hui dates the onset of the ancient Chinese system to be in 656 BC and ended at the establishment of the universal empire in 221 BC (Hui, 2005). The concept of Waltzian Realism, created by Kenneth Waltz, also known as neorealism, argues for a structuralist view of state formation, something that is cycled in ancient Chinese dynasties toward unification before Europe had the opportunity to do the same, thus advancing the claim that they were farther ahead than previously thought.

Joseph Schumpeter did not only use the term capitalism in his research, but he was also deeply influenced by how the economy changed. He found this in innovation. He developed his theory of the business cycle where innovations trigger growth with more and more entrepreneurs joining in. Max Weber, likewise, attributed special significance to a “spirit of capitalism” that Weber derived from the Calvinist-Puritan ethic beginning in the sixteenth century. Chinese merchants were not wholly convinced by the opium trade, for example, and Confucianism spelled the end for Dutch and English traders in Hong Kong’s port of entry in the Early Modern world in protest. By contrast, Early Modern Europe failed to deliver on the promise of a single dominant state. The Chinese trajectory that had a logic of balancing, domination, rising costs of administration, self-strengthening reforms, divide-and-conquer strategies, and ruthless stratagems placed them into the logic of domination fully. Why not Europe? Europe failed because it did not follow the logic of domination entirely. Jason Del Gandio in “From Affectivity to Bodily Emanation: An Introduction to the Human Vibe” wants readers to fulfill the phenomenological paradigm of human experience (Gandio, 2012). I want to focus on the scientific paradigm instead, and to do that means accepting a novel body politic that is not part of a human body-environment relationship as Gandio wants to understand. Abacus history tells us emanation starts from an epistemology of fragmentation, and thus the epistemology of emanationism notices sameness across cultures over time. Temporality was on the side of mercantile expansion in Europe and the West while the pursuit of mercantilist policies helped construct roads, bridges, and canals, and promoted nascent industries critical to Europe’s military power abroad before it witnessed Asia’s association with modernism.

The Industrial Revolution was a distinctly English phenomenon, but it innately speaks to the fragmented reality of Europe, and Prussia in Eastern Europe, and why Baruch Spinoza's association with mathematician Johannes Hudde and anatomist Theodor Kerckring made calculations a rational quality. British industrialization spread to the rest of Western Europe as it practiced expansion abroad also the epistemology of emanation for both Western and later, Eastern society. To Eurocentric historians of this debate, they refer to Europe's age of discovery as being a latecomer to international trade. It is rather ironic to note that, aside from the apparent challenge Sinocentric scholars present in China's comparable reputation in the Early Modern world; the Portuguese, Spanish, Dutch, and English sequesters abroad made Joint Stock Companies and finance capitalism the norm all over the world. For them, and conquistadors like Hernan Cortes, it was about supply and demand. Agrarian capitalism and mining were not new to the Chinese mind, but they did interrupt what China considered to be a central status on the world stage. Europe leveraged English industrialization and even before 1800, were forging their dynastic disputes into competition for valuable silver deposits, land, and spices to name a few. The 1602 Dutch "United East India Company" was one of, if not the most important colonial trade apparatus. The Dutch Republic and the English constitutional monarchy established after 1688-1689 a consolidation of public debt to help pay for all these excursions. In Europe and China, a framework of the household economy helped make clothing and other manufactured goods from rural or countryside areas and abacus accounting did all of the work. European artisanal production by the fifteenth century resembled the moral doctrine of other authors of stature, namely Baruch Spinoza, who inspired new enlightenment virtues they saw in themselves for others. Capitalism became the dominant principle in England and the Netherlands. There was also an increase in reading skills among urban populations, and a growing dissemination of newspapers, books, and listings of all kinds.

Cycles of silver gave birth to modern world trade using a universal currency, renewing emanationism and the epistemology of calculations. Before the Industrial Revolution, authors Dennis Flynn and Arturo Giraldez made certain to link Europe's "late-blooming" with the nascent sixteenth century alongside Asia. Their thesis is that Europe versus non-Europe discussions do not need any more reinforcement, but rather they want the field to focus on the highly integrated global economy that has existed since the sixteenth century (Flynn and Giraldez, 2002). Their article focuses on two significant cycles in the evolution of the global silver market. The first phase – The Potosi/Japan cycle – spans the 1540s to the 1640s and generated the birth of global trade, and a second silver phase out of fragmentation – The Mexican Cycle – which covered the first half of the eighteenth century and was related to significant demographic growth in China, also attributable to new crops in the Americas (Flynn and Giraldez, 2002, p. 392). These two silver cycles bolster the authors' contention that a highly integrated global economy has existed since the sixteenth century and that all analyses of world regions should recognize an interconnected economic, demographic, and ecological force on a global scale. Arbitrage Trade created deficits that China counterbalanced with mercantilist trade. Chinese traders exported some non-silver products like silk and ceramics to make up for this arbitrage trading. While it is true that Chinese porcelain was the most universally admired and imitated product in the world, the 1540s to 1640s could be viewed in terms of "multiple arbitrages," rather than a single arbitrage. The silver market co-existed with silk, ceramics, and other non-silver goods.

During the Mexican Silver Cycle of 1700–1750 and American Crops surge, three changes occurred in the eighteenth century that set the course of China's subsequent history of calculations around the world: The establishment of Europe's presence globally, the doubling in territorial size of the Chinese empire, and the doubling of the Han Chinese population. New World crops contributed to massive ecological changes not only there, but around the world and in China (Hämäläinen, 2010). By the eighteenth century, sweet potatoes were grown in all the provinces of Yangzi and Sichuan. These and other crops spread through the intermediaries of the Philippines, and other Pacific Islands. There was a massive Mexican-Peruvian silver boom in the eighteenth century that more than doubled the production of the Potosi-Japan silver cycle of the 1540s to 1640s. Eighteenth-century silver flowed to Asia in the most successful form of global monies in history, which was the Mexican pesos. Also, the *Dos Mundos* and *Bustos* pesos. The extensive royal buildings that grace Madrid today stem from the eighteenth century during the Mexican Cycle of silver production. The next great emanation cycle

was the Tea and the Opium Cycle. The Battle of Plassey in 1757 led to British control of Bengal and represented a fundamental change in Asian trade patterns. The three decades of the 1750s, 60s, and 70s marked decades of British rise to power and a French-Dutch decline. Opium and tea became the high-profit market and remained so for quite some time. It is not wholly unique to find some historians, like Andre Gunder Frank, get accused of switching their viewpoint after encountering China, the “ultimate sink” of global trade patterns and the world’s money, silver (Arrighi, 1999). Giovanni Arrighi exposes Frank’s Eurocentric theory early on in his career. Examples include *World Accumulation, 1492-1789*, and *Dependent Accumulation, and Underdevelopment*, both of which were published in 1978. In his book *ReOrient*, Frank wants us to deconstruct the assumptions of Western social theory and change our perspective (Frank, 2008). Instead, he deduces through his research that Asia was displaced from being the center of the world economy after 1800.

Andre Gunder Frank is also part of this “California School” of Sinocentric thought. What Frank uses as his framework is a theory on the rise of the West that is based on three contentions: the first is a free-ride on the Asian-train argument. Next, Europeans obtained money from gold and silver mines found in the Americas. And lastly, digging up silver led to other profitable businesses, like lucrative slave plantations. What Europe bought into the wealth of Asia itself, buying commodities that they resold as a profit in Europe, Africa, the Americas, and Asia, was not a way for Europe to profit from the intra-Asian trade but from calculations, most of which the abacus enabled earlier in history. Europeans could hold out in Asia for three centuries but were unable to position themselves in the global economy because silver cycles benefitted Asian economies more, ironically. Or, as other historians contend, it was more like the “ultimate sink” argument that pervaded until 1800 when China no longer bore the brunt of a global trade imbalance. It becomes clear to see how the decline of the East preceded the West. But why were Asian polities weakening? Frank argues that Asian successes permitted the decline of the East and not European penetration. Industrialized economies in Europe used import substitution and export promotion to create a new hegemonic order. There was a rise with Europe at the center, not China, and a rise in Capital. After 1750, the expansion of the global economy was generated by labor, land, capital, and labor-saving technology. Qing China was caught in an all too familiar “High-Equilibrium Trap” Pomeranz describes.

If it is true that Europe experienced advantages along with Malthusian terms and it was China’s preponderance to encounter traps or hindrances, what gave the West such a dominant trajectory toward expansion after 1750? David S. Landes claims that sometime in the medieval and Early Modern era, Europe took a decisive path apart from other civilizations (Duchesne, 2005). *The Wealth and Poverty of Nations* reinforces the theory arguing that temperate places in Europe and North America were afforded an advantage (Landes, 1998). Tropical climates, in contrast, simply could not work as hard or efficiently as their counterparts in Europe and North America. The affordability of abundant natural resources and a refusal to let them go to waste is part of a theme that highlights the Eurocentric wisdom that evaded other nations. Part of Landes’s thesis is that New World conquest and imperialism were not immoral, but stimulated capital, industrial commerce, and trade in a way that accounted for the emanation of New Worlds from fragmentation. Economic historians have rallied behind Landes in some respects, by echoing the tenets he puts forth of western history not building off the back of the rest of the world, but by moving ahead of the pack with gears, widgets, and clock calculations.

In the article, “A Grand Tour of Exotic Landes,” Charles Tilly’s review of Landes’s book *The Wealth and Poverty of Nations* aims its critique at the questionable use of statistics, a problem compounded by diverse use of the abacus’s methodology (Tilly, 1999). Tilly writes, “he deploys statistics when they suit his arguments but overrules them when they do not,” suggesting that Landes’s summary of technological change is more biased than he would care to admit. For example, Landes compares per capita product figures for Mexico, Barbados, and the contemporary United States in 1700, 1800, and 1989, but uses a footnote to mention that these figures are but “figments” (Landes, 1998, p. 292-309). Despite the warning, he then assures his readers that his Sinocentric opponents are overstating the importance of said statistics. And in another stroke of academic fate, Landes is accused by Tilly of using analyses he derived from his previous publication *Unbound*

*Prometheus* from 1969, which is a criticism Andre Gunder Frank had to endure after releasing *ReOrient*. For Eurocentric historians, the condemning association with this side of the debate may spell disaster. To call the West a “late bloomer” misses the mark on arguing for a British or Albion advantage only after the Industrial Revolution. Instead, Landes must acquiesce to looking at the roots of expansion both theoretically and chronologically. Though unlike Victoria Hui who used Ancient Chinese state-formation as her example, Landes derives his argument from the prevalence of ecological circumstance, or better put, anomalies. It may be hard to find a historian who would have said with certainty that the “statistics” or an analytical study of Europe during the Early Modern period would have proposed Europe was destined for exponential expansion and China to a centralized authoritative regime. The only explanation for that would have to be accidents, luck, or at least for Landes, a retreat away from global statistics.

Rather than be hampered by political correctness, Landes takes the moral high ground in his argument, just as Spinoza would as an Enlightenment rationalist. He does it by using economic explanations and framing nature’s inequalities as unyielding next to human dependency. After all, it is not Europeans’ fault for countries that were poorly situated in tropical or semi-tropical climates near the equator. Richer countries are in temperate zones, Landes reminds readers. Donna J. Guy, author of “The Morality of Economic History and the Immorality of Imperialism” gives insight into the reasoning of David Landes (Guy, 1999). He accepts the Max Weber theses that Protestantism, and Calvinism, more specifically, were at the forefront of industrialization compared to Muslims, Catholics, Jews, and other non-conformists such as Quakers or the diversity of worship related to Judaism. Max Weber’s thesis applauded the efforts of these religious reformers because if it were not for them, the Industrial Revolution would not have had the same enduring impression on the human psyche. Invention and religious temperament turn the arguments of a morally corrupt Europe into a contradiction, for it was the Protestant ethic that instilled values of respect, honor, and order into the cultural consciousness. If there is any connection between what imperialism inflicted on indigenous populations as an immoral ethic and the economic history of the West, then it should be reconstituted to fit the parameters of more than statistics. And this is exactly what Landes ventures out to do. Landes relies on a counter-moral argument which then positions the Sinocentric side of this debate into a conundrum of a “numbers only” approach. In the case of *The Wealth and Poverty of Nations*, Landes pardons the rise of Western nations who were merely acting out a natural, rational means of making a profit, arguing that in that case there is no real culpability there. The only exploitation was of a clear opportunity for the taking.

Joel Mokyr argues that Europe’s rise out of stagnation was not a complete accident. Mokyr is part of this eclectic group of historians seeking explanations for Europe’s divergence (Mokyr, 1999). If it was not a happenstance of coming upon good economic fortune, then what was it? Mokyr agrees with the common consensus that Europe was largely lagging behind the rest of the world before the Industrial Revolution. According to Mokyr, Europe was a relatively backward, poverty-stricken region. Interestingly, this may be a stipulation that supports Europe’s great divergence. China, by comparison, had already demonstrated its lead, but that same pace could not be sustained. Subsequently, when Industrialization arrived in Europe checks on authoritative power grew the trend toward led to more expansion. This points to a fortuitous slump or equilibrium trap. Also, two historical giants, Mancur Olson, and Douglass C. North seem to have had little intellectual influence on Landes, who does not list them in his bibliography.

Formal economic histories of Chinese state formation use the concept of institutions to their advantage, but emanation proves better when attempting to understand it as a history of calculations. Unlike David Landes’s overreliance on culture, economic historians such as R. Bin Wong or Morris Bian situate their arguments in the history of patterns. There are two main analytical challenges in comparing European and Asian political economies: first is comparing closely European practices with those found elsewhere, and second, observing more carefully the economic connections forged in the Early Modern period (Wong, 2002). Accurate economic histories regularly encounter parallels, even for authors of disparate intellectual opinions. It is the data that matters most, and institutions are what harbor the social confluence of groups. In his article, “The Search for European Differences and

Domination in the Early Modern World: A View from Asia,” R. Bin Wong reiterates that the world before 1800 was overwhelmingly agrarian, and production possibilities were largely the same everywhere. It was either through expansion or an increase in the rates of factory production that enabled societies to grow. China was not alone in its pursuit, between 1500 and 1700, Japan was also increasing its productive abilities and was rapidly urbanizing its population with calculating societies and people who knew math well. Production centers were in areas of high demand with regional specializations such as silk, lamp oil, and soy sauce in Japan’s Osaka, Kyoto, and Kobe cities. An entire maritime trading network around port cities flourished in southwest Asia. China’s commercial revolution was taken up in places such as present-day Shanghai where cotton textiles, silk, and rice were central nodes and offshoot items such as salt, fish, bamboo, pottery, metal goods, embroidery, tobacco, and vegetable oils made up widespread commercialization. And to solidify the production patterns between Asia and Europe one only must look to the logic of exchange. China’s “native banks” were financial institutions driven by Smithian logic and divisions of labor before Europe (Wong, 2002). The very first *zhangju* looks to have been established in 1736 by a Shanxi merchant in Zhangjiakou who committed 40,000 *taels*. It acted as a bank for loans or deposits and helped facilitate Russian-Chinese trading, a precursor to one of the major border frontiers of trade in contemporary China.

To better understand how a sufficient economic framework can explain state formation it is crucial that the historiography address periodization. If it is not clear by now, it should go without saying that the East was in many ways a suitable rival to Europe in the Early Modern period. Morris Bian has taken the common assumptions about this temporal dichotomy and presents a unique narrative of Chinese economic history that is neither Early Modern nor ancient, rather it spans from 1937 to 1957 (Bian, 2015). In it, Bian traces the development of industries associated with the Chinese Communist Party (coinciding with Kuomintang), doing away with the commonly held myth that China borrowed its planned social-economic system wholesale from the Soviet Union. The Sino-Japanese War from 1937-1945 was a crescendo in a tumultuous history after the fall of the Qing Dynasty in 1911. As was the case in the Early Modern period, Japan’s proximity to China made it a fierce competitor. It also created a distinct pattern of factory formation. The “connective tissues” of Guizhou’s regional economic institutions refer to the connections that sustained key elements of Guizhou’s regional communities. After September 1953, Mao Zedong announced a new general, socialist transition, which was designed to address the “pressing need for cadres for industrial reconstruction” (Bian, 2015, p. 325). In contrast to their European counterparts, centuries of history resulted in China not undergoing an Industrial Revolution, but a political one burdened with the task of reconstructing Malthusian-induced crises. Some projects included state-owned heavy industry, mining, national defense, ordinance manufacturing, and artillery factories relocated away from the periphery.

During the early 1930s, work emulation campaigns in China were established by the Nationalist government to foment a response to languishing motivation. This is similar with the United States. The adoption of an accounting system characterized by cost calculation and state-owned enterprises as motivations were features of modern capital enterprise. Bian cites Arif Dirlik who argues that the New Life Campaign was the “Guomindang version of a ‘cultural revolution’ for China,” and he may be correct (Bian, 2005). The New Life Campaign was designed to instill Confucian moral values and a modern military ethic into the people. Academic scholars who ventured to the United States, but also to European universities in England and Germany, ignited the passion for learning in China. A typical coming-of-age story is that of Qian Changzhao who studied political economy and economics at the University of London and Cambridge University and finally returned to China infused with the ideals of Fabianism. Qian became deputy director of the National Defense Planning Commission and deputy director of the National Resources Commission. This only attests to the viability of a European and Chinese comparison that was emboldened by an exchange of ideas – whether in the Early Modern period – or the early twentieth century. In 1936, the Three-Year Plan for Heavy Industrial Reconstruction was made a central facet of the commission’s organizational structure. Some financial plans began as early as 1933. In early 1941, the National Resources Commission made another comprehensive economic plan, the *Outline of the Three-Year Plan for*



*National Defense Industries.* Between 1942 and 1944, the National Resources Commission would establish new factories or expand existing ones.

Douglass C. North's theory of institutional change structure abides by the "rules of the game," which as Bian cites, is a devised constraint structured by human interactions, organizations, and groups of individuals bound by some common purpose. I liken it to Mahjong, the Chinese strategy game. Something else especially useful to know is the concept of "path dependence," which connects the past, present, and future in a sequence of causality. Any modern history would benefit from using it, and Bian exemplifies its utility by referencing it in his history of Chinese state-formation, and not good fortune. The historiography of this topic is never relegated to only the Early Modern era, but Europe's divergence during the Industrial Revolution is instead an important pivoting point in a grand entanglement of global economic history. The dynamics of economic and institutional change, in Europe and Asia, are further exemplified in Mokyr's assertions of formal institutions. In his work, *The Gifts of Athena*, he expounds on methodologies of economic welfare and institutions (Mokyr, 2004). Britain's Industrial Revolution was not nearly a race between the East and the West as some claim, as much as it was the result of a deemphasis on formal institutions in Europe, where fragmented states held sway rather than a centralized politic. Mokyr calls it the "Knowledge Economy," and it is central to themes of economic change and the epistemology of emanationism.

As a historian of science, Mokyr is concerned with technology as knowledge. Mokyr's article "The Institutional Origins of the Industrial Revolution" argues that the importance of institutions extends beyond politics (Mokyr, 2008). "Cultural Beliefs" allowed inventors and entrepreneurs to cooperate freely. Another historian, P.H. Vries, makes a similar claim. He argues the role of the state system in Europe was part of an exceptional economic history (Vries, 2002). R. Bin Wong makes a case for "Making Modern Economies" in his book *China Transformed*, where the logic of technological change is wrapped up in contingent possibilities, and it takes Joel Mokyr to be that edifying voice (Wong, 2014). Cultural values and the rate with which technological changes occur are part of his descriptive generalizations. Technology became part of the public good, rather than private interests. But after 1400, Mokyr argues, China's philosophical outlook radically changed to be hostile toward so much technology. But this assumption has problems, Wong writes. It is mostly due to the notion that the Chinese state actively suppressed technological change. Why would change slowly down? One argument has been that technological change is rare. Social constraints, likewise, are described by Mokyr as "micro-inventions," but barely describes the case of "macro-inventions" through history. The possibilities of technology as a unique frontier of knowledge now have more merit. From coal to steam, to chemicals to electricity, these shifts are a part of the Smithian dynamics of economic growth and numeric calculation everywhere.

Why did sustained economic growth occur in Europe and not in China? The works reviewed in this article are a response to the current and earlier literature depicting Europe as an ever-growing behemoth and China as a nation of stagnation. It is mostly due to an ethnocentric methodology used by historians. In reality, sustained economic growth occurred in Europe and China at varying periods throughout history based on calculations that can be interpreted with partition theory. The Warring States period in Ancient Chinese history predates much of the already existing theories that posit a comparison to only the Early Modern period, but what has lasted since then in a Big History way, is the abacus. The distortions of capital-using technologies were in place several centuries before 1700, and China was already practicing many of the Smithian techniques of trading. Consider Thomas Ertman, who wrote – that the Church brought Christianity to the Angles, Saxons, and Jutes, but it was "technologies of rule" from Carolingian neighbors that made a pattern of "shared rule," or "equal government" popular to diversify education (Ertman, 1999). The ultimate cause and timing of the Great Divergence are still up for debate, but in the three centuries before 1800 advanced industry near the Yangzi Delta thrived on the abacus calculation ability and integration. Europe and China fundamentally carried different economies but shared related knowledge economies, something Mokyr adds to as a new epistemology of emanation out of fragmentation. There cannot be only one path of economic growth, and as such, we must acknowledge multiple trajectories toward modernity of nation-states.

## References

- Ali, S. S., Ahmed, M. K., Sami, H. H., & Mahmood, A. S. (2021). The Syriac Letters and E-Abacus Diagram II. *Journal of Physics: Conference Series*, 1879(2), 022098. <https://doi.org/10.1088/1742-6596/1879/2/022098>
- American Missionaries in Fuzhou China 1940s Promotional Film "Letter from China" 34214: Internet Archive. (2020, April 8). Internet Archive and Periscope Film LLC. <https://archive.org/details/34214letterfromchinavwr>
- Arrighi, G. (1999). "The World According to Andre Gunder Frank," *Review* 22, Fernand Braudel Center, 327-55.
- Bian, M. L. (2015). Redefining the Chinese Revolution: The Transformation and Evolution of Guizhou's Regional State Enterprises, 1937–1957. *Modern China*, 41. <https://doi.org/10.1177/0097700414530830>
- Bian, M. L. (2009). *The Making of the State Enterprise System in Modern China*. Harvard University Press.
- Brandt, L., Debin Ma, and Thomas G. Rawski. (2014) "From Divergence to Convergence: Reevaluating the History Behind China's Economic Boom." *Journal of Economic Literature* 52(1). <https://doi.org/10.1257/jel.52.1.45>.
- Brenner, R., & Isett, C. (2002). England's Divergence from China's Yangzi Delta: Property Relations, Microeconomics, and Patterns of Development. *The Journal of Asian Studies*, 61(2), 609–662. <https://doi.org/10.2307/2700302>
- Brown, N. M. (2012). *The Abacus and the Cross: The Story of the Pope Who Brought the Light of Science to the Dark Ages*. Basic Books.
- Carter, M., & Kwong, J. N. F. (2009). *Abacus and Mah Jong: Sino-Mauritian Settlement and Economic Consolidation*. Series: European Expansion and Indigenous Response, Volume: 1. Brill. <https://booksandjournals.brillonline.com/content/books/9789047429166>
- Children of China 1930s Educational Film Rural Life 33804: Internet Archive. (2020, April 7). Internet Archive and Periscope Films LLC. <https://archive.org/details/33804childrenofchinavwr>
- Del Gandio, J. (2012). From Affectivity to Bodily Emanation: an introduction to the human vibe. *PhaenEx*. <https://doi.org/10.22329/p.v7i2.3554>
- Duchesne, R. (n.d.). *World History Connected | Vol. 2 No. 2 | Ricardo Duchesne: Peer Vries, the Great Divergence, and the California School: Who's In and Who's Out?* <https://worldhistoryconnected.press.uillinois.edu/2.2/duchesne.html>
- Ertman, T. (1997). *Birth of the Leviathan: Building States and Regimes in Medieval and Early Modern Europe*. Cambridge University Press.
- Frank, A. G. (1998). *ReORIENT: Global Economy in the Asian Age*. University of California Press.
- Flynn, D. O., & Giráldez, A. (2002). Cycles of Silver: Global Economic Unity through the Mid-Eighteenth Century. *Journal of World History*, 13(2), 391–427. <https://doi.org/10.1353/jwh.2002.0035>
- Guy, D. J. (1999). The Morality of Economic History and the Immorality of Imperialism. *The American Historical Review*, 104(4), 1247–1252. <https://doi.org/10.2307/2649576>
- Hämäläinen P. K. (2010). The Politics of Grass: European expansion, ecological change, and Indigenous power in the Southwest borderlands. *William and Mary Quarterly*, 67(2), 173. <https://doi.org/10.5309/willmaryquar.67.2.173>
- Hui, V. T. (2005). *War and State Formation in Ancient China and Early Modern Europe*. Cambridge University Press.
- Jones, E. (2003). *The European Miracle: Environments, Economies and Geopolitics in the History of Europe and Asia*. Cambridge University Press.
- Juren, L., & Yuxi, X. (2018). *A Century of Change in a Chinese Village: The Crisis of the Countryside*. Rowman & Littlefield.
- Kempf, K. F. (1961). *Electronic Computers within the Ordnance Corps*. Aberdeen Proving Ground.
- Kocka, J. (2017). *Capitalism: A Short History*. Princeton University Press.

- Landes, D. S. (1999). *Wealth And Poverty Of Nations: Why Some Are So Rich And Some So Poor*. WW Norton.
- Li Di, B. S., & Williams, M. R. (1992). Chinese Calculators Made During the Kangxi Reign in the Qing Dynasty. *Annals of the History of Computing*, 14(4).
- Li, S.-T. (1959). Origin and Development of the Chinese Abacus. *J. ACM* 6(1): 102–110.
- McCord, E.A. (1993). *The Power of the Gun: The Emergence of Modern Chinese Warlordism*. Berkeley: University of California Press. <http://ark.cdlib.org/ark:/13030/ft167nb0p4/>
- Menninger, K. (1969). *Number Words and Number Symbols: A Cultural History of Numbers*. MIT Press.
- Mesopotamian Mathematics*. <http://it.stlawu.edu/~dmelvill/mesomath/>
- Mokyr, J. (1999). Eurocentricity Triumphant. *The American Historical Review*, 104(4), 1241. <https://doi.org/10.2307/2649575>
- Mokyr, J. (2004). *The Gifts of Athena: Historical Origins of the Knowledge Economy*. Princeton: Princeton University Press.
- Mokyr, J. (2008). “The Institutional Origins of the Industrial Revolution,” in Elhanan Helpman ed., *Institutions and Economic Performance* Cambridge, Mass.: Harvard University Press, 64–119.
- Moon, P. (1971). *The Abacus: Its History, Its Design, Its Possibilities in the Modern World*. Gordon and Breach Science Publishers.
- Parthasarathi, P. (2011). *Why Europe grew rich and Asia Did Not: Global Economic Divergence, 1600–1850*. Cambridge University Press.
- Pomeranz, K. (2002): “Political Economy and Ecology on the Eve of Industrialization: Europe, China, and the Global Conjuncture,” *The American Historical Review* 107(2), 427. <https://doi.org/10.1086/532293>.
- Pomeranz, K. (2021). *The Great Divergence: China, Europe, and the Making of the Modern World Economy*. Princeton University Press.
- Taton, R., and Jean Paul Flad (1949). “Le Calcul Mécanique. Que Sais-je?” *Presses Universitaires de France*, Paris.
- Tilly, C. (1999). “A Grand Tour of Exotic Landes,” *The American Historical Review*, 104(4), 1253. <https://doi.org/10.2307/2649577>
- Vries, P. (2010). The California School and Beyond: How to study the Great Divergence? *History Compass*, 8(7), 730–751. <https://doi.org/10.1111/j.1478-0542.2010.00698.x>
- Vries, P.H. (2002). “Governing Growth: A Comparative Analysis of the Role of the State in the Rise of the West,” *Journal of World History* 13(1), 67–138. <https://doi.org/10.1353/jwh.2002.0026>.
- Wong, R.B. (2014). *China Transformed: Historical Change and the Limits of European Experience*. Ithaca: Cornell University Press.
- Wong, R. B. (2002). The Search for European Differences and Domination in the Early Modern World: A View from Asia. *The American Historical Review*, 107(2), 447. <https://doi.org/10.1086/532294>
- Zhang, D. (1996). *Proceedings of the China-Japan-U.S. Seminar on Mathematical Education*. <http://files.eric.ed.gov/fulltext/ED395776.pdf>