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Modelski's Long Cycle Revisited

Comparing American Decline to British Deconcentration

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Abstract

Despite flourishing after the collapse of the Soviet Union, the American order has been weakened by wars in Iraq and Afghanistan, growing unilateral neo-isolationism within conservative American politics, and the meteoric rise of China as a great power rival. Though theories of historical comparison are often critiqued, some, such as George Modelski's pattern of long cycles, seem timely to revisit amid this "deconcentration" of world leadership. This work supports Modelski's historical case-study by applying quantitative measures of power to make statistically informed comparisons between the changes in the distribution of power between British deconcentration (1885–1914), to the current period of supposed American decline. This work finds statistical evidence of American decline in more measures than the British Empire, despite maintaining a wider margin with its rival. China is increasing its power in all measures at a faster rate than the German Empire during its rise to challenger status. Though statistical forecasting raises doubts whether China can near parity in the coming decades, (mis)perceptions of Beijing's power, domestic American political fracturing, geopolitical flashpoints, escalating regional wars involving partner states, and differing military readiness strategies make global war between the United States and China a near-future possibility worth continued study.

Keywords: Great Powers, Long Cycles, Hegemonic Shift, Hegemonic Rivalry

The United States faces what may seem to be a novel yet existential question: how to contend with a rising challenger motivated by the rewards of world leadership, such as international influence, dominant military capabilities and strong alliance networks, control of international sea-lanes and the global market, and leading international institution building—allowing one to lay out new "rules of the game" (Modelski 1987).

Though this security dilemma may seem uniquely dire in the course of American history, especially after two decades of unrivaled military and economic capabilities following the collapse of the Soviet Union (Chivvis et al. 2024), it is perhaps better viewed as one security dilemma in a long recurring pattern of global security dilemmas. The British Empire of the early nineteenth and twentieth centuries twice faced a similar security dilemma as does the United States today—how to contend with a largely continental, economically and militarily powerful, motivated challenger to global leadership.

The cyclical nature of conflict and competition among states for control of the world-system is perhaps best illustrated in the literature through long cycles in global leadership (Modelski 1987). According to long cycle theorists, or world-systems theorists more broadly, there seem to be recognizable, repeated trends in the distribution of power—military and economic—among states throughout the roughly 500 years of the modern nation state era (Modelski 1987).

Although Modelski's long cycles, and similar political-economic waves of hegemony (Wallerstein 1984) have been criticized for their inability to predict future outcomes (Nye 1990), this is not the purpose in using such theories. Rather, it lends a historical frame which can be used in conjunction with quantifiable measures to allow for better understanding of the position of states in the world-system, and to recognize how similar distributions of power, global conflicts, and security dilemmas have led to the onset of global war in previous systems and cycles of leadership.

This work, then, does not seek to prove the predictability of the long cycle, but rather revisits it as a historical lens to guide the quantitative measurement of power between the United States and China, as well as compare the trends in distributions of power between the United States and China to that of the British and German Empires in the lead-up to the First World War[1].

Clarifying World Leadership

This study does not take world leadership, and the consideration of state's potential for world leadership, to be used interchangeably with the concept of hegemony, a common critique of such studies[2]. Hegemonic states are those whose advantage over others "is so unbalanced that it can dominate the world economy" (Kwon 2011: 601), measured as absolute advantage in GDP per

[1] India and Russia, though unlikely, are included in this study because of the potential to emerge from a global war in which both the United States and China have so depleted their resources that they are no longer suitable for world leadership, as occurred in the previous cycle.

[2] See Nye (1990) "The Changing Nature of World Power" for critiques of hegemonic and world-system theories.

capita, as well as possessing a preponderance of seapower[3], resulting in a "hegemonic index" twice the score of the nearest competitor.

Instead, world leadership can be understood as a level of great power status held by a singular state which possesses superior—but not necessarily hegemonic—military and economic abilities necessary to create and maintain post-global war stability through the implementation of "new rules of the game." These states often possess the greatest shares of seapower (Crisher and Souva 2014), boast commanding military power and economic wealth, and are domestically stable (Modelski 1987).

This work first questions whether the current world leader, the United States, is in a *deconcentration* phase of decline; and as such assumes that the United States is no longer hegemonic according to the criteria mentioned previously. Therefore, this study does not propose to create an alternative measure of hegemony, nor does it assume that any state holds hegemonic power over the system.

In this study, indicators of world leadership include both relative shares of military power and economic power[4]. Both military and economic power are necessary to gauge potential for world leadership as some historic world leaders have not held economic hegemony[5]—a critique of long cycle theory—thus GDP alone is not a useful measure of world leadership potential, and powerful militaries which lack strong economic support cannot maintain the systemic ordering necessary of the world leader, nor can they bear the financial cost of applying sustained military force (Nye 1990).

Historic Comparison of Long Cycles

The theory of political long cycles is a pattern of change in global leadership supported by historical case study. As such, adding quantitative analysis to such a theory is constrained by unquantifiable aspects of power such as power perception and miscalculation, soft power, alliances and partnerships, and other means of global leadership which cannot be fully accounted for by the quantitative measures used in this study. As such, it is first helpful to explain the theory of long cycles and present anecdotal historical evidence to compare the deconcentration phase of the second British cycle to the theorized deconcentration phase of the American cycle.

The world leadership long cycle is an explanation of the nature of world power through patterns of positive and negative feedback mechanisms in the world-system which create a *cybernetic* or self-steering cycle (Modelski 1987); put more simply, it is an analysis of the causes and effects of world power transitions which cause change at the system level.

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[3] Measured in total warship count (Modelski and Thompson 1988).

[4] The lack of consideration for measures of soft power are discussed later in this article.

[5] Portugal, as world leader, was the dominant seapower with 112 warships in 1512 (Modelski and Thompson 1988) which allowed it to dominate early colonization and global trade networks, despite trailing Habsburg Spain and Genoa in GDP per Capita (Kwon 2011) and eventually falling to Spain (Nye 1990).

This is similar to Kondratieff cycles (K-waves), which illustrate cyclical trends in the global economy through expansion and stagnation phases. Unlike Modelski's roughly 100-year cycles, K-waves tend to follow a 60-year pattern, though states can impact the length through economic policies meant to stave off stagnation (Wallerstein 2007). K-waves, when compared with Modelski's long cycles, reflect the rising and declining phases of world leadership, with the global war phase occurring every other "upswing" or expansion wave[6] (Goldstein 1988). The K-wave also reflects Modelski's long cycle in that the international system progresses or evolves as solutions to global issues are introduced. In the case of K-waves, solutions to inadequate expansion are implemented to "maintain the possibility of the endless accumulation of capital" (Wallerstein 2007: 31), most often by the world leaders who possess lead economies and the ability to innovate "crucial segments" (Modelski 1987: 61) which impact the global system.

However, despite the effectiveness of K-waves in reflecting economic cycles and change in the international system, Modelski's long political long cycles more completely represent changes in political leadership, which include the rise of challenger states and coalitions of dissatisfied states, diminishing domestic support for the costs of global stabilization on the part of the world leader, and the evolution of the competition continuum as it transitions from economic trade wars into security dilemma, arms proliferation, and eventually global war for world leadership. Contemporary global events seem to reflect the latter, rather than simply changes in the global economy, thus making Modelski's cycles the theoretical frame for this work.

In political long cycles the order created by the establishment of a world leader solves systemic problems made evident through global war, but also reduces the desire of weaker states to exist in a subservient system reliant on the world leader to maintain balance and order. Eventually, reduced desire for the world leader's order, combined with the increased costs of system maintenance on the part of the world leader, lead to a decline in world leadership (Gilpin 1981) and the rise in challenger states, transitioning the system cyclically towards global war.

The first two phases, *global war* and *world leadership*, make up the *ascending* or positive phase of the long cycle during which the world leader responds to global problems and creates new national governmental and transnational institutions to meet the needs of the global system. The third and fourth phases are that of "delegitimization" and "deconcentration," which begin the *descending* or negative phases of the long cycle.

Each long cycle period begins with the *global war* phase. This "test of strength" determines which global power is most capable of leading the world-system in response to the growing inability of the prior world leader to maintain order, and their inability to solve increasingly onerous world issues, often as a result of financial burden, lack of political will, and the rise of dissatisfied states. This failure creates opportunities for exploitation by challenger states who perceive benefit from disrupting the status quo order and possess the necessary capabilities of solving the pressing world problems and restoring general order (Modelski 1987: 64).

[6]The largest K-wave upswings since 1600 have occurred during the global wars of the contemporaneous long cycle period: the War of Spanish Succession, the Napoleonic Wars, and the two World Wars (Goldstein 1988).

The defining characteristic of the global war is that it is a system changing event through which the power structure is significantly altered. During this period the desire for systemic order is high but unattainable due to the high disorder and chaos of global war (Modelski 1978: 30). Due to data restrictions, the historical scope of this paper only includes the cycles stemming from the Napoleonic wars[7] and the European World Wars.

The Napoleonic wars served as a test of strength between the declining British Empire and Napoleonic France. Britain emerged from this test as the dominant global naval power, possessing 66 percent of global warships in 1816 and maintaining supremacy until 1919 (Modelski and Thompson 1988). Britain also retained superior economic power, possessing an estimated 8.5 million square miles of colonial holdings (Temple 1884) and producing 53.2 percent of global manufacturing by the height of its power (Ikenberry 2001: 86[8]). Even before the war had officially ended the British began laying the political groundwork for a balanced European continent and all but assured British domination of the seas, hallmarks of its *world leadership* phase.

The twentieth century European world wars (1914–1918, 1939–1945) saw the end of the second British cycle and the rise of the United States as world leader. For the first time in roughly two centuries the British Empire failed to possess predominant naval power, having been surpassed by the United States which obtained 61.3 percent of global warship tonnage by 1945, and achieved a staggering 71.8 percent by 1949 (Modelski and Thompson 1988). By the end of the war, the United States emerged as the only industrial power with its industry intact, allowing it the opportunity to become the world's primary manufacturer and supplier once economic stability was enforced through ordering mechanisms.

The second phase is that of *world power* or "implementation" during which the order desired as a result of global war is established by the victorious coalition, led by the new world leader (Modelski 1978). During this phase both demand and availability for order are high, while challenges to the established order are low. The world leader reaches peak power and focuses on implementing innovations and policies necessary for solving global issues, while establishing an international order which maximizes the "interests of the dominant state and [its] allies" (Geller 1996: 127), such as greater than average security, preferential knowledge of–and superior bargaining power in—global transactions and communications, and a heightened capacity to "set the rules" in world affairs (Modelski 1987: 153).

Through its leadership at the Congress of Vienna, the British began to establish systemic order through such mechanisms as the "Concert" system which—temporarily—balanced an ever-encroaching Russian Empire through the partition of Poland (King 2008) and covertly through a secret military alliance with France and Austria (Ghervas 2017). Additionally, the Royal Navy implemented London's new rules of trade, made clear through the repeal of the Navigation Act in 1849 (Clapham 1910), and "opened" China to trade with the West. By dominating global trade

[7] Modelski (1987) includes the French Revolution in this global war, marking it from 1792-1815. Traditional chronology of the war against Napoleon begins in 1803 with the Third Coalition.

[8] citing Bairoch (1982: 296)

and the open sea, the British Empire established political control of colonies and developing states in the Middle East, Latin America, and Africa (Modelski, G. and Modelski, S.1988).

As it emerged as the next world leader the United States enacted ordering mechanisms to restore order and stability to the post-war world through organizations—such as the United Nations, the World Trade Organization (WTO), and World Bank—and used its economic power to restore Europe through the Marshall Plan, create a status-quo liberal democratic political order[9] and preemptively balance the Soviet Union through the creation and expansion of the North Atlantic Treaty Organization (NATO) and an alliance with Japan (Ikenberry 2005). Through the implementation of the Marshall Plan, financial assistance to Japan, the International Monetary Fund (IMF), and the World Bank, the United States was able to restore the economic capabilities of a global network of trade in which demand for American production was high (Wallerstein 2003), helping to propel it as the dominant economic power with a GDP ten times that of Great Britain, and soon responsible for 50 percent of global manufacturing [10] (Zakaria 2008).

Delegitimation follows the world power period during which order and stability had been implemented by the world leader. Reliance on the world leader for stability declines as the abundance of security diminishes the high priority once given to its maintenance. As such, demand for order becomes low as the system stabilizes, though the availability for order remains high as the world leader continues to impress its will upon the system. This encourages states to strengthen their own security capabilities so as to no longer act as subservient to the world leader (Modelski 1978). Finally, as a result of the continued enforcement of order by the world leader in a system with low demand, opponents to the status quo order begin to rise as they gain domestic support through nationalist politics and anti-hegemonic rhetoric.

Delegitimation within the second British cycle is best illustrated beginning with the Crimean war and ending with the Boer war. Though each were British victories, they made evident the growing inability of the Empire to compel states through decisive military action—a signal to emerging rivals that the British could be challenged. Britain's political leadership continued to decline as it neared conflict with two allies; first avoiding conflict with the United States over a border dispute in Venezuela by accepting Washington's arbitration decisions (Boyle 1978), and avoiding conflict with France over control of Fashoda, an outpost each saw as strategically important to their African colonies and in controlling territory along the Nile (Eubank 1960). In each case conflict was avoided because of the decline of British power and leadership legitimacy, challenged control of its colonies, and the growing security dilemma rising from the European mainland (Layne 1994).

As occurs in delegitimation phases, a rising challenger—the German Empire—began to emerge as a proximate security threat almost immediately after unification in 1871. By 1896, German Naval High Command began planning for a future war with Britain, reinforced by

[9] As opposed to the status quo monarchic order of the previous cycle.

[10] This preponderance of manufacturing would only last through the 1950s, and soon a restored Western Europe and Japan would become competitive economic powers in the 1960s (Wallerstein 2003).

realizations that British power could be used to diminish German growth and influence. This was illustrated after Berlin attempted to assist the Boers and was reminded that "the annihilation of German commerce on the high seas would be child's play for the English fleet" (Allison 2017: 69). Under this fear of naval blockade and realizing its primary weakness in competition with the British, Germany increased its share of naval tonnage from 10.8 percent of relative shares in 1899—the first year of Britain's Two Power Standard—and by 1915, controlled the second highest share at 14.3 percent, overtaking the United States which possessed 12 percent (Crisher and Souva 2014).

In the American cycle, delegitimation can be approximated as beginning with the Vietnam War, through which the U.S. military failed to defeat a non-peer adversary. Additional signs of the decline of American leadership included the punitive 1973 oil embargo in response to Washington's support of Israel during the Yom Kippur war (Wallerstein 2003), the Iran hostage crisis which, in part, revealed the willingness of dissatisfied states—such as the Soviet Union and China, and opportunistic partners such as Mexico, Sweden and Poland—to disrupt and offset punitive American sanctions by normalizing and expanding trade relations with Tehran (Hewitt and Nephew 2019), and the rise of new East Asian economic rivals in the form of Japan, Hong Kong, South Korea, Taiwan, and eventually China (Wallerstein 2003). Further, growing domestic instability and recurring political violence marked a decline in the trust of political leaders within the United States, revealing signs of a disunified domestic base necessary for strong international leadership.

These events signaled the increasing inability of the United States to use economic coercion and military force as well as political prestige and leadership to influence international outcomes. Additionally, it made clear that regional dissatisfied powers could oppose the United States on the international stage and gain small victories while awaiting the rise of a legitimate challenger who they could bandwagon for support.

Finally, *deconcentration* occurs when both demand and availability for order are low and the previous world leader has overstretched itself and can no longer adequately provide system stability and order or is no longer invested in the costs of leadership. Competition between global powers for the support of weaker states takes form through nation-building projects and security alliances. National security becomes prioritized in domestic politics as global issues emerge and are no longer resolved by the world leader. Ultimately, a powerful challenger—backed by dissatisfied states and bandwagoners—challenges the world leader to establish a new status quo order to implement policies and create institutions beneficial to themselves and their allies, culminating in a global test of strength and the establishment a new world leader (Modelski 1987); transitioning from one leadership cycle to the next.

Deconcentration was first evidenced by the decline of the British Empire's economic base, which was surpassed by both Germany and the United States (Wallerstein 2003), and the increasingly competitive capabilities of the German Empire. In 1900, the distribution of national capabilities (CINC) was nearly balanced, with Britain controlling 17.8 percent, the United States controlling 18.8 percent, and Germany controlling 13.2 percent. By 1914, transition occurred

between Great Britain, which fell to control 13.8 percent, and Germany which rose to control 15.8 percent, while the United States further increased to 20.6 percent (Singer 1988).

By 1913, Germany possessed the second-highest population in Europe—50 percent larger than the British population (Allison, 2017)—boasted a literacy rate which dwarfed its neighbors, and produced leaders in science, technology, engineering, and agriculture (Kennedy 1989). German manufacturing began to challenge then outpace the British. By the onset of the first World War, the German military was 160 percent the size of the British[11]. Germany produced 14.8 percent of global manufacturing to Britain's 13.6 percent and, vital to sustaining its rising military capabilities, produced twice as much steel as the British (Allison 2017). The increased competition, growing security dilemma, declining economic capability and leadership projection of the British as world leader culminated in a global environment in which the sparks of a relatively minor nationalist assassination plot quickly pulled on the strings of secret alliances, drawing the world leader and its competitor, finally, into their test of strength.

These historic comparisons are useful in visualizing trends in world leadership as argued through the framework of Modelski's long cycles, though they alone are not sufficient to conclude that the United States is experiencing deconcentration similar to that of the British Empire, nor do they consider factors which make the two competitions different.

Britain and Germany did not have to compete while possessing nuclear options, nor did they face the looming threat of military conflict during what many have dubbed a "fourth industrial revolution" laying the groundwork for a battlefield in which hypersonic missiles, artificial intelligence and lethal autonomous weapons systems (LAWS), cyber warfare, and space as a domain of battle (Barno and Bensahel 2018), need to be considered. Additionally, the different bargaining positions of the challengers, influenced by their perception of power, may present different options for China[12]. However, these similarities and the warnings they portend are important if they are supported by similar changes in the distribution of power as measured through regression analysis and time-series plotting, giving this work practical importance.

Finally, consideration must be given regarding limits within Modelski's (1978) framework for world leadership. Modelski (1987) considers non-military and economic factors such as insular geography and cohesive, open society as necessary characteristics of world leadership. However, he fails to address elements such as social capital[13] and culture as instrumental factors in establishing the cohesive, open society he deems so necessary. Additionally, his work does not include considerations for "soft power;" methods not reliant on coercion or inducements, but by "getting others to want the outcomes that you want" (Nye 2004: 5) through admiration of values, cultural influences, and national prosperity. Soft power undoubtedly plays a role in leadership projection, as well as bolstering military and economic strength through alliances, partnerships, and trade linkages. For example, 36 of the Forbes 2024 Global 2000 are American companies, and

[11] Approximately 862,000 to 532,000 using the Correlates of War NMC v.6.0 dataset (Singer 1988).

[12] See "Consideration for Future Studies" below.

[13] See Putnam (1993) and Fukuyama (2000).

13 are Chinese (Murphy and Schifrin 2024). These public companies bolster the economic strength of the United States and China respectively but also allow those nations to spread their influence globally through recognized brands such as Coca-Cola, global retailers such as Alibaba and Amazon, and financing development projects through entities such as the China Construction Bank. These non-state influences may attract the admiration of states during times of competition outside of coercive foreign policy and direct applications of hard power.

Though these soft power considerations are important in gauging the full leadership potential of a twenty-first century power, they are not as useful in a study meant to apply contemporary trends in power to Modelski's theory of long cycles. Although cultural linkages and influence undoubtedly spread from both the British and German empires, and "thin" globalization dates back to the ancient Silk Road (Nye 2002), the contemporary globalized international economy united by robust international governmental organizations and digitally connected global citizens did not exist in a comparable form during the early twentieth century. As such, this paper contends with only quantifiable aspects of "hard" military and economic power to compare the proposed deconcentration phases of each cycle, while acknowledging the importance of soft power in contemporary leadership projection.

Methods

Theory and Hypotheses

Based on anecdotal evidence from historical comparison, this work theorizes that the United States is in a phase of deconcentration, evidencing rates of decline comparable to those of the British Empire from 1885 to 1914. The challenger to American order is China, which is evidencing a similar rise in measures of power as did the German Empire. Analysis of quantitative measurements of power—CINC, Seapower, Material Military Power (MMP), and Military Expenditure per Soldier (MExS)—will support this theory by providing evidence that the presumed world leaders evidence statistically significant rates of decline, and that the challengers evidence significant increases, in all measures of power.

This paper presents five hypotheses: (1) The United State will evidence decline in all measures of power; (2) China will evidence increases in all measurements of power; (3) despite decline, the United States will maintain superior levels of power in Seapower, MMP and MexS; (4) Great Britain will have evidenced similar rates of change as the contemporary United States during its period of deconcentration; and (5) the German Empire will evidence similar rates of change as China during its period of deconcentration.

Method

Linear regression is used to calculate the rates of change[14] (slope) for the United States and China in CINC, Seapower, MMP, and MExS for each available data year since 2000, and for the British

[14] Statistical significance measured at $p<.05$.

and German Empires between 1885–1914. Rates of change provide quantitative support for Modelski's argument that decline in power of the world leader is met by the rise in power of a motivated challenger, culminating in a test of strength. Further, by mapping these trends in time-series graphs, the changes in power over time can be compared between the two pairings.

Variables

Year. The temporal variable *Year* is used for the linear regression analyses and for the purpose of plotting the time-series line chart. As this work is primarily concerned with determining whether the current world-system is in a deconcentration phase of American leadership, this date range will begin in the year 2000, roughly equal to Modelski's proposed 25–30 year phases (Modelski 1987). Due to data limitations, CINC and MExS are measured until 2016, Seapower is measured until 2020, and MMP until 2022.

CINC. The Composite Index of National Capability (CINC) is an aggregate of six national material capabilities: military expenditure, military personnel, energy consumption, iron and steel production, urban population, and total population (Singer 1988) and is commonly used as a relative indicator of power. States are scored on a range from zero to one[15]. Though a widely used indicator of power there are some weaknesses which must be addressed.

One significant drawback is that CINC places greater emphasis on economic and demographic factors rather than military capabilities. This may signal states as more powerful than others while possessing significantly weaker military capabilities, as evidenced in the data which suggest China surpassed the United States as early as 1995, reached near parity in 2002, and has since maintained greater capabilities for nearly three decades (Thompson, et al. 2022), despite China possessing fewer offensive naval vessels and fighter aircraft[16] (Souva 2022).

Such overestimation of the power of population size fails to take into account the realities of modern warfare. Though fielding a much larger force than the opponent was an advantage throughout history, a large but untrained and technologically inferior force may have less power than a smaller, well-equipped force in the increasingly technologically complex battlefields of the present (Thompson, et al. 2022); indeed, as the war in Ukraine is indicating, large military powers can be contested by smaller forces bolstered by technology, strategy, and advanced systems (Canian 2022; Crowther 2022).

Additionally, studies have shown that CINC scores are only marginally better at predicting war outcomes than chance (Carroll and Kenkel 2019). Though this study is not concerned with predicting war outcomes, it is concerned with gauging power *before* a potential conflict emerges, and as such one would assume a useful indicator of power would also be useful in predicting the outcome of wars (assuming that power wins wars).

[15] Where one reflects 100 percent of global CINC. Additional explanation of calculating and weighing CINC scores can be found using the Correlates of War NMC Data Documentation Version 5.0, 2017.

[16] Specifically in the observation year 1999 (Souva 2022).

Finally, though the Correlates of War National Material Capability dataset contains a relatively wide temporal range of data—reaching as far into the past as 1865—it suffers from the constraint of available contemporary data, with the current dataset ending in 2016. This leaves the available CINC scores to study within the hypothesized deconcentration period to a limited 16 year range which does not account for significant global events such as the Covid-19 pandemic (which could affect such components as energy consumption and urban population), the Russian invasion of Ukraine, nor the rising tensions in the South China sea (which may have affected Chinese and American military expenditures, military personnel, and steel production), among other significant international events.

Seapower. Seapower, or naval tonnage, is a useful indicator of military power and the power projection capabilities of states. Naval power is necessary for any potential world leader as it gives the ability to deploy military units worldwide, deploy offensive advanced military technology, maintain and control international networks of trade, and enforce a global political order (Modelski 1987; Modelski and Thompson 1988). As evidenced by the global wars of previous cycles, the state with the largest share of naval power within the victorious coalition has always become the world leader for the subsequent cycle (Modelski 1987). Despite criticism of the importance given to seapower in long cycle literature as the primary measure of military power, (Nye 1990) there is no doubt of its importance in world leadership. World leadership relies on strong naval power for military force, coercion, protection of trade[17], and implementation of order and policy, and as such is a vital measurement of power in any study of power differentials.

One consideration in using seapower as a variable is the difference between two major datasets: the Crisher and Souva dataset (2014) and the Modelski and Thompson dataset (1988). The Seapower variable used in this study follows the Crisher and Souva (2014) system tonnage variable which has been updated post-publication to include 2020 data. Unlike the Modelski and Thompson (1988) measure of seapower, which used preponderant shares of total warship count[18], the Crisher and Souva (2014: 612) variable includes all offensive vessels which possess "the capability of using kinetic force to damage targets for purposes beyond self-protection and that can operate outside of their littoral waters" and all non-carrier vessels with at least "2,000 tons of displacement and 5-inch guns, or ships with 1,000 tons of displacement and at least three torpedo tubes."

The difference between these datasets is important both in measuring modern naval power but also in comparing the trends in naval power between the United States and China to that of their twentieth century counterparts. Modelski and Thompson (1988) record the British Empire to have possessed 58 percent of global seapower in 1865, while for the same year Crisher and Souva (2014) report 28.5 percent. This distinction must be made clear; Modelski and Thompson (1988)

[17] With roughly 90 percentage of goods still transported via ship (OECD 2022).

[18] This measure does not include submarines, cruisers, destroyers, or aircraft carriers not classified as heavy attack carriers (see Crisher and Souva 2014).

argued that a state must possess preponderant seapower to be considered a world leader, thus dropping below a 50 percent share would be seen as deconcentration. However, using the more aggregate and updated Crisher and Souva (2014) variable, the United States need not hold preponderant power in terms of warship count, but must hold the largest share of naval tonnage. This more accurately reflects the state of naval power in contemporary militaries, in which battleships are no longer functional and sub-surface vessels have increased in range and lethality.

One criticism of the Crisher and Souva (2014) dataset is the reliance on tonnage as a singular representation of offensive naval power. This measure diminishes the impact of lighter ships with potential to outgun larger vessels, including far lighter submarines. It may also overemphasize the strength of outdated carriers, such as the soon-to-be retired USS Nimitz and USS Eisenhower (Brodsky 2023). As naval technology progresses, future fleets may become lighter than their outdated counterparts and be able to launch more rounds per volley, as measured by the number of vertical launch cells (VLC) (Palmer, Carroll, and Velazquez 2024). An updated seapower variable in which VLC count and ship generation[19] is factored into a nation's relative tonnage, might more accurately reflect contemporary national seapower. However, for a study seeking to compare trends in seapower between two disparate eras of naval technology, tonnage works as a suitably comparable measure of naval power.

Another criticism is the overemphasis placed on seapower as a sole measure of military power. Although vital for leadership post-war, and important for controlling international sea lanes for the movement of forces and goods, naval power alone cannot take and hold territory in times of war. There is no doubt the Battle of Trafalgar and destruction of Napoleon's navy was vital for British victory, but so too was Napoleon's pyrrhic invasion of Moscow and the march of Wellington's forces from Portugal to France. The naval landing on D-Day was bolstered by the combined navies of Britain and the United States, but without land forces liberating France and enclosing Germany from three fronts, naval power alone would not have been sufficient to win the war in Europe.

As such, any serious comparison of the military capabilities of potential world leaders in a theorized phase of pre-war deconcentration must include an aggregate measure of military power. Changes to the battlefield seem to indicate that the historic power of the "warship" may be countered by easily transported anti-ship missiles, as used in Ukraine (Barnes and Glanz 2022), and ballistic aerial, surface, and subsurface drones, as evidenced by Houthi use of such capabilities to disrupt international shipping and to confront the U.S. Navy in the Red Sea (Sutton, 2024). Other considerations, such as the implementation of LAWS, advanced robotics, and nuclear-powered submarines, may reduce the power advantage of offensive naval vessels such as aircraft carriers and "warships" (Crumplar and Morrison 2014; Zimm 2022).

Material Military Power (MMP). Material Military Power combines a state's annual share of naval tonnage—including aircraft carriers, destroys, cruisers, submarines, and all major surface

[19] Weighing by generation is done in Souva's (2022) airpower component of the MMP variable.

vessels with at least 1,000 tons displacement—airpower as indicated by summed fighter and aircraft weighted by generation[20] (used in Saunders and Souva 2020), land power as measured by summed mobile armor vehicles (as recorded by *Military Balance*), and an averaged measure of missile power measured ordinally through the number of ballistic missiles by maximum range and nuclear weapon power measured ordinally by the number a state possesses.

Put simply, MMP "is a country's annual average of naval, air, ballistic missile/nuclear weapons and land power" (Souva 2022: 1005). This indicator of military power is useful for a modern analysis of the military capabilities of all potential world leadership contenders, especially in regard to previously stated concerns with analyses which focus military power primarily as a state's share of naval power. This is remedied by using MMP which takes into consideration land and air forces, as well as advancements in military technology.

MMP better reflects the overall potential of a state to compete in a global test of strength than seapower alone and accurately reflects actual military capability rather than projected latent ability as measured by CINC scores. MMP has been shown to more accurately predict war outcomes than naval tonnage, net resources, and military expenditure, correctly predicting 80 percent of dyadic wars while naval tonnage accurately predicted 71 percent of outcomes between 1865 and 1945 (Souva 2022)[21]. Based on this data, MMP is a useful measure of military power and can be used to accurately reflect the relative share of military power among the potential challengers for world leadership.

One shortcoming of MMP is its inability to account for unquantifiable factors of military strength, such as motivation and morale, which can account for victory in battles in which the weaker force—on paper—emerges victorious. Cohesion theory suggests that quantifiably weaker forces can display strong staying power and battlefield performance, resisting panic despite heavy losses or when command links are disrupted (Castillo 2014). Such factors may offer explanation of how quantifiably weaker forces can contend with or defeat adversaries with higher rates of MMP, such as North Vietnam against the United States (1965–1973).

Additionally, MMP does not account for material and financial military aid provided by partners and allies, which may significantly increase a state's military power despite reflecting low MMP. One such example is Ukraine, possessing only .04 percent relative MMP compared to Russia's 6.6 percent in 2022, despite receiving approximately $62 billion in military aid from the United States since the 2022 invasion (Knickmeyer, Novikov, and Madhani. 2024).

Military expenditure per soldier. Military Expenditure per Soldier (MExS) is a useful measure of the fiscal prioritization of a state's military capabilities, factoring for the increased costs of maintaining larger militaries, and better indicating a state's economic capacity for fielding a well-equipped, well trained military force than GDP alone. MExS is useful in comparing states

[20] Weighting by generation provides consideration for increased capabilities of newer systems, allowing a degree of measurement for technological development (see Souva 2022, and Saunders and Souva 2020).

[21] Net resources correctly predicted 69 percent and military expenditures predicted 75 percent (Souva 2022).

with two vastly different population sizes, such as the United States and China, in which one could field a much larger force in a time of war but which may not be as able to adequately fund, supply, and maintain such a large force, leading to issues such as soldiers' health, quality of arms and training, and economic incentives for recruitment. This MExS variable is computed using the Correlates of War NMC dataset by dividing the "milex" variable[22] by the "milper" variable[23] (Singer 1988).

One shortcoming regarding MExS is the failure of the "milper" variable to include reservists and historic colonial forces, thus failing to fully represent the total number of troops a state could deploy in wartime[24]. Additionally, gross military expenditures have been shown to overestimate military power. One such example is that Egypt ranked higher than Israel in military expenditure during the Six-Day War (1967), yet MMP more accurately reflects Israel as more powerful. Additionally, Kuwait had higher military expenditures than Iraq yet was remarkably weaker during the 1990 invasion (Souva 2022)[25].

Another consideration when comparing the military expenditures of either cycle is the U.S. dollar's status as a reserve currency. This privilege—reaped as a fruit of world leadership—grants the United States an advantageous position when borrowing, which would become a significant advantage in sustaining its military during a protracted global war. Such advantage has historical precedent, though to a lesser degree.

The British pound allowed the British Empire to reap a borrowing advantage during the end of their first leadership cycle, which allowed for greater military funding during the Napoleonic Wars (Bordo and White 1991; cited in Pflueger and Yared 2024). However, the power of the dollar as a tool of American foreign policy cannot be understated. Not only does it give the United States favorable borrowing terms such as lower interest rates and steady debt values which do not fluctuate with exchange rates, it also allows the United States to use economic tools of coercion—sanctions—to punish adversaries (Lahiri 2023). This gives the United States the ability to both fund its military production and projection but also weaken the ability of a challenger state to bolster their capabilities during competition in a way that the early-twentieth century British Empire could not.

Additionally, states with high rates of political extraction could conceivably increase their military expenditures suddenly at the onset of war yet fail to maintain competitive levels of

[22] Military expenditure in thousands. Created by converting military expenditures in national currencies into British Pounds for all years prior to 1914, and U.S. dollars for all years after 1914, using the Correlates of War currency conversion dataset. Detailed explanation is found on page 23 of the version 6.0 codebook documentation.

[23] Military personnel in thousands. Data collected by the U.S. Arms Control and Disarmament Agency (ACDA) and supplemented by International Institute of Strategic Studies data.

[24] For emphasis, there were roughly 765,000 reservists and National Guards soldiers among the combined branches of the U.S. military in 2022 (Siripurapu and Berman 2024).

[25] Souva (2022) focused solely on measuring the predictive value of military expenditure, rather than expenditure per soldier. For my purposes here, it shows the unreliability of using military spending to accurately predict a state's military power.

spending during peacetime. This is reflected in the time-series plot of MExS for Great Britain and Germany between 1885 and 1914. Both states spent minimally and nearly equal expenditures per soldier, yet in 1914 sharply increased their rate of military expenditure in preparation for war.

Moreover, military budgets are not set solely in consideration for perceived security threats but instead based on economic profit or government corruption—such as "revolving elites" (Mills 1956) who transition from political roles to those within the federal military or within private military manufacturing and contracting industries (Li 1997; cited in Kentor and Kick 2008). It is possible that the military industrial complex which drives both public and private arms manufacturing may create the perception that higher spending per soldier directly results in higher quality arms and training. However, high expenditures can be on unnecessary comforts such as $1,280 water heating cups (Cohen 2018) or perpetually stalled development projects which support domestic manufacturing, such as the development of the F-35[26] (Wolf 2023).

Finally, MExS does not account for purchasing power parity (PPP), which can be used to account for differences in costs for machines, services, and equipment, rather than simply converting budgetary exchange rates. In terms of military expenditure in PPP, as of 2024, China's spending was 59 percent that of the United States, lower than the dollar-value of China's gross military spending which was 67 percent that of the United States (Robertson 2024).

Results: Rates of Change and Time-Series Trends

CINC. The results below (Figure 1) show that at the turn of the twenty-first century, China possessed the greatest share of national material capability followed closely by the United States. The two reached near parity in 2002 with China possessing 15.4 percent and the United States possessing 15.3 percent of global CINC, before China began to steadily increase while the United States began to decline, ending 2016 with 23.1 percent and 13.3 percent of shares respectively.

Figure 1.

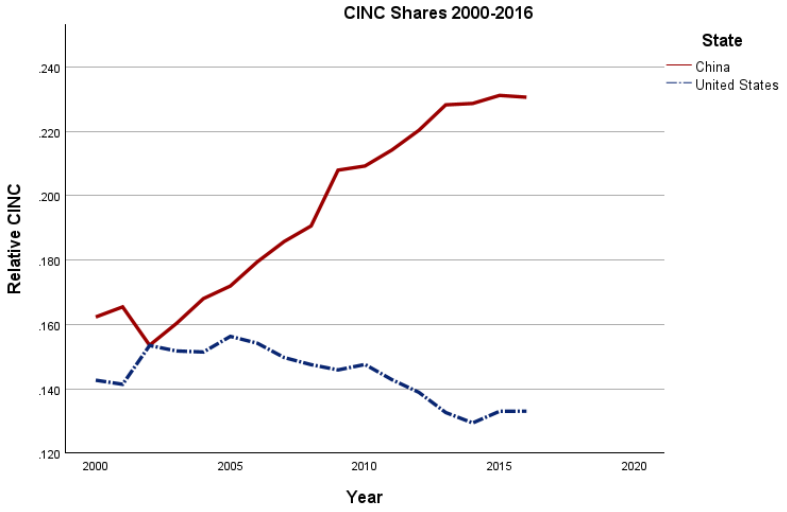

Figure 1. Singer, J.D. (1988). "Reconstructing the Correlates of War Dataset on Material Capabilities of States, 1816-1985". International Interactions,14, pp. 115-132. Version 6.0

[26] Estimated to cost $1.7 trillion.

The regression output (Table 1) displays the average rate of change over the 16 year period observed. China, the global leader in CINC, increased its share by an average of .05 percent per year, while the United States decreased its share by about .01 percent, both at a statistically significant rate[27].

Table 1.

Coefficients[a]

	stateabb	Model	Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	CHN	1	-10.704	.650		-16.465	<.001
	USA	1	2.522	.611		4.129	<.001
year	CHN	1	.005	.000	.974	16.765	<.001
	USA	1	-.001	.000	-.709	-3.892	.001

a. Dependent Variable: cinc

Comparatively (Figure 2), Great Britain possessed 21.6 percent of global CINC in 1885, while Germany trailed with 11.4 percent. By the end of the deconcentration phase and onset of war, a transition had occurred (between 1904 and 1905), with Germany possessing 15.8 percent to Great Britain's share of 13.8 percent. It is also clear that the onset of war led to sudden increases in the national capabilities of both states as industry shifted to war production.

Figure 2.

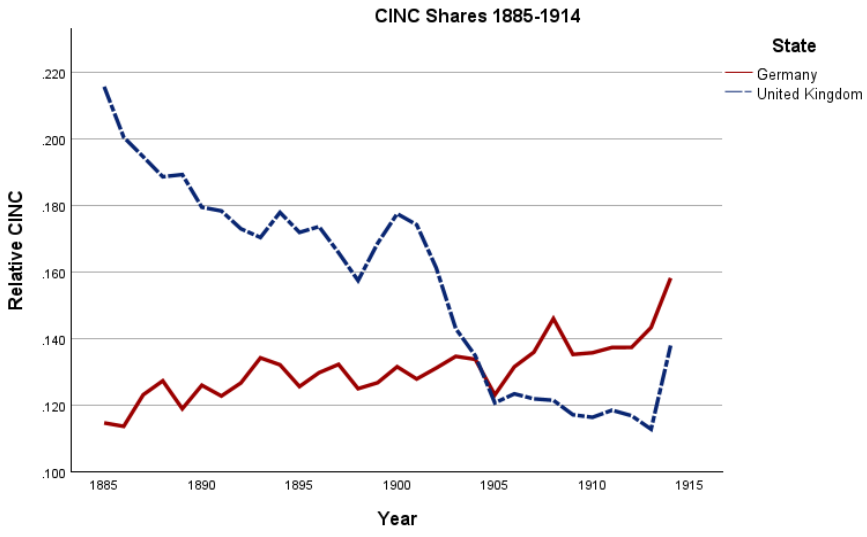

Figure 2. Singer, J.D. (1988). "Reconstructing the Correlates of War Dataset on Material Capabilities of States, 1816-1985". International Interactions,14, pp. 115-132. Version

The British and German Empires' rates of change (Table 2) reflect the trends of the United States and China, though not to the same degree. Both the United States and Great Britain

[27] Significance is indicated by a p-value less than .05 for each variable tested in this study.

evidenced decline in CINC, reflecting their theorized "deconcentration" of power, while both China and Germany evidenced positive rates, reflecting their rise to challenger status. However, the United States is only declining at a rate of .01 percent per year, while Great Britain declined at a rate of .03 percent; additionally, Germany only averaged an increase of .01 percent while China has evidenced an increase of .05 percent per year[28].

Table 2.

Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
	stateabb	Model	B	Std. Error	Beta	t	Sig.
(Constant)	GMY	1	-1.432	.219		-6.539	<.001
	UKG	1	6.240	.439		14.228	<.001
year	GMY	1	.001	.000	.803	7.136	<.001
	UKG	1	-.003	.000	-.934	-13.871	<.001

a. Dependent Variable: cinc

Seapower. The data supports the assertion that the United States possesses unmatched naval power (Figure 3). Despite declining from 44.6 percent of global tonnage in 2010 to 40.8 percent in 2020, the United States held a clear superiority in seapower with no state nearing parity. Although it fell far short of American seapower, China has increased its share of global tonnage from just 4.8 percent in 2000 to 9.5 percent in 2020.

Figure 3.

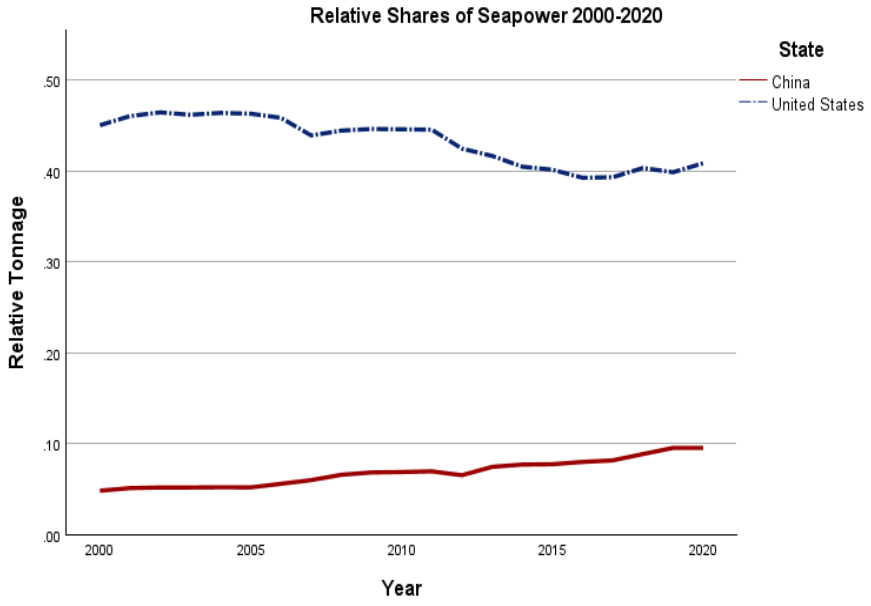

Figure 3. Crisher, B., Souva, M. (2014). Power at Sea: A Naval Power Dataset, 1865-2011. International Interactions, 40, pp. 602-629. Updated 2024.

[28] As with each of the dyadic comparisons, it must be acknowledged that the American cycle tested is nearly twice as short as the 29-year deconcentration phase of the British cycle. A complete phase of roughly 30-years may evidence more significant rates of change.

These results are interesting and will be discussed in detail below, but do not reflect the focus that has been placed on the shipbuilding priorities of the People's Liberation Army Navy (PLAN). Importantly, China has set course for rapid naval expansion as evidenced by their 2019 "defense white paper" (CSIS, 2022), including the launch of its third aircraft carrier, the *Fujian*[29], which will be reflected as the seapower dataset continues to update.

During the observation period China increased its naval tonnage at a rate of about .02 percent per year (Table 3). The United States experienced a significant decline at about .04 percent per year, though it remains the world leader by a wide margin. If these trends continue, forecasting predicts China would grow to possess 14.2 percent of global tonnage by 2040, while the United States would only decline to about 36.6 percent. However, should Chinese shipbuilding remain a priority for Beijing, and should Washington fail to invest in shipbuilding capabilities, including increasing dockyards (Seavy 2024), the two could trend nearer to parity, as represented in the data by China's upper confidence limit of 17.1 percent in 2040 to the United States' lower confidence limit of 28.6 percent. Conversely, if Beijing's stagnating economy cannot continue to generate the financial resources for naval expansion, the PLAN may fall well short of the U.S. Navy's total tonnage. This may be represented by China's lower forecast limit of 11.3 percent[30].

Table 3.

Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
	country	Model	B	Std. Error	Beta	t	Sig.
(Constant)	China	1	-4.619	.243		-19.011	<.001
	USA	1	8.270	.805		10.267	<.001
year	China	1	.002	.000	.975	19.292	<.001
	USA	1	-.004	.000	-.913	-9.730	<.001

a. Dependent Variable: tonn_prop

Once more, the results for the British deconcentration phase seem to reflect those of the contemporary American phase (Figure 4). Great Britain maintained a supremacy of naval power for the observation period, as did the United States, possessing 29.9 percent of global tonnage and ending the period with 31.8 percent. Unlike the United States however, Great Britain evidenced a slight increase in tonnage, .01 percent, likely supported by the Two-Power Standard[31] and the strategic belief that maintaining naval supremacy was necessary in countering the challenger of Imperial Germany.

[29] Which recently successfully tested the launch and landing of J-35 fighter aircraft (Panella 2024).

[30] Forecasting data are the result of the Author's own analysis using the updated Crisher-Souva dataset (2014). For forecasting output and time-series charts see Figures 9 and 10 in the data appendix.

[31] Established in the Naval Defense Act of 1889, meant to keep Britain's navy larger than the next two largest navies combined. See Mullins and Beeler (2016).

Figure 4.

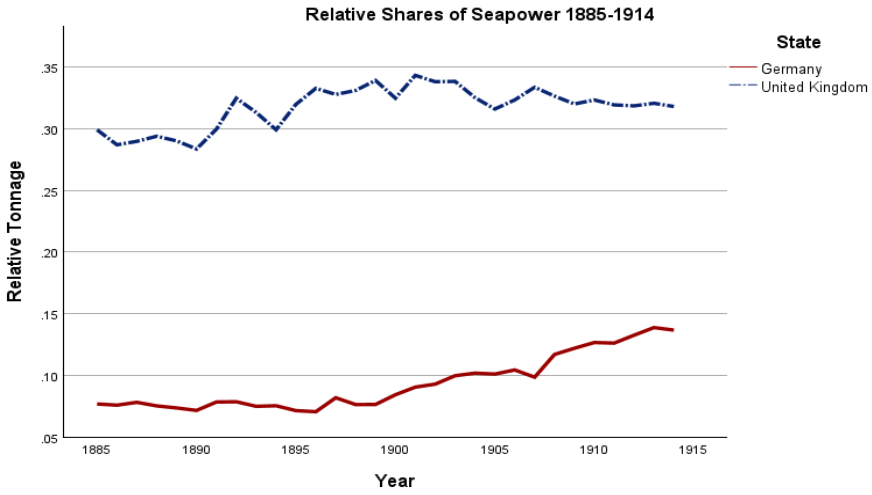

Figure 4. Crisher, B., Souva, M. (2014). Power at Sea: A Naval Power Dataset, 1865-2011. International Interactions, 40, pp. 602-629. Updated 2024.

The results (Table 4) indicate a similarity between the rise in seapower of contemporary China and Imperial Germany as well. Germany began the observation period possessing only 5.7 percent of global tonnage yet obtained 13.7 percent by the onset of war and maintained an average increase in relative tonnage at a rate of .02 percent per year. China has increased at the same rate, increasing its relative naval tonnage from 4.8 percent to 9.5 percent.

Table 4.

Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
	country	Model	B	Std. Error	Beta	t	Sig.
(Constant)	GMY	1	-4.232	.386		-10.968	<.001
	UKG	1	-1.886	.549		-3.439	.002
year	GMY	1	.002	.000	.904	11.211	<.001
	UKG	1	.001	.000	.605	4.017	<.001

a. Dependent Variable: tonn_prop

Material military power. The results indicate that the United States is the undisputed leader in material military power as well as naval power (Figure 5), beginning the twenty-first century with 21.3 percent of global MMP, and declining slightly to 19.6 percent in 2022. China began the century possessing only 5.5 percent but has increased its share of MMP to 7.6 percent as of 2022.

Figure 5.

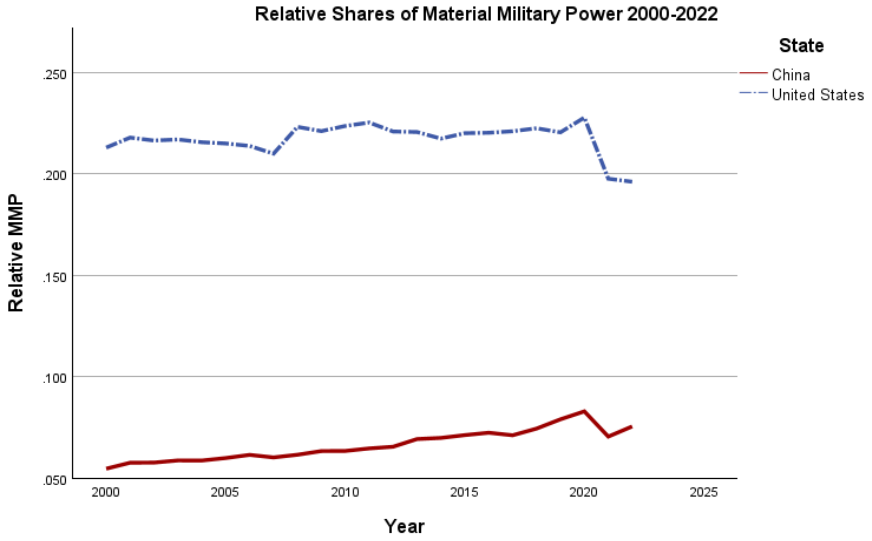

Figure 5. Souva, M. (2022). Material military power: A country-year measure of military power, 1865-2019. Journal of Peace Research Updated 2024.

The regression results (Table 5) indicate that the United States has not experienced a statistically significant change to its share of global military power, maintaining about one-fifth of global MMP for the entirety of the observation period. However, China has experienced an average increase of about .01 percent per year of the observation period.

Table 5.

Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
	stateabb	Model	B	Std. Error	Beta	t	Sig.
(Constant)	CHN	1	-2.045	.164		-12.464	<.001
	USA	1	.459	.492		.933	.361
year	CHN	1	.001	.000	.942	12.868	<.001
	USA	1	.000	.000	-.107	-.491	.628

a. Dependent Variable: tonn_prop, cap2share, nuke2bm armorl/armypctl

The results for the British deconcentration phase resemble those of the contemporary American cycle, however the two states were much nearer to parity than the United States and China (Figure 6). Great Britain entered its deconcentration phase possessing 18.4 percent of global military power, and entered the First World War with 20 percent (comparable to the position the United States has maintained since 2000). Imperial Germany possessed only 5.7 percent of relative MMP in 1885, but had increased its shares to 12.6 by the war.

Figure 6.

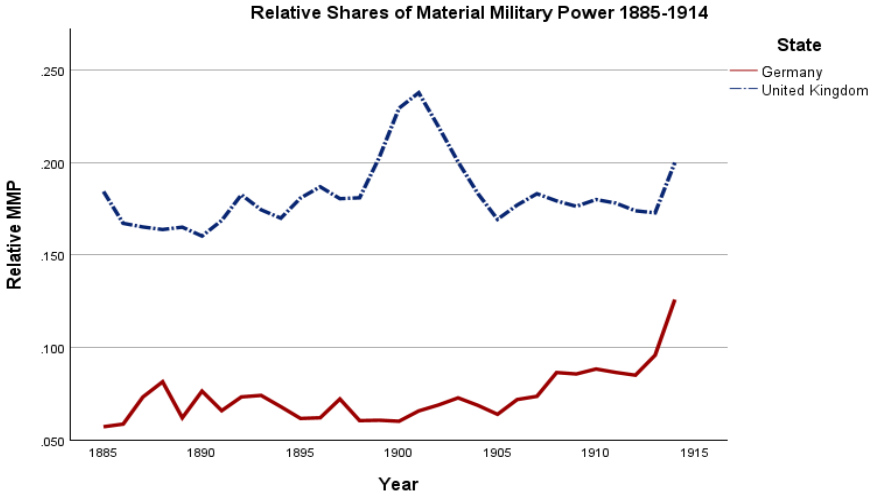

Figure 6. Souva, M. (2022). Material military power: A country-year measure of military power, 1865-2019. Journal of Peace Research. Updated 2024.

As with the contemporary American phase, the British deconcentration phase evidenced no statistically significant change on the part of the world leader, Great Britain, but a statistically significant increase of .01 percent by Imperial Germany (Table 6). Britain and Germany were nearer to parity in relative MMP, separated by a margin of only 7.4 percent, compared to the wider margin of 12 percent currently separating the United States and China[32].

Table 6.

Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
	stateabb	Model	B	Std. Error	Beta	t	Sig.
(Constant)	GMY	1	-1.853	.451		-4.111	<.001
	UKG	1	-.871	.739		-1.179	.248
year	GMY	1	.001	.000	.628	4.274	<.001
	UKG	1	.001	.000	.260	1.426	.165

a. Dependent Variable: tonn_prop, cap2share, nuke2bm armorl/armypctl

Military Expenditure per Soldier. The results indicate that the United States spent substantially more per soldier than China during the observation period (Figure 7). Beginning in 2000, the United States spent about $221,915 per soldier, whereas China spent $14,946 per soldier. By the end of the observation period, U.S. spending rose to $437,691 per soldier, and China more than quadrupled its spending to $62,168 per soldier.

[32] Some consideration must be given in the historical analysis of naval tonnage and MMP, as the field of sovereign states which could possess shares of each indicator of power were fewer than there are in the contemporary world system.

Figure 7.

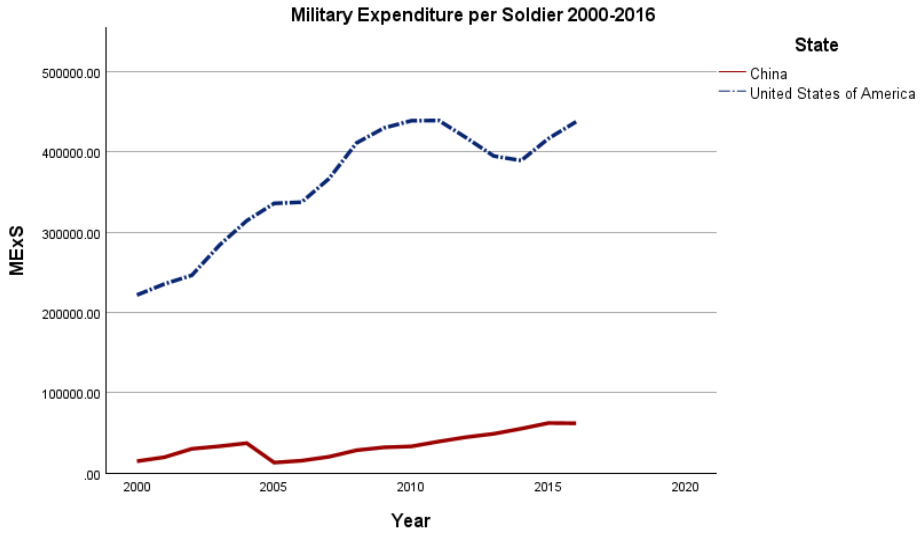

Figure 7. Singer, J.D. (1988). "Reconstructing the Correlates of War Dataset on Material Capabilities of States, 1816-1985". International Interactions,14, pp. 115-132. Version 6.0.

The regression analysis of MExS (Table 7) indicates that the United States and China each increased their MExS by statistically significant levels. The United States averaged an increase in MExS of $13,229 each year of the observation period, followed by China with an average increase of $2,598.

Table 7.

Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
	stateabb	Model	B	Std. Error	Beta	t	Sig.
(Constant)	CHN	1	-5182192.064	906031.379		-5.720	<.001
	USA	1	-26205504.207	3607604.566		-7.264	<.001
year	CHN	1	2598.158	451.210	.830	5.758	<.001
	USA	1	13229.801	1796.610	.885	7.364	<.001

a. Dependent Variable: MExS

Military Expenditure per Soldier is the only indicator of power used in this study in which the British deconcentration phase does not resemble the contemporary American phase (Figure 8). Both the British and German empires maintained stable, low levels of MExS until the outbreak of war in 1914. In 1885, Britain spent approximately £148.52 per soldier, while Germany spent approximately £43.51. By 1914, British spending rose to £3,155.72 and German spending reached £2,070.77 per soldier.

Figure 8.

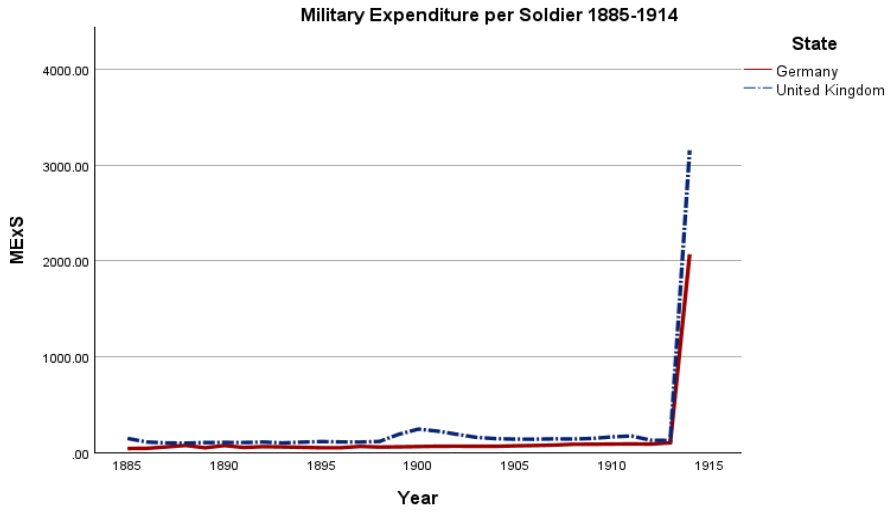

Figure 8. Singer, J.D. (1988). "Reconstructing the Correlates of War Dataset on Material Capabilities of States, 1816-1985". Internationa Interactions,14, pp. 115-132. Version 6.0.

Neither the British nor the German empires evidenced statistically significant changes (Table 8) to their MExS for the observation period; each only began to heavily invest in military spending at the outbreak of war in 1914. This differs from the American phase, in which both the United States and China have averaged an increase in MExS by .01 percent per year.

Table 8.

Coefficients[a]

			Unstandardized Coefficients		Standardized Coefficients		
	stateabb	Model	B	Std. Error	Beta	t	Sig.
(Constant)	GMY	1	-26899.746	14021.047		-1.919	.065
	UKG	1	-40102.964	21180.392		-1.893	.069
year	GMY	1	14.232	7.381	.342	1.928	.064
	UKG	1	21.238	11.150	.339	1.905	.067

a. Dependent Variable: MExS

Results

Hypothesis 1. The first hypothesis of this study was that the United States would evidence decline in all measures of power. This hypothesis is partly supported by the data. The United States has declined in CINC at a rate of .01 percent per year, and naval tonnage at a rate of .04 percent per year; however, the United States has evidenced no statistically significant change in MMP and has increased military expenditures at a rate of about $13,229 per soldier annually.

These results are interesting in that American shares of global naval tonnage have decreased, though the United States remains the clear world leader in sea power, possessing 40.8 percent share of global tonnage in 2020, and only forecasted to fall to 36.6 percent by 2040[33].

Despite the U.S. Navy's proposed budget for fiscal year 2024 including $32.8 billion for shipbuilding, it is expected to retire its two oldest aircraft carriers—the Nimitz and the Eisenhower—by 2027 (Brodsky 2023) and has estimated that the number of battle force ships will drop from 296 to 291 by 2028 (CRS 2023). This plan reflects the overall trend in American sea power decline, and it is likely that the United States will continue to average a decline in relative tonnage through 2028 unless increased tensions shift naval readiness priorities.

Hypothesis 2. The second hypothesis was that China would evidence increases in each of the indicators of power measured. This is supported by the data. China has increased its shares of both CINC and seapower by .02 percent, MMP by .01 percent, and MExS by $2,598.15 for each available data year since 2000.

Hypothesis 3. The third hypothesis of this study was that despite declining in power, the United States would maintain superior levels of seapower, MMP, and MExS relative to China. This is supported by the data.

Though China has surpassed the United States in power as measured by CINC, owing in large part to its outlier population size, and has averaged positive rates of change in each measure of power analyzed, China's military strength remains quantitatively inferior to that of the United States. The United States maintains a sizable lead in naval tonnage, possessing 40.8 percent in 2022 compared to China's 9.5 percent; if rates of change remain steady the United States will maintain its lead by a 22.4 percent margin into 2040.

However, the current seapower dataset does not account for Beijing's third aircraft carrier, the *Fujian*, estimated to displace 80,000 (China Power 2023) to 100,000 tonnes (Gatopoulos 2022) and cannot account for the PLAN's ambitious naval expansion plan which reportedly includes increasing its fleet to 400 hulls by 2025 from its 2022 level of 340 ships (Department of Defense, 2022)[34].

Additionally, the United States maintains a lead in relative MMP, though not at the same degree of separation as naval tonnage—once again owing to China's larger population. The United States possessed 19.6 percent of global MMP in 2022, down from 21.3 percent in 2000, while China increased from 5.5 percent to 7.6 percent of global MMP, resulting in a margin of 27.2 percent.

Finally, the United States spends vastly more per soldier than China and seems to be further widening that gap. The United States has increased spending from $221,915 per soldier in 2000 to

[33] See Appendix

[34] As well as an increased investment in shipbuilding as evidenced by China's 2017–2019 ship production which surpassed the productions of the United Kingdom, France, India, Japan, and Australia combined (CSIS 2022).

about $437,691 by 2016. China, hampered by its larger military[35], spent a much smaller $14,946 at the beginning of the century, increasing to about $62,168 in 2016.

Hypothesis 4. The fourth hypothesis of this study was that the British Empire would evidence similar rates of change as the contemporary United States during its period of deconcentration. This is not supported by the data.

Between 1885 and 1914, Great Britain declined in CINC at a rate of .03 percent while the United States is currently declining at a rate of .01 percent; increased in naval tonnage at a rate of .01 percent while the United States has declined at a rate of .04 percent, neither evidenced statistically significant changes to their share of MMP, and only the United States has evidenced a significant change in MExS.

These results suggest that the only similar rate of change during either presumed deconcentration phases occurred with CINC, though Great Britain experienced a sharper average decline. Interestingly, despite its decline into the Great War, Great Britain was maintaining its lead in seapower and increasing its share of tonnage on an annual basis, though it did not experience significant changes to its MMP nor MExS until the onset of war.

These results seem to support the critique of the decline of the British empire leading into 1914 as "greatly exaggerated" (Neilson 1991) and seem to indicate that the utility of the long cycle, in this case, may not accurately illustrate the declines of world leaders. Instead, the rise of challengers in each period better reflects the long cycle, as each evidenced nearly identical rates of change in each measure of power; the only difference being that China has increased its relative CINC at a greater rate than did Germany.

Hypothesis 5. The fifth hypothesis of this study proposed that the German Empire would evidence similar rates of change as contemporary China during its ascendancy in the deconcentration phase of the British cycle. This is supported by the data.

Between 1885 and 1914, Germany increased its shares of CINC by .01 percent, while China is currently increasing its CINC at a rate of .05 percent; both evidenced growth in naval tonnage by .02 percent, growth in relative MMP by .01 percent, while only China evidenced a statistically significant change in MExS, despite Berlin's sudden increased investment in military spending at the outbreak of war in 1914. These results indicate there is much more similarity, at least in rates of change, between the rising challengers of each period and not the declines of the world leaders.

Considerations for Future Study

One difference between the deconcentration phase of the British cycle and the American cycle is the "bargaining" position of the challenger relative to the declining world leader. The German Empire, though a rising challenger, failed to match British naval power and made the calculation

[35] For perspective, the sizes of each state's militaries are about 1.3 million to 2.3 million, respectively (NMC v.6.0, Singer 1988).

that they were at risk of becoming militarily inferior to the Russian Empire—a more immediate land-based threat. The Russian Empire made a similar calculation despite their devastating loss to Japan in 1905 and the fracturing political situation with the Czarist regime (Ferguson 2002: 249).

This calculation, that perhaps the challenger would itself become challenged by another great power, led the German military to plan and engage in a pre-emptive strike in the Balkans, serving as the flashpoint to a series of events which would drag the British into the cycle-ending global war (Ferguson 2002: 249). Within the power structure of that period the German challenger believed they needed military action to maintain and continue their rise in power. The Chinese situation differs.

Unlike Germany, which acted out of a sense of perceived weakness, China—if it does not miscalculate the power of other states and can avoid economic downturn—could continue to rise in power within the American system. This means that China has more bargaining power than the Germans believed they did; if China can maintain its growth within the current international order, it may not need to force the issue of world leadership through global war. Instead, the onus may be on the United States to act in order to preserve its position. Though this is speculative, it is a consideration worth noting when considering the likelihood of a global test of strength and in pinpointing potential flashpoints.

Additionally, power perception and policy decisions made on (mis)calculations are important aspects of great power competition which cannot be addressed through quantitative measures. Despite the results of this study which indicate the United States maintains sizeable leads in relative naval tonnage (by 31.3 percent) and relative MMP (27.2 percent), there seem to be growing perceptions within American politics and academia that Beijing has become a near-peer or peer adversary (Zhao 2022; Garamone 2023) this perception may influence policy decisions which pursue aggressive measures of containment despite the United States's relative power advantage, resulting in miscalculation and heightening the risk of war.

Maintaining Dominant Naval Power

Hawkish foreign policy experts and strategists might look towards the 1807 British seizure of the neutral Danish fleet as a successful if not brash maneuver which effectively, when coupled with the earlier victory at Trafalgar, ended French hopes for an invasion of the British mainland (Adkins 2006). Although this was both unpopular domestically and internationally, it allowed the British to maintain their one power advantage over Napoleonic France—naval power.

Again, one cycle later, the British faced a proximate rising challenger in the German Empire and once again needed to implement policy to maintain its advantage—again, naval power. Unlike the bombardment of Copenhagen, this policy was one of production, the previously described "Two-Power Plan" which sought to bolster British naval manufacturing to outnumber the next two most powerful navies combined (Allison 2017). This policy was effective in maintaining a steady balance of power over the rising German navy, despite becoming economically inferior to the German challenger, and having been surpassed in material capabilities.

Although naval power may no longer be the superior force multiplier of modern, nuclear and cybernetically capable militaries that it was during previous cycles, the United States should not allow itself to be surpassed in this measure of power. It is evident from the Chinese naval production plans discussed in this work that Beijing recognizes it remains dwarfed by the United States in naval power—and may fail to near parity in the next two decades—despite surpassing the United States in economic and material capabilities. To challenge American global leadership, Beijing must bolster its naval forces.

As such, the current U.S. Navy's 30-year plan seems either woefully short-sighted or devastatingly under-funded compared to Beijing's. The U.S. Navy is only projected to increase manned ships from the current[36] 296 ships to an estimated 331 by the year 2040 (CRS 2023); in comparison the PLAN, which is already larger at 330 ships, and seeks to expand to 400 ships by 2025 (LaGrone 2022). Despite arguments echoing the sentiment that quantity is not quality, numerical advantage has been shown to better predict victory in naval wars between two navies of similar "professional competence"[37] (Tangredi 2023). Further, though it falls far short of American aircraft carrier count, Beijing is on path to outnumber the U.S. Navy in number of vertical launch system cells by 2027 which would allow the PLAN to fire more anti-ship, land-attack, and air defense missiles than the U.S. Navy per average salvo (Palmer, et al. 2024).

These concerns are bolstered by the lack of American shipbuilding infrastructure. The United States only possesses four public shipyards and is estimated to be 20 years behind in necessary naval maintenance, making the United States reliant on its more efficient and productive shipbuilding partners, such as South Korea and Japan (Seavy 2024). The lack of infrastructure is concerning in an operational sense, especially in a Pacific theater which will be dominated by naval campaigns. If war between the United States and China occurs, Washington's ability to maintain naval supremacy could be severely crippled by its lack of domestic shipbuilding and reliance on partners proximate to China, which could disrupt those shipbuilding efforts while creating shortages of global parts and services needed by domestic American shipyards.

In part due to the inability of the United States to produce ships at the same rate (Barndollar and Mai 2024), and in acknowledgment of the growing separation between the size of the U.S. Navy and the PLAN, the DoD has pursued the "Replicator Initiative" (Hicks 2023) as means to compete with Beijing's increasing "mass" by developing and implementing cheap autonomous systems which pose Beijing with an "unfavorable cost-exchange ratio"[38](USNI 2024). If the United States cannot maintain its dominant naval advantage in a time of war through production—

[36] Current as of 2023

[37] Tangredi (2023) found that of 28 naval wars with protracted naval combat, 25 were won by the larger fleet, while the smaller, more technologically superior fleets won only three wars.

[38] Using cheaper UAVs to draw costlier counter-fire, a lesson gained from the U.S. Navy's experience intercepting Houthis drones in the Red Sea using costly missiles. Some, like the Block IV, cost $2.1 million dollars.

and there are arguments why resources are best used elsewhere[39]—it should seek to offset Chinese expansion in this domain through the implementation of cost-effective unmanned systems. Although lethal autonomous systems are not the force multipliers aircraft carriers are, their use in the Red Sea and in Ukraine illustrate the ability of small, quick, and ballistically enabled systems, to target weaknesses in naval vessels at a more favorable cost than large-scale ship production.

Conclusion

This work sought to determine whether the current distribution of power between great power rivals, compared to that of 1885–1914, suggests the United States is in a period of deconcentration as put forward by Goerge Modelski's (1987) theorized pattern of long cycles. Such a study is important amid shifts in the distribution of power and aggressive rhetoric which may lead to over-reaction and miscalculated perceptions of power exacerbated by growing geopolitical tensions and hyper-insecurity (Doran and Parsons 1980).

Potential flashpoints have emerged over the sovereignty of Taiwan (Kine 2022; Maizland 2025), detection of Chinese cyber-attacks targeting critical infrastructure[40] (Pearson and Satter 2024), apparent expansion of PLAN nuclear submarine construction (Copp and Gambrell 2024), and the creation of Chinese naval bases and outposts along strategic trade chokepoints[41] (Kanwal 2018). Additionally, indications that the Chinese economy is stalling may lead Beijing to take more aggressive actions to maintain its ascendancy; the Chinese Communist Party may calculate that Beijing can no longer maintain growth within the current international order, and the time has come to remove the restraints of the American system.

This seems to be reflected by the expansion of BRICS, which first formally met in 2009 and expanded in 2023 to include Egypt, Iran, Ethiopia, the UAE, and which has reportedly received applications for membership from 20 states since 2023 (Ferragamo 2024). Among BRICS priorities are recurring discussions of challenging the dollar through such proposals as the Cross-Border Payment Initiative (BCBPI) and a SWIFT-adjacent interbank communication infrastructure to allow members to circumvent Western sanctions (Norton 2024). As membership continues to grow, BRICS members may bandwagon more powerful members such as China, India, and Russia, to circumvent Washington-led financial coercion, while seeking alternative banking services removed from Western neoliberal rules-based constraints of the International Monetary Fund and World Trade Organization (Chorev and Babb 2009).

Additionally, political support for unilateral world leadership and the reduction of resources on international issues is becoming a staple of American politics, highlighted by the foreign policy of previous, and future, administrations. Support for the withdrawal of the United States from its

[39] Recall lessons learned in Ukraine and the Red Sea regarding the use of far cheaper unmanned lethal munitions to disrupt and/or destroy expensive naval vessels.

[40] Such as the 2023 "Volt Typhoon" attack.

[41] See the Asia Maritime Transparency Initiative's *China Island Tracker,* Center for Strategic and International Studies.

leadership position resembles the characteristics of deconcentration, including decline in support for the use of "blood and treasure" on system-level issues and ordering. This political shift (Agrawal 2024) seems to indicate an American public[42] and political base which are weary of the costs of system maintenance and are decreasingly perceptive to the benefits of world leadership and find withdrawal favorable to leadership (Mearsheimer and Walt 2016).

This study has attempted to bolster the historical comparative evidence argued in long cycle literature with quantitative analyses of power to accurately understand the distribution of power in the world-system. It is clear that the United States is declining in military power, but despite Chinese growth in each measure studied, maintains sizable shares of relative naval tonnage and MMP.

Determining whether the decline recognized in this study is truly deconcentration leading towards global war is a question which can only be answered in hindsight, though conditions which have brought about global war in similar periods of competition are present in the current system (Stares, et al. 2020). It is clear from this study that global power between the United States and China is re-distributing: American power is decreasing while China continues to increase power at a consistent, statistically significant rate. However, Washington maintains an advantage in relative naval tonnage and material military power.

Whether these margins will close as Beijing continues to invest in rapid naval expansion amid a downsizing U.S. Navy unable to compete in shipbuilding, or if growing geopolitical tensions will increase support for hawkish deterrents and increased investments in military readiness thus widening the distribution of power gap remains to be seen, but makes this competition and the risk of war a consideration worth continued study in the coming decade.

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[42] See Whiteley (2024) for American poll data regarding Ukraine spending.

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Appendix: Data and Figures

Figure 9

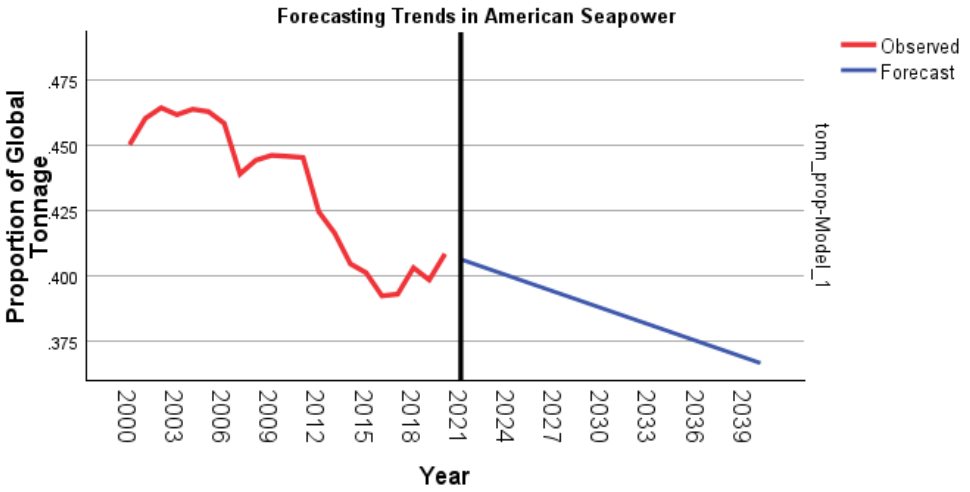

Figure 9. Crisher, B., Souva, M. (2014). Power at Sea: A Naval Power Dataset, 1865-2011. International Interactions, 40, pp. 602-629. Updated 2024.

Figure 10

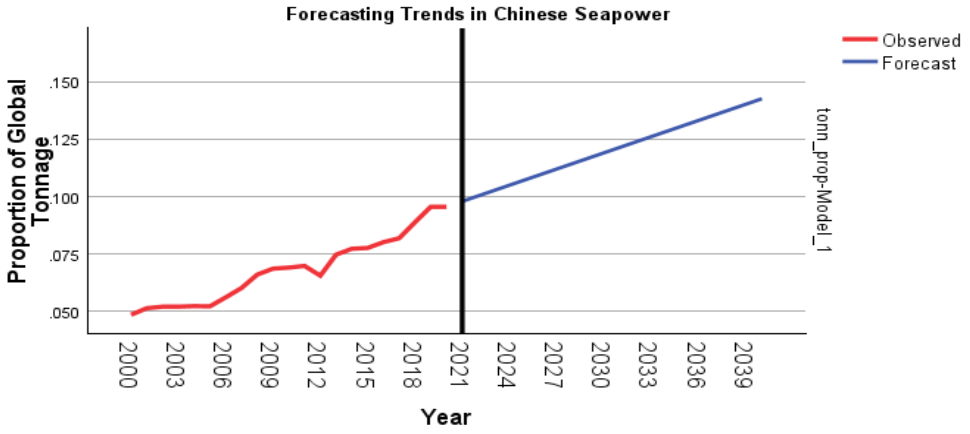

Figure 10. Crisher, B., Souva, M. (2014). Power at Sea: A Naval Power Dataset, 1865-2011. International Interactions, 40, pp. 602-629. Updated 2024.