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Renaissance of the Rimlands: How Eurasia's Transformation at Sea Re-Shapes Geopolitics on Land✣

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|ABSTRACT|

The functional role of Eurasia's surrounding sea lanes has changed substantially over the past three decades, with broader implications on land for the continent's role in world affairs. Until recent decades largely a venue for local trading, since the early 1990s the Indian Ocean and surrounding bodies of water have become arenas for intense, large-scale trans-continental commerce, as the economies of the rimlands have expanded. Energy, industrial raw materials, and food products have flowed to Northeast Asia and Europe, balanced by industrial exports. The expansion of commodity trade has much further to go, especially in the South and Southeast Asian rimlands of the Indian Ocean, as both energy and food consumption expand from their

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still-low per capita base in these heavily populated nations. Three other dimensions of transformation complement the expansion of commodity trade and manufactured exports. Beneath the seas, raw material extraction is rising, even as the information revolution transforms Eurasia's oceans, through the rapid expansion of undersea fiber-optic cables, and sub-surface military technology advances. Global warming is also making Arctic transport and resource development, long rendered impractical by climate, increasingly feasible. These multiple maritime transformations all have geopolitical implications on land. In the aggregate, the changes benefit China and Russia, rendering their prospective partnership of enhanced global strategic value. The embedded strengths of the industrial democracies, however, remain formidable, especially in the technological realm, leveraged by their market orientation. The changing geopolitics of Eurasia's waterways thus intensifies challenges to the industrial democracies, increasing the future importance of multilateral collaboration, although whether these marginal changes in capacity will provoke thoroughgoing systemic transformation still remains unlikely.

Ⅰ. Introduction

Geography is physically enduring. And in classic geopolitical analysis, its functional significance is constant across the ages. Sir Halford Mackinder, father of modern geopolitics, saw Eurasia's heartland as strategically central by virtue of where it lay, even as Nicholas Spykman, one of the founders of classical realism, prioritized its rimland periphery for similar reasons.[1] And Alfred Thayer Mahan stressed the endemic and enduring centrality of the seas.[2]

In reality, however, change is an indelible aspect of our world. Human beings as a species are continually evolving, as is the technology that enables us to navigate and make sense of the world. The functional significance of geographic features thus varies markedly over time, due to advances in human technology and interaction with the environment.

1) See, for example, Halford Mackinder, "The Geographical Pivot of History," *The Geographical Journal,* Vol. 23, No. 4 (1904); Nicholas Spykman, *The Geography of the Peace* (New York: Harcourt, Brace, and Company, 1944).

2) Alfred Thayer Mahan, *The Influence of Sea Power upon History* (Boston: Little Brown, 1890).

As Heraclitus wisely observed, one cannot step into the same river twice.[3] And that is not only because we are changing.

What geography means in the contemporary world, how its practical significance changes across the years, and what such transformations ultimately mean for world affairs, are crucial questions of both theoretical and policy importance. When the geographical unit in question is substantial in political-economic and demographic scale, functional transformations in the geographic realm can powerfully impact global system transformation.[4] The rise of East Asia, and China within it, has been a topic of special analytical attention for at least four decades in that regard.[5] Some attention has also recently been given to the implications of broader political-economic changes on the Eurasian continent, such as the collapse of the Soviet Union, that have amplified the global impact of China's rise.[6]

A century and more ago, Mahan theorized about the strategic importance of the seas. The Battle of Midway and other key developments of the Pacific War confirmed his contentions, in the view of many. Across the Indo-Pacific, from the 1950s on, new geo-economic relations

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3) Plato quoted Heraclitus as saying: "You could not step twice into the same river." See *Stanford Encyclopedia of Philosophy,* "Heraclitus," https://plato.stanford.edu/entries/heraclitus (Accessed October 15, 2023).

4) On system-transformation theoretical debates, see for example, Robert Gilpin, *War and Change in International Politics* (Cambridge: Cambridge University Press, 1981); Robert O. Keohane and Joseph S. Nye, *Power and Interdependence* (New York: Scott Foresman and Company, 1989); Robert Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 2005).

5) Kent E. Calder and Roy Hofheinz, Jr., *The Eastasia Edge* (New York: Basic Books, 1982); Martin Jacques, *When China Rules the World: The End of the Western World and the Birth of a New Global Order* (London: Penguin Books, 2009); Gideon Rachman, *Easternization: Asia's Rise and America's Decline: From Obama to Trump and Beyond* (New York: Vintage Books, 2016).

6) Kent E. Calder, *The New Continentalism: Energy and Twenty-First Century Eurasian Geopolitics* (New Haven: Yale University Press, 2012); Kent E. Calder, *Super Continent: The Logic of Eurasian Integration* (Stanford: Stanford University Press, 2019).

between Northeast Asia and the Arabian Gulf, centering on energy and largely maritime, began quietly to emerge.

Virtually all of this geopolitical and geo-economic analysis, however, has focused on land-based developments. Very little has dealt with transformations at sea, and the few works of that sort tend to focus narrowly on naval power rather than on broader geo-economic developments.[7] Yet the interaction of transformations on land and those at sea have, as this paper will make clear, profound implications for one another. The evolution in the functional role of the seas themselves, in particular, can profoundly influence developments on land. And the synergies between geo-economic evolution on land and sea can in turn become a crucial determinant of global system transformation as a whole.

Ⅱ. How Maritime Developments Alter Geo-Politics on Land

In considering the impact of maritime developments on broader continental geopolitics, it is important to consider first the functional role that maritime bodies themselves play in the larger geo-economics of international relations. Three in particular are noteworthy. First, the seas are a conduit for cost-effective trade, especially of bulk commodities. State-of-the-art container ships can carry massively larger loads than freight trains — easily 15-20 times as many standard-size Twenty Foot Equivalent Unit (TEU) containers. The Unit cost of transportation by

7) Toshi Yoshihara and James R. Holmes, *Red Star over the Pacific: China's Rise and the Challenge to U.S. Maritime Strategy* (Annapolis, Maryland: Naval Institute Press, 2018); Geoffrey F. Gresh, *To Rule Eurasia's Waves: The New Great Power Competition at Sea* (New Haven: Yale University Press, 2020).

weight is also orders of magnitude less than by land.[8] Raw materials, foodstuffs, and machinery are thus much cheaper to transport by sea than otherwise.

As a general matter, maritime access offers the distinct advantage to rimland nations, bordering on the sea, of broad choice of trading partners, since sea transport, in contrast to overland transit, is not directly subject to third-party control. This considerable advantage of maritime access is, however, constrained in the case of enclosed seas, such as the Black, Red, Mediterranean, and South China Seas, by the existence of chokepoints that constrain access to the broader oceans, as will later be discussed in greater detail.

Apart from transport, there are important economic functions of the seas that should be noted. They can be sources of seafood, which can be important for populous nations such as China and Japan. They can be sources themselves of off-shore oil and gas, as well as renewable energy, drawn from the wind and the waves. The seas themselves can also be sources of raw materials, including rare-earth metals such as manganese and cobalt — a consideration that could become more important in future years. Cobalt, for example, is a key element in batteries that power electric vehicles.

Although not as well recognized as the transport and food-supply functions, the seas are also rapidly becoming increasingly important as a conduit for information flows. In the information age, over 95 percent of internet information moves, for example, beneath the sea. Satellite-based information flows, of course, are an alternate possibility, but fiber-optic undersea communication is far more cost-effective than

8) For distances over 1500 kilometers, maritime transport is generally cheaper than by rail, with the "break-even" point between road and rail around 500-750 kilometers. The heavier the load in question, the more favorable are the differentials in favor of maritime. See Jean-Paul Rodrigue, *The Geography of Transport Systems (Fifth Edition)* (London: Routledge, 2020), p. 153.

aerospace.

A final functional role of the seas, of course, is geo-strategic. As so evident in the South China Sea, waterways can easily become the site of bitter international conflict.[9] Precisely because so many vital economic transactions, ranging from bulk commodities such as crude oil to information, flow on or under the sea, their broader importance for national security is substantial, as is their role in cultural exchange also. That strategic importance of the maritime can be either as a conduit to other nations or as a protective barrier moat, especially important for island nations like Britain, Australia, and Japan.

Unlike land, the seas are not "susceptible of ownership", as the naval strategist Jeremy Corbett has pointed out.[10] Consequently, one cannot conquer them in a definitive way. Sea control, as Corbett emphasized, is strategically important, but cannot easily be more than temporary or relative. Apart from physical destruction of opposing forces, indirect means such as blockades or control of chokepoints become important in assuring such sea control. This strategic reality inevitably links maritime geopolitics to those of the adjacent rimland.

Ⅲ. An Explosion of Eurasian Maritime Commodity Flows

The Eurasian continent, largest in the world, is blessed by striking internal complementarities that are potential building blocks of continental interdependence.[11] Most importantly, it is home to over half

9) Robert D. Kaplan, *Asia's Cauldron: The South China Sea and the End of a Stable Pacific* (New York: Random House, 2014).

10) Julian S. Corbett, *Some Principles of Maritime Strategy* (Annapolis, Maryland: Naval Institute Press, 1988).

of the world's population. Indeed, four of the five most populous nations on earth — India, China, Indonesia, and Pakistan — lie on the Eurasian continent, with an aggregate population of well over three billion people themselves.[12)]

All of these nations, being generally lower-income relative to the industrialized West, have remarkably low current per-capita consumption of energy, food, and raw materials. The average Indian, for example, consumes only one tenth the amount of primary energy that the average American does, and only two thirds of the per-capita caloric food intake.[13)] As these developing nations grow more affluent, however, their per-capita requirements for food and energy will inevitably rise. Given the huge populations of developing Eurasia, the result could well be massive growth in aggregate demand for foodstuffs, energy, and raw-material commodities.

The largest population centers of developing Eurasia are invariably on the sea — Shanghai, Mumbai, Jakarta, and Karachi among them. Their energy and food requirements are for bulk commodities. That combination will almost inevitably involve transport by sea — both from elsewhere in Eurasia and beyond. Ninety-five percent of India's foreign trade by volume, and 68 percent by value, is maritime.[14)]

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11) For details, see Calder (2019), pp. 70-99, which explores resources and demographic complementarities among geographically contiguous Europe, East Asia, and South Asia, in particular.

12) United Nations Statistics Division, "Demographic and Social Statistics: population size and density," https://unstats.un.org/unsd/demographic-social/sconcerns/popsize (Accessed October 17, 2023).

13) World Bank, "Energy Use (kg of Oil Equivalent per capita)," https://databank.worldbank.org/source/world-development-indicators (Accessed October 17, 2023); United Nations Food and Agricultural Organization, "Food Supply—Crops Primary Equivalent (kcal/capita/day)," https://www.fao.org/faostat/en/ (Accessed October 17, 2023).

14) Invest India, https://www.investindia.gov.in (Accessed October 17, 2023).

Ⅳ. Implications for Eurasia's Sea Lanes

The most industrialized nations of Eurasia, and the ones that first began rapidly increasing their propensity to consume food and energy, lie in the northeast of the continent. Food imports have been longstanding, and historically came from throughout the world, but invariably by sea. Energy imports have been more region-specific. First Japan (from the 1950s), then Korea (from the 1960s), and then China (from the 1990s) began importing energy in large quantities from the Arabian Gulf, across the China Seas and the Indian Ocean, as their economies began to grow rapidly. By 2022, China alone was importing over 12 million barrels of oil a day, with the overwhelming share of this huge volume flowing from west of the Strait of Malacca and across the Indian Ocean from the Gul f.[15] China alone was also importing almost 10 million tons of wheat and over 20 million tons of corn, much of it flowing from the black earth of Russia and the Ukraine as well as from Australia.[16]

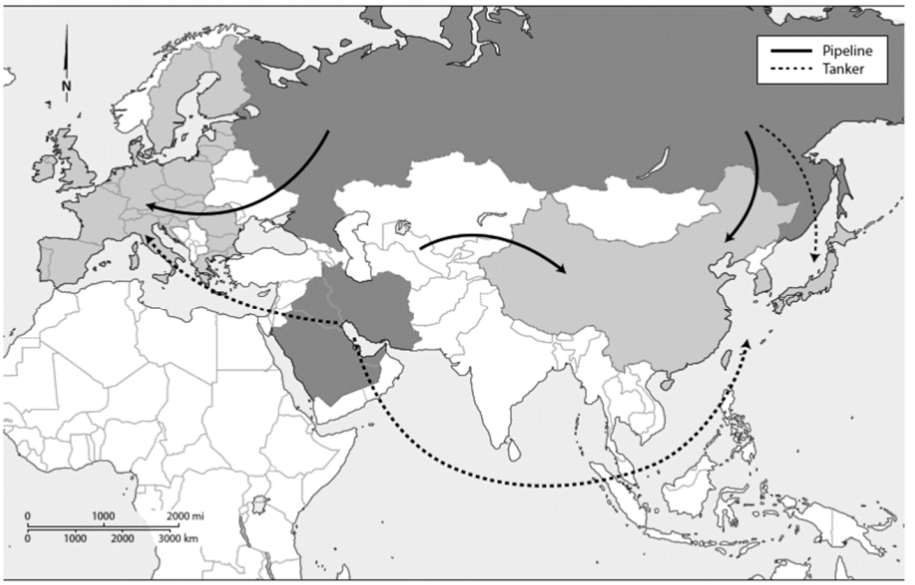
Over the past decade, economic growth, coupled with related growth in energy demand and caloric intake, have likewise begun to accelerate in South and Southeast Asia. The automotive revolution, air conditioning, construction, and a transition from vegetarian to more meat-intensive diets have amplified commodity demand. These varied yet parallel socio-economic transformations have propelled a new surge of commodity demand, across the same Eurasian sea lanes as those used by energy, but with a special concentration west of the Malacca Strait. As noted in 〈Figure 1〉, this rapidly rising commodity trade, and reciprocal trade in manufactures, has been concentrated heavily in the Indian

15) Energy Institute, *Statistical Review of World Energy* (2023), p. 29.

16) Nongye nongcun bu nongye maoyi jujing jiuji zhuanjia wei yuanhui, "Guoji nongchanpin shichang yu maoyi 2023 nian (chunji) baogao," https://www.gjs.moa.gov.cn/ncpmy/202303/PO20230310661385545978.pdf (Accessed October 18, 2023).

Ocean, and the sea lanes further westward to Europe. Given the prospect of rapid future economic growth, and still-low but rising per-capita consumption levels along the Indian Ocean rimlands, there is a strong likelihood that this trend will continue. Commodity trade across the Indian Ocean, Red Sea, Mediterranean Sea, and Black Sea could remain buoyant for many years to come, even though it may take a somewhat different form from China's iconic maritime expansion of recent years.

<Figure 1> Trans-National Energy Flows and the Eurasian Sea Lanes



MAP 4.4 Contrasting energy supply options for Europe and East Asia

Source: Calder (2012).

A second driver for enhanced commodity flows across Eurasia's sea lanes, rooted more in geopolitics than in demography, is the enhanced European interest in Arabian Gulf gas supplies, stemming from the Ukraine conflict and the mutually painful rupture in energy relations between Europe and Russia.[17] Since Moscow's full-scale invasion of Ukraine in February 2022, Europe has virtually terminated direct oil

and gas flows from Russia, including those through the two Nordstream pipelines under the North Sea. To replace Russian gas, the Europeans have actively explored increased Liquefied Natural Gas (LNG) supplies from the Gulf, while also expanding dependence on Norway and the United States (US).[18)]

Flows of Russian oil and gas to the international market have, of course, not disappeared. Russia is attempting to direct gas exports eastward to China, via the Power of Siberia pipelines. Yet the infrastructure for large-scale overland exports is still lacking. Instead, Russia too is relying increasingly on the sea lanes — both from Sakhalin southward, and also via the Black and Baltic Seas, to refiners in India and elsewhere. Maritime supplies from Murmansk and other Russian Arctic ports are also beginning to flow, as global warming proceeds. India is also rapidly increasing re-exports of refined cut-rate Russian gas, again by sea, to Africa, Southeast Asia, and even the Middle East.

As sanctions against Russia take hold, the United States is also emerging as an enhanced energy exporter — again, across the sea lanes. Europe is taking increasing amounts of American liquified natural gas across the Atlantic.[19)] There is also some increased North American trans-Pacific energy trade with Korea and Japan.

A final dimension of the expanding Eurasian maritime energy trade is in the Arctic. As global warming proceeds, the Arctic is becoming a

17) In oil, however, the marginal shift has been from Russia to the US and Norway, rather than primarily to the Gulf, although the sea lanes have been the key conduit in all these cases. Between 2019 and 2022, oil imports into the European Union from the US increased 63 percent, and from Norway 37 percent, while falling 36 percent from a very high base with regard to Russia. See Eurostat Statistics, https://ec.europa.edu (Accessed October 18, 2023).

18) See Eurostat Statistics, https://ec.europa.eu (Accessed October 18, 2023).

19) EU imports of US LNG, entirely maritime, were up around 55 percent in 2022, to 19 percent of the EU's entire imported LNG volume. See European Commission (EC), "EU-US Task Force on Energy Security: one year on," April 3, 2023, https://energy.ec.europa.eu/news/eu-us-task-force-energy-security-one-year-2023-04-03_en (Accessed October 16, 2023).

more hospitable environment for energy resource exploitation, and numerous major LNG projects along Russia's Arctic coast, such as Yamal and Arctic II, are nearing completion. These have involved mainly Russian and Chinese firms, such as Novotek and China National Petroleum Corporation (CNPC). They did, however, involve some G-7 companies such as France's Total and Japan's Mitsui, before the Ukraine war. If and when such Arctic projects become operational, the LNG they produce will also inevitably flow over the Eurasian sea lanes—particularly southeast to China, and possibly onward to Japan, and Korea some day.

Commodity-trade prospects, of course, will depend on more than sustained aggregate demand. Supply constraints will also factor in. And those constraints are likely to be intertwined intimately with geopolitics.

V. Rimland Renaissance? The Emerging Geopolitics of Eurasia's Sea Lanes

To understand the emerging geopolitics of Eurasia's twenty-first century sea lanes, it is crucial to grasp the geographic profile of the most important trade flows, which countries those flows connect, and the geopolitical points of leverage that flow from the underlying patterns of trade. Ten key points regarding the changing functional role of Eurasian sea lanes must be made:

(1) The Arabian Gulf is enjoying a renaissance as an oil and gas supplier, with Europe disengaged from Russian supplies, and the Asian nations willing to trade with Russia, such as India, are generally unable to receive supplies from Russia overland, due to infrastructural constraints, even as their supplies by sea rapidly

expand. The Arabian Gulf is more accessible, and transportation costs are lower.

(2) The Black Sea has growing strategic importance, in both the food and energy realms. Russia, Ukraine, and Central Asian nations such as Kazakhstan are all reliant on transit across the Black Sea for a substantial share of both their oil and their grain exports.

(3) The Red Sea is likewise of increasing strategic importance, as both a transit corridor for energy supplies from the Arabian Gulf to Europe, and also for food supplies from Russia/Ukraine to South Asia. Yet its stability is also threatened by instability in the Sudan, and by political-military rivalries among several powers (US, China, Russia, Saudi Arabia, and United Arab Emirates (UAE) among them) with bases along adjacent waterways.[20]

(4) The Baltic Sea is of rising significance in strategic terms, as it controls Russia's access to the open waters of the Atlantic. Historically, much of the sea, encompassing waters from the Gulf of Finland, near St. Petersburg, to the Skaggerak Strait between Denmark and Sweden was a neutral channel with strong Russian littoral presence.[21] The Ukraine war, however, provoked a sharp transition in its geopolitical complexion, with Finland and Sweden both applying to join North Atlantic Treaty Organization (NATO) in May, 2022.

(5) The South China Sea, bordering on both China and multiple Southeast Asian nations, is a principal conduit for close to a quarter of the world's trade by volume, and is wracked by multiple

20) Although Iran lacks formal basing presence, it is also a significant informal presence along these sea lanes, due in part to its ongoing political-military relationship with the Houthis (literally "Supporters of God") in Yemen.

21) For a well-researched, geopolitically sensitive history of the Baltic, see Michael North, *The Baltic: A History* (Cambridge, Massachusetts: Harvard University Press, 2015).

territorial conflicts, as well as cut-throat economic competition.[22] These geo-economic rivalries have grown increasingly intense, paradoxically, as the economy of the region has grown, and as its rimland nations have become increasingly interdependent.

(6) The Indian Ocean, a transit corridor for Northeast Asian energy for well over half a century, is gaining added importance, as South and Southeast Asian commodity flows grow explosively, with both the Gulf and Australia as important suppliers.[23] China is also an increasingly prominent strategic presence, now boasting the largest navy, in quantitative terms, in the world.

(7) The Bay of Bengal, a vigorous maritime thoroughfare under the British Raj, during the 19th and early 20th centuries, languished in economic vitality and strategic importance between the late 1940s and the 2010s.[24] Over the past decade, however, it has become once again an increasingly consequential thoroughfare, as growth accelerates in both Southeast Asia and South Asia.

(8) The Arctic Ocean is of rising importance as a source of energy, and a transit route between Europe and Northeast Asia, as global warming proceeds.[25] As indicated in 〈Figure 2〉, maritime routes between Europe and Northeast Asia are significantly shorter, via the Arctic, than via the Indian Ocean.

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22) See Kaplan (2014).

23) On the geopolitical implications of the Indian Ocean's changing global role, see Robert D. Kaplan, *Monsoon: The Indian Ocean and the Future of American Power* (New York: Random House, 2011).

24) For a detailed and well-researched history of the Bay of Bengal, see Sunil S. Amrith, *The Bay of Bengal: The Furies of Nature and the Fortunes of Migrants* (Cambridge, Massachusetts: Harvard University Press, 2015).

25) Rodger Baker, "Revisiting Arctic Geopolitics," *Mackinder Forum*, Seminar No. 62, July 26, 2022, https://mackinderforum.org/mackinder-forum-seminar-62-rodger-baker-revisiting-arctic-geopolitics/ (Accessed October 19, 2023).

<Figure 2> The Arctic Link between Europe and Northeast Asia

Source: World Maritime News, "Offshore Energy," https://www.offshore-energy.biz/vladimir-rusanov-ships-yamal-lng-cargo-to-china-via-northern-sea-route/ (Accessed October 15, 2023).

(9) Rimland nations all along the sea lanes — Turkey, Egypt, Saudi Arabia, Pakistan, India, Myanmar, Indonesia, and the Philippines, in particular — are gaining enhanced strategic importance. They stand between rapidly growing and increasingly proactive continental powers, such as China and Russia, which need access to the southern sea lanes, and these increasingly strategic commodity-trade sea lanes themselves.

(10) Chokepoints controlling access to enclosed seas — the Bosporus/Dardelles, controlled by Turkey; the Hormuz Strait, dominated by the UAE and Iran; the Bab al Mandab, at Djibouti, home to around ten foreign military bases; and the Strait of Malacca, adjacent to Indonesia and Singapore — have outsized significance, and give major leverage to littoral nations.

VI. The Changing Geo-Economic Role of Eurasian Seas: Principal Drivers of Transformation

Each of the eight bodies of water mentioned above — the Arabian Gulf; the Black Sea; the Red Sea; the Baltic Sea; the South China Sea; the Indian Ocean; and the Arctic Ocean are assuming new political-economic roles that are altering the broader geopolitics of Eurasia, with implications for the world as a whole. All are in the throes of geo-economic transformation. They are assuming new political-economic roles that are altering the broader geopolitics of Eurasia, with implications for the world as a whole. Eurasia's sea lanes are thus becoming a major driver, provoking an expanding global role for the continent in world affairs.

As the geopolitical role of Eurasia's littoral waters changes, the surrounding terrestrial world — the rimland and the chokepoints controlling access to enclosed seas — take on an enhanced functional importance on the global stage. Changes at sea across Eurasia are hence fatefully altering geopolitical relationships on land. Although the Ukraine war is primarily a land-based conflict, it has provoked important geo-economic changes at sea that in turn accelerate these shifting geopolitical relationships on land.

Four powerful forces are changing the geo-economic role of Eurasia's surrounding seas collectively, and giving them a distinct and rising geopolitical importance of their own. Most important is economic growth, which in turn is fueling increased energy demand. Before the 1930s — indeed, arguably until the mid-1960s — the Arabian Gulf was a relatively insignificant location in global geopolitics, despite its immense resources. A century ago, it was best known for its high-quality pearls.

Over the past half century, however, and especially since the two Oil Shocks of the 1970s, the functional importance of the Gulf in the global political economy has soared, as global economic growth has driven a sea change in energy demand. The Gulf's role has been enhanced since the mid-1990s by China's rising dependence on the Gulf, and by Beijing's increased political-economic activism there since the US withdrawal from Iraq in 2011. The rising affluence of Gulf nations has given them influence beyond the energy realm as well.

Economic growth is also changing the regional and global roles of several water bodies described above, that collectively connect major manufacturing centers of Europe, North America, and Northeast Asia, on the one hand, to commodity centers. The Indian Ocean, linking the Arabian Gulf to East Asia, has been powerfully affected in this regard, as has the Bay of Bengal, linking South and Southeast Asia. So, especially since advent of the Ukraine war, has the Red Sea, connecting the Gulf to a Europe increasingly interested in Arabian Gulf energy, especially LNG, due to the rupturing of European energy ties to Russia.

Demographic change also helps alter the role of the Eurasian seas in world affairs. Close to 40 percent of the world's population lies adjacent to the Indian Ocean and the South China Sea. These populations are young and growing rapidly. Their demographics clearly raise both the importance of the seas themselves, and of the littoral rimlands, including India, Bangladesh, Myanmar, and Pakistan.

Environmental transformation is also changing the functional role of some important bodies of water. This is especially true of the Arctic Ocean, where global warming is loosening the Arctic ice pack. Arctic sea lanes have been opening first on the Russian side of the Arctic Ocean, with close to two-thirds of the aggregate coastline, affording Moscow new geo-political and geo-economic advantages, including both access to raw materials and new export routes. The opening of the Arctic Ocean

also gives Russia at last the prospect of a direct access to the open seas that it has never enjoyed, across its long history.

Strategic transition is a final factor reshaping the geo-economic role of specific seas, with feedback effects on the geopolitical role of rimland nations as well. The Baltic and Black Seas are especially clear cases of this phenomenon at work. The global role of both seas has been profoundly affected, in particular, by the outbreak of the Ukraine war, because they border Russia, and the surrounding nations, alarmed by Russia's invasion, have strong incentives to balance against Russian assertiveness. In the Baltic, Finland and Sweden responded to Russia's invasion by applying to join NATO. In the Black Sea, Turkey denied Russian and NATO warships free passage through the Dardanelles.

Developments in Eurasia's surrounding seas, shaped by economic, demographic, environmental, and strategic factors, in turn have substantial impact back on land. This is especially true in the rimlands directly adjacent to the sea. Deepening South-South undersea informatics linkages through optical fiber, for example, connecting parts of South and Southeast Asia long isolated from the broader world, provide China advantages on land. Deepening East Asian energy ties with the Arabian Gulf also reinforce Japanese Indo-Pacific and Korean Southern Diplomacy strategies, while also motivating Washington's Northeast Asian allies to persuade the US to deepen Indo-Pacific security commitments where Washington's interests otherwise would be marginal.

Ⅶ. Eurasian Maritime Transformation: Geo-political and Geo-economic Implications

As suggested in the preceding pages, maritime transformation is occurring across the Eurasian continent, as globally, in several distinct

dimensions. There is transformation above the seas — principally in the transport of energy and other commodities, especially feed grains. There are also dynamic and highly strategic developments beneath the seas, both in the economic and security domains. These developments include off-shore oil and gas development; fiber-optic underwater communication; and sub-surface mineral development in the civilian domain, as well as sonar reconnaissance and submarine activities in the military realm.

These varied transformations, driven by both technology and economic development, have expressions both at the generic and at the area-specific level. In the latter realm, that of enclosed seas, the geopolitics are substantially influenced by local geography. In the interest of parsimony, we will consider here only the impact of transformations in the three most strategically important enclosed seas adjacent to Eurasia's rimlands — the Black Sea, the Arabian Gulf, and the South China Sea.

(a) The Rising Importance of Choke Points: Increased commerce across the oceans over the past three decades has naturally enhanced the importance of narrow straits through which maritime commerce must pass. This also increases the leverage of nations that control choke point access. Thus, Turkey, which controls the Dardanelles and the Bosporus; the UAE and Iran, which border the Strait of Hormuz; and Singapore, which adjoins the Strait of Malacca, have gained rising geo-political importance, relating to their influence at key choke points. Around the Strait of Malacca, India and Australia have quietly gained leverage as well, due to their control of the Andaman and Nicobar Islands, and the Keeling and Christmas Islands, respectively.

(b) Rising Geo-Economic Vulnerability of China: Until late 1993,

China was a net oil exporter. Today it imports over 12 million barrels of oil daily, mainly over sea lanes stretching west of the Strait of Malacca and across the Indian Ocean.[26] And credible estimates suggest that its dependence on imported oil could exceed 80 percent of consumption by 2030.[27]

Although it has traditionally imported most of its natural gas by pipeline — mainly from Russia and Central Asia, China over the past decade has become a major LNG importer. This LNG has inevitably flowed to China over the seas, primarily from Qatar in the Arabian Gulf, although secondarily from Australia and Malaysia. Although LNG has diversified China's energy supplies, LNG imports, like oil imports, have intensified China's substantial energy vulnerability.

Food is a further dimension of China's maritime vulnerability. With a population of over 1.4 billion, which is steadily diversifying its diet toward higher meat content as it becomes more affluent, feed grain imports into China are also rising. And the vast majority of those imports are flowing in via the sea lanes.

(c) Rising Sensitivity of Commodity Prices to Geopolitical Conflict: Commodity demand in Eurasia's rimlands — India, the Levant, Bangladesh, Pakistan, Southeast Asia, and coastal China among them — has risen sharply over the past two decades, and shows promise of continuing to outpace global trends in coming years. That demand is being supplied, in substantial part, from

26) Energy Information Agency (EIA), "China imported record volumes of crude oil in the first half of 2023," September 18, 2023, https://www.eia.gov/todayinenergy/detail.php?id=60401#:~:text=Record%20volumes%20of%20crude%20oil%20were%20imported%20into%20China%20during,eased%20COVID%2D19%20mobility%20restrictions. (Accessed October 20, 2023).

27) Qiang Wang, Shuyu Li and Rongrong Li, "China's dependency on foreign oil will exceed 80 percent by 2030," *Energy,* Vol. 163 (2018), pp. 151-167.

geopolitically volatile areas, such as the Black Sea. Russia and the Ukraine together supply around 30 percent of the wheat, 26 percent of the barley, and 16 percent of the corn flowing in international trade, with the bulk of that supply flowing outward from the ferociously contested Black Sea itself.[28] Oil, similarly, flows to a substantial degree out through the politically contested Arabian Gulf and Arabian Sea.

(d) Rising Importance of Geopolitically Insulated Suppliers: Precisely due to the rising volatility of international commodity prices and supplies, geopolitically insulated suppliers with substantial production capacity are increasingly attractive to consuming nations. That emerging reality places stable, resource-rich nations like Australia and to some extent Canada and the United States in an increasingly advantageous position. Australia, in particular, has been actively cultivated as an economic and security partner by South and Southeast Asian nations, as well as the United States and, most recently, by China as an economic partner as well.

(e) Rising Intensity of South-South Lateral Communication: Increasingly important in the information age, internet communications run almost exclusively beneath the seas of the world, via fiber-optic cables. Traditionally these cables have been built and financed by Western multinational firms, with a resulting bias toward connecting information hubs of the industrialized world, primarily across the Atlantic. Undersea communication architecture has, for largely market-oriented reasons, tended to have a hub and spokes character, with internet traffic flowing largely through information hubs in the United States, Europe, Japan, and Korea.[29]

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28) Clare Sebastian, "Russia wields 'silent weapon' of grain exports to weaken Ukraine," *CNN Business*, October 5, 2023, https://edition.cnn.com/2023/10/05/economy/russia-wheat-exports-ukraine-war/index.html (Accessed October 21, 2023).

Recent undersea fiber-optic cable construction across Eurasia's seas is sharply altering that pattern, with broader geopolitical implications. Most importantly, China's Digital Silk Road program is placing strong emphasis on enhancing South-South communication, through expanding efforts to connect newly emerging information societies of South and Southeast Asia, as well as Africa and Latin America, directly with China.[30] One important example is the Pakistan and East Africa Connecting Europe (PEACE) Cable, linking Beijing overland with Gwadar in Pakistan, and thence undersea from Gwadar via Djibouti at the Red Sea entrance to both Mombasa in Kenya and Marseilles in France.[31] Another effort at deepening South-South undersea communication is Huawei Marine's recent initiative to connect Fortaleza in northeast Brazil to Kribi, Cameroon, in Central Africa, without traditional north-south routing via the United States and Europe.[32]

Such initiatives are ultimately important in geopolitical terms, as they come just as many of the developing nations being newly connected with one another are entering the information age for the first time. Along the route of China's Peace Cable, for example, internet users in Pakistan, constituted in 2020 only around 34

29) See Nicole Starosielski, *The Undersea Network* (Durham, North Carolina: Duke University Press, 2015).

30) See, for example, Jonathan E. Hillman, *The Digital Silk Road: China's Quest to Wire the World and Win the Future* (New York: Harper Collins, 2021), pp. 140-161.

31) The PEACE Cable, stretching 5800 kilometers from Pakistan to France, was completed in August, 2022. For details, see Winston Qiu, "PEACE Cable Completes Connectivity from Pakistan to France," *Submarine Networks*, August 27, 2022, https://www.submarinenetworks.com/en/systems/asia-europe-africa/peace/peace-cable-completes-connectivity-from-pakistan-to-france (Accessed October 20, 2023).

32) The South Atlantic Inter Link (SAIL) is a 6000 kilometer trans-oceanic submarine cable, completed in September, 2018. See Submarine Networks, "South Atlantic Inter Link (SAIL) Connecting Cameroon to Brazil Fully Connected," September 5, 2018, https://www.submarinenetworks.com/en/systems/brazil-africa/sail/sail-connecting-cameroom-to-brazil-fully-connected (Accessed October 21, 2023).

percent of the population, while in Djibouti they were 55 percent, in Egypt 53 percent, in Yemen 26 percent, and in Eritrea only 7 percent.[33] The SAIL cable, also initiated by China, connected Brazil, with 71 percent internet usage, to Cameroon, with 29 percent.[34] Myanmar, with 52 percent coverage, and Sri Lanka, with 35 percent coverage at present, are also increasingly reliant on China for expansion of their international communications networks through undersea cable.

(f) Impact of Global Warming: Changing environmental circumstances are clearly transforming the functional role of Eurasia's surrounding seas, with significant geopolitical implications. Most importantly, the Arctic Ocean is gradually becoming passable in summer, as the polar icecap grows thinner, with the most rapid opening along the northern coast of Russia, which also possesses two thirds of the total Arctic coastline.[35] The geopolitical implications will take some time to emerge, but this transformation of the northern seas will ultimately give Russia an access to open blue water that it has struggled for over three centuries, since the days of Peter the Great, to achieve.[36]

(g) Leverage of Embedded Maritime Security Capabilities and Networks: The seas surrounding Eurasia are clearly changing in important functional dimensions. The southern seas are carrying more commerce and more information, while the northern seas are opening to commerce as well. China and Russia, in the main, are benefitting from these transformations, and devoting

33) See Internet World Statistics, https://www.internetworldstats.com/stats1.htm (Accessed October 22, 2023).

34) Ibid.

35) Gresh (2020), pp. 245-271.

36) Baker (2022).

resources to capitalize. Yet significant embedded capabilities and geographical advantages inherited from the past, together with advantages from technological innovation that are largely still non-transparent to the general observer, counter-balance these Sino-Russian advantages on the seas and in the surrounding rimlands.

The most important embedded capabilities in the Eurasian seas are those of the United States. China now has, in numerical terms, the largest navy in the world, together with extensive maritime para-military capabilities, but the technological level of the People's Liberation Army Navy remains low, and China lacks a true blue-water navy. It possesses only two aircraft carriers and a third now building, compared to eleven for the US, each with significantly more sophisticated technical capabilities than those of the Chinese. Perhaps more importantly, for prospective conflicts of the future that would render carriers obsolete, the US has markedly superior undersea capabilities, particularly in attack submarines and underwater monitoring devices. These capabilities make deepening international trade dependence, as in commodity trade, a serious area of strategic vulnerability for China.

Another area of embedded American geopolitical leverage, that requires remarkably little financial upkeep, is the global U.S. military basing network, including important strategic outposts in the Indo-Pacific region.[37] Diego Garcia, in particular, lying 3,000 miles due south of the Arabian Gulf, and directly across Northeast Asia's sea lanes to both Africa and the Gulf, is a strong point of tremendous strategic importance. So are

37) On the details, see Kent E. Calder, *Embattled Garrisons: Comparative Base Politics and American Globalism* (Princeton: Princeton University Press, 2007), pp. 183-187.

Singapore and the Philippines, with whom the US retains strong defense relations, and Guam — deep in the western Pacific, but within range of Asia. In the north, as the Arctic begins to open, the numerous US military bases in Alaska also have globally strategic positioning, with respect to future sea lanes.[38]

Ⅷ. Conclusion

The functional role of Eurasia's surrounding seas has thus changed substantially over the past three decades, with broader implications on land for the continent's role in world affairs. Until recent decades largely a venue for local trading, the Indian Ocean and surrounding bodies of water have become arenas for intense, large-scale trans-continental commerce, as the economies of the rimlands have expanded. That trajectory has much further to go, especially in the South and Southeast Asian rimlands of the Indian Ocean, as both energy and food consumption expand from their still-low per capita base in these heavily populated nations.

There is also increasing activity beneath the sea. Off-shore resource exploration, particularly for natural gas, is one dimension. Sea-bed deposits, of cobalt, manganese, and other minerals, could be another. In the military dimension, submarine and related sonar reconnaissance technology is evolving rapidly as well.

Global warming is having an important impact on the functional role of the seas. Most importantly, it is making Arctic transport and resource development, long rendered impractical by climate, increasingly

38) Rodger Baker, "Alaska's Geopolitical Significance for the United States," *RANE*, June 24, 2019, https://www.ranenetwork.com/blog/alaskas-geopolitical-significance-for-the-united-states (Accessed October 20, 2023).

feasible. The northern seas from Europe, across Russia's Arctic, to East Asia are becoming increasingly navigable.

The information revolution is also changing the role of Eurasia's oceans. Internet communication occurs almost entirely beneath the seas, surging through undersea fiber-optic cables. It is expanding at explosive speed across developing Eurasia, from levels significantly lower than in the industrialized world.

These multiple transformations — increased trade, particularly of commodities; increased undersea development and military activity; growing access to the Arctic Ocean; and the rising role of the seas in internet communication — all have geopolitical implications on land. In the aggregate, in many observable dimensions the changes benefit China and Russia, rendering their prospective partnership of enhanced global strategic value. The embedded strengths of the industrial democracies, however, remain formidable, creating particular leverage in South and Southeast Asian rimlands that are of pivotal strategic importance. The changing geopolitics of Eurasia's waterways thus reconfigure the playing field of international affairs more generally, creating new challenges for both industrial democracies and their antagonists. Whether these marginal changes will provoke thoroughgoing systemic transformation, however, remains yet to be determined.

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