The Emergence of the Atlantic Energy Seascape: Implications for Global Energy and Geopolitical Maps[1]

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The Rise of the Global Seascape

The Atlantic offshore revolution is just one of the many expressions—one of the most dramatically visible—of a deeper reconfiguration of the global geopolitical and energy flow maps that has been unfolding since the end of the Cold War. The rise of the seascape and the emergence of the blue economy is a driving dynamic behind the various revolutions and counter-revolutions of the Atlantic energy renaissance. In fact, the strategic emergence of the global seascape reflects a long-term shift in relative geoeconomic and geopolitical significance (and transnational governance potential) away from the traditional geopolitical and energy landscapes and increasingly into the sea—the next great resource frontier and transnational governance challenge.

Over time, technological innovation has deepened the economic division of labor, pushing the dividing line of productive specialization beyond the unit of the household, then beyond the locally-confined market of the village, then past the boundaries of regional and national economies, and finally, now, even beyond the terrestrial, continental land frontiers of the global political economy itself to stretch more exhaustively across—and more penetratingly into—the global seascape. Over the past two decades, the increasingly rapid rate, and intensifying reach, of technological innovation has opened the sea

1. This chapter has been derived—with significant alteration suffered along the way—from an earlier analysis conducted for a scientific article submitted to the Atlantic Future research project of the European Commission. See: http://www.atlanticfuture.eu/contents/view/an-atlantic-energy-renaissance

depths and allowed for the mapping of their unique and largely unknown spaces, systems and topographies. Today the seascape represents a key space not just for the movement of people, goods, and military forces across the surface of the sea, but also for the exploration, mapping, exploitation, stewardship, and governance of its depths and floors—with its consequent implications for the global geopolitical and energy flow maps.

Transportation and commerce have, and continue to be, typically more efficiently undertaken by sea. Over 90% of physical merchandise trade (by volume, and nearly three-quarters by value) takes place via marine transport along the world's sea lanes (including two-thirds of the global oil trade, one-third of the gas trade, and the large majority of other global material flows, which together are expected to triple by mid-century).[2] Already some 5% of global GDP—or 3 trillion U.S. dollars annually—is generated from marine and coastal industries, while some 40% of the world's population depends directly upon marine and coastal biodiversity.[3] Furthermore, the role of the oceans in the maintenance of species diversity and of coastal ecosystem services, and in the absorption of carbon dioxide, is also critical, and—given the deplorable state of oceans in general and their rapid rate of deterioration—it will demand more and more intensive transnational collaboration.[4]

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2. Total global seaborne trade has increased since 1970 at an average annual rate of 3.1% and is expected to double yet again by 2030 (UNCTAD 2012). Since the mid-19th century, it has increased 400-fold in cargo volume terms, reaching nearly 1.5 trillion tons of seaborne cargo per capita annually. See Martin Stopford, "How shipping has changed the world & the social impact of shipping" *Global Maritime Environmental Congress* SMM Hamburg, September 7, 2010. (Stopford 2010).

3. See Marcia Stanton, "The Worth of the Deep Blue," *Namib Times*, April 27, 2013 (http://www.namibtimes.net/forum/topics/the-worth-of-the-deep-blue) (Stanton 2013), and Global Ocean Commission, "Petitioning Ban Ki-moon: Help secure a living ocean, food and prosperity—propose a new agreement for high seas protection" September 2014 (https://www.change.org/en-GB/petitions/ban-ki-moon-help-secure-a-living-ocean-food-and-prosperity-propose-a-new-agreement-for-high-seas-protection-in-september-2014) (GOC 2014).

4. See Paul Holthus, Xavier de la Gorce, and Anne-François de Saint Salvy, "Fisheries: A Resource in Crisis", in Richardson et al, *The Fractured Ocean: Current Challenges to Maritime Policy in the Wider Atlantic* (Washington, D.C.: German Marshall Fund of the United States and the OCP Foundation), 2012 (Holthus 2012a) and Paul Holthus, "Marine Natural Resources Extraction", in Richardson et al, 2012 (Holthus, 2012b).

"How inappropriate to call this planet Earth, when it is quite clearly Ocean" wrote the British writer, Arthur C. Clarke, referring to the fact that few are aware that nearly three-quarters of the planet's surface is covered by water, and that this same salt water constitutes 96% of the planet's living space by volume.[5] Largely as a result of having always lived predominantly upon the continental landmasses, even fewer among us have fully registered this relative shift in the center of gravity of the human political economy and our geopolitics into the seas. Nevertheless, as the center of economic and geopolitical gravity continues its modern shift from the land to the sea, our actual energy, geo-economic, geopolitical, and governance maps (independent of reigning mental maps) are increasingly marine-centered and ocean basin-based.

Furthermore, this relative shift from the land to the seascape today is far more profound that that announced in the first part of the 20th century by Alfred Thayer Mahan and Julian Corbett. In that earlier historical context, the advent of petroleum and the modern naval ship allowed sea power to overtake land power in relative terms, as navies could then influence the rim lands of Eurasia more effectively than during the earlier maritime ages of sail and steam. That relative shift in the historical technological edge between modes of land and sea transportation made obsolete the earlier claim by Halford Mackinder, the original geopolitical theorist, that the railroad ultimately implied that any power in control of the Eurasia heartland would easily dominant the entire landmass of Eurasia, and thus the world. But the subsequent relative overtaking of rail by sea transport in the early 20th century offset the influence of the once more dominant land-based railroad and facilitated a more feasible containment of the land-locked Eurasia heartland (most of what is today Russia and Central Asia and much of the Middle East) through the application of sea power to the rim lands of the supercontinent.

Despite that shift—theorized by Nicholas Spykman and *de facto* articulated in practice by George Kennan, and declared epoch-shap-

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5. "How inappropriate to call this planet Earth when it is clearly Ocean," quoted in James E. Lovelock, "Hands Up for the Gaia Hypothesis," *Nature*, Volume 344, Number 6262, 8 March 1990 (p. 102); also: "... As science-fiction author Arthur C. Clarke noted, 'it is inappropriate to call this planet Earth when it is quite clearly Ocean,'" as quoted in "Oceans: The Blue Frontier," *Nature*, 469, 12 January 2011 (pp. 158-159).

ing in its own day—the Eurasian heartland has continued to be considered the pivot of history—something like a middle earth on the predominant geopolitical projection of our global maps—just as it did back when Mackinder first made the claim in 1904, just before the railroad and land power lost their relative edge to maritime transport and sea power. Today strategic priorities are still focused on the heartland and rim lands of the supercontinent, even as seascape emerges in relative strategic terms.

This tectonic slippage of relative strategic significance from the global landscape into the seascape has continued at an accelerated pace since the first half of the 20th century, and is now far more profound than it was in the world war and interwar years when Mackinder's heartland and land power gave way to Mahan's sea power and Spykman's rim lands. Today, the seascape embraces not just secondary trade, naval power, and the strategic balance of power (as it did at the time of the dying British Empire), but increasingly significant aspects of very material base of the expanding global economy itself—energy and a plethora of other raw materials, foodstuffs, pharmaceuticals, biotech products, and maritime transportation and security. The key geopolitical implication is that the strategic significance of the Eurasian heartland has now dissolved into the sea—and into the energy seascape of the Atlantic Basin.

The Atlantic Energy Seascape and the Changing Global Energy Flow Map

Today the long-building strategic shift to the seascape is approaching an inflection point, as accumulating layers of new strategic significance now overlap across the Atlantic Basin. These cumulative overlays are over-determining certain tectonic ruptures in the underlying global geopolitical and energy flow maps and giving rise to new interlocking global centers of gravity within the Atlantic Basin.

Atlantic as the Center of Gravity of the Global Seascape

Atlantic Basin dominance along the burgeoning frontier of offshore oil and gas E&P (explored in Chapter Four) is complemented and buttressed by the Atlantic's clear lead in the maritime transport of

global energy flows along the global seascape. Nearly 40% of the global total of tradable energy—and three-quarters of the world's actually traded energy—is transported via the global seascape.[6] Furthermore, intra-Atlantic (or Atlantic Basin) energy flows—75% of all Atlantic Basin global energy flows—make up nearly two-thirds (42mbdoe) of total maritime energy transportation on the global seascape (63mbdoe).[7] We estimate that total Atlantic Basin global energy flows (including both intra- and extra-Atlantic energy trade) constitute over three-quarters of the total use of the global seascape for the transportation of global energy flows.[8]

Therefore, putting together both offshore energy and maritime energy transport, the Atlantic Basin clearly dominates the global energy seascape, accounting for, all told, about two-thirds of all global maritime energy stocks and flows. Because of this outsized role for the Atlantic Basin in the global energy seascape, much of the entire world's sea, ground and air transportation (which rely nearly completely on oil and gas, an increasing amount of which is coming from the Atlantic) will depend in the short- and medium run directly upon the efficiency, productivity and security of the Atlantic energy seascape—and, increasingly into the future, the Southern Atlantic seascape. As more energy comes out of the Atlantic energy seascape, more energy will also be transported along the seaborne flow circuits of the Atlantic Basin, underlining its rising relative strategic significance as a seascape, compared to both the global energy landscape, in general, and to the other ocean-basin energy seascapes, in particular. In this sense, the center of gravity of the global energy seascape has shifted into the Atlantic Basin.

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6. Tradeable energy is energy which could feasibly be traded, but which may or may not be actually traded (internationally, across borders) in any given year (much primary biomass would therefore not qualify). Total tradeable energy produced globally amounted to 222 million barrels a day of oil equivalent (mbdoe) in 2012 (against a total global energy production of 250mbdoe). Actual total traded energy came to 84mbdoe globally. Based on British Petroleum, *Annual Statistical Review of Energy* (Database) 2013 (BP 2013a) and own-elaboration.

7. Based on annual national bilateral trade data from UNCOMTRADE International Trade Statistics Database, 2014 (http://comtrade.un.org/) (UNCOMTRADE, 2014).

8. Intra-Atlantic energy trade is international energy trade whose flow circuit begins and ends in the Atlantic Basin. Extra-Atlantic energy trade is made up of either imports into the Atlantic Basin from the extra-Atlantic (i.e., the rest of the world beyond the Atlantic Basin) or of Atlantic exports to the extra-Atlantic.

The Role of the Atlantic Energy Seascape upon the Changing Global Geopolitical and Energy Flow Maps

Along with the increasingly significant shift of the center of gravity of the global energy seascape into the Atlantic Basin is another underlying tectonic shift stemming from the Atlantic energy revolutions—the swapping of positions between the relative centers of gravity of both global energy supply and demand between the Atlantic Basin and Eurasia. This epochal change of globalization has produced a dramatic reversal in the dominant overall directional patterns of global energy flows. The historic switch from predominantly East-to-West flows to West-to-East flows (and even more so, to Atlantic Basin-to Asia-Pacific flows) is also the principal driver behind the currently unfolding transformation in the relative balance between East-West and North-South global maritime flows upon the global map.

On the traditional Cold War energy flow map, maritime flows moved, in general, along an East-West axis vector. Energy flow circuits in particular relied on sea lanes that were punctuated by the strategic energy chokepoints that characterize the rim land geography of Eurasia and the security dynamics of its East-West energy flow circuits—the Straits of Malacca, the Strait of Hormuz, the Strait of Bab el Mandeb, the Suez Canal, the Straits of Bosporus and the Dardanelles, the Straits of Denmark and Gibraltar, and the inner seas of East Asia (and the passages between). These predominantly East-West global maritime energy flows (the Hormuz-Malacca flow circuit from East Asia to Western Europe being its main artery) relied primarily upon the low latitude inter-basin passages, leaving the high latitude inter-basin passages (the Arctic and Cape passages) in the merely complementary role of handling the spillover or other ancillary traffic.

From here on, however, the initial and intermediate corridors of all such seaborne flows following flow circuits leading from the Atlantic Basin to Asia-Pacific will increasingly shift, over time, from their current East-West orientation—through the low latitude canals—to a North-South flow following longer stretches of north-south Atlantic sea lanes before turning into the high latitude inter-basin passages (the Cape and Arctic passages) to move towards Asia-Pacific.

This will occur because of a confluence of now-shifting flow circuit constraints and enablers. First, even the enlarged and/or refitted Panama and Suez canals will increasingly come to represent bottlenecked chokepoints—once the enlarged Asia-Pacific bound capacity of Panama and the still spare eastward capacity of Suez are absorbed over the years to 2030 by increasing Atlantic Basin energy flows to Asia-Pacific. Secondly, international shipping traffic—which has grown 400-fold since the mid-19th century and tripled in the last ten years—is expected continue its upward growth, doubling again by 2030, and tripling by 2050.[9] Such an increase in volume can be expected to outstrip even the enlarged capacity of the low latitude inter-basin passages by 2030, and possibly before. Thirdly, and given these anticipated trends in volume and patterns of maritime flows, shipping and marine-related technology have, and will continue, to evolve such that the largest seaborne vessels—which already cannot pass through the canals and tend to carry bulk and dry cargoes (i.e., raw materials)[10]—will increasingly to be pushed, even during the period up to 2030, to the high-latitude passages to reach Asia-Pacific from the Atlantic, particularly through the Cape Passage in the South, but also even through the Arctic's Northern Route (as the latest enhanced weatherization technology allows more and more ships to effectively use this Arctic route, even in its current state).[11]

The first of these high-latitude inter-basin passages—the rising Southern Passage—flows south out of the Southern Atlantic and through the Cape Passage, along the northern reaches of the Southern Ocean, and into the Indian Ocean. The other is the emerging Northern Route, which flows north from the northeast Atlantic and into the Arctic Ocean along the northern stretches of Russia.

Ever since the Portuguese first rounded the Cape of Good Hope, the traditional mediating ocean basin between markets and destina-

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9. UNCTAD, *World Economic Situation and Prospects*, UN: New York, 2012. (UNCTAD 2012), and Stopford 2010.

10. See Armando Marques Guedes, "Geopolitical Shifts in the Wider Atlantic: Past, Present, and Future," in Richardson et al, *The Fractured Ocean: Current Challenges to Maritime Policy in the Wider Atlantic* (Washington, D.C.: German Marshall Fund of the United States and the OCP Foundation), 2012 (Marques Guedes 2012).

11. Juha Käpylä & Harri Mikkola, "Arctic Conflict Potential: Towards an Extra-Arctic Perspective," Finnish Institute for International Affairs, Briefing Paper 138 (2013) (Käpylä & Mikkola, 2013).

tions in the Atlantic and Asia-Pacific—given the enormous breadth of the Pacific Basin, and the traditionally impassable nature of a frozen Arctic—has been the Indian Ocean, which progressively displaced the old land-based Eurasian silk road. As climate change melts the Arctic icecap, however, the Arctic Ocean becomes a potential new rival—or at least a complement—to the Indian Ocean as a mediating basin between the Atlantic world and Asia.[12]

But for a number of reasons, the Artic Basin is not likely to displace the strategic significance of the Indian Ocean as a mediating basin—the absolute strategic significance of which will continue grow—or even rival for strategic significance the other East-West low latitude energy flow circuits that are lined with straits and canal chokepoints, particularly those of the Hormuz-Malacca energy flow circuit. At least in the near-to-mid-term—even with ongoing climate change—the ultimate, inherent limitations of the Arctic on most economic activities, together with the likelihood that most Arctic oil and gas will be economically marginalized by the Southern Atlantic offshore revolution (see Chapter Four) will prevent Arctic Basin global energy flows—both those originating from Arctic production and those potentially passing through from the Atlantic Basin to Asia-Pacific—from ever contributing more than marginally to the total of global seaborne energy flows.[13]

This does not mean, however, that the Bering Strait, long a strategic hard power passage, could not become for the first time a strategic energy chokepoint. The emergence of a new rival, strategic eastward energy flow to Asia-Pacific from Arctic Russia—where most of the projected, if limited, hydrocarbon production in the Arctic is expected to take place—would point to this development.

Furthermore, and as a result of all of the factors analyzed above, maritime traffic of all types, but particularly of Atlantic Basin global energy flows (both intra- and extra-basin bound) will become increasingly dense in the North-South directions, particularly along the

12. For an optimistic appraisal of the future potentials of the Arctic, see Scott Borgerson, "The Coming Arctic Boom: As the Ice Melts, the Region Heats Up", *Foreign Affairs*, July/August 2013, pp. 76-89.

13. For a more circumspect analysis of the near and mid-term future of the Arctic, see Käpylä & Mikkola, 2013.

western and eastern seaboards of the Atlantic. This is because Atlantic Basin energy flows will rely increasingly on maritime flow circuits through the high latitude passages to reach growing markets in Asia-Pacific as they are increasingly boxed out of the East-West inter-basin energy flow circuits. The low latitude canals—while continuing to accommodate their newly expanded maximum capacity throughputs over the short to middle run—will come to represent over the middle to long run, both a gauntlet of strategic bottleneck chokepoints and a shrinking share of global energy flows over time.

These projected changes in maritime trends within the Atlantic energy seascape also reinforce the rapidly growing relative strategic significance of the Southern Atlantic—and of the Southern Ocean around Antarctica. Such shifting trends on the strategic horizon—in which the Southern Atlantic gains more than anywhere else on the global map in relative strategic terms, and in which the Indian Ocean Basin remains the most significant in absolute terms—serve as harbingers for rising future investments in transportation, communications, and port facilities, in addition to energy, in the southern reaches of the Atlantic. They might also serve as a call for pan-Atlantic energy cooperation.