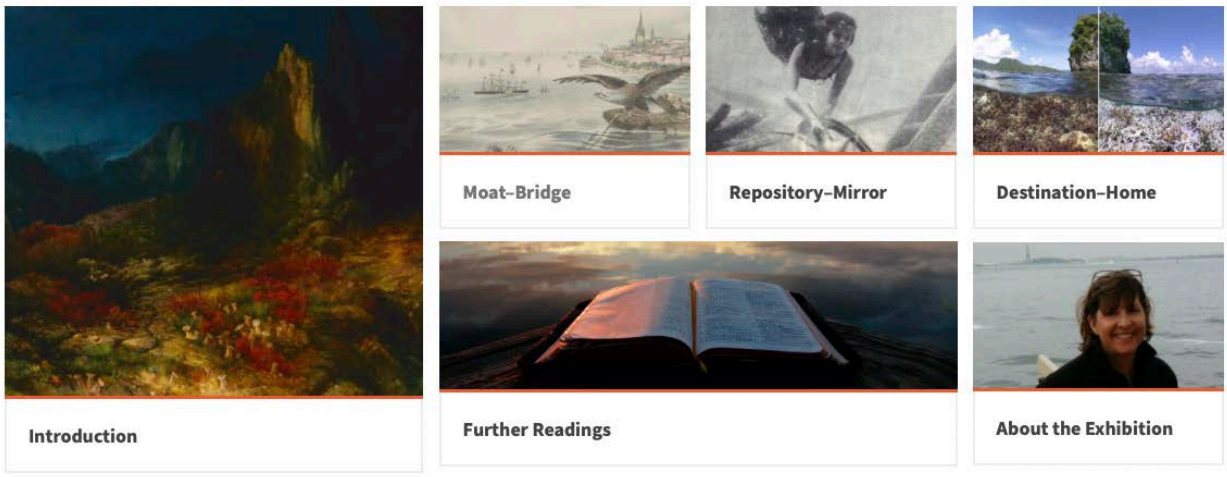
Oceans in Three Paradoxes: Knowing the Blue through the Humanities

Helen M. Rozwadowski

What can the humanities reveal about people's interconnections with the ocean, past and present? In 1975, the maritime historian Benjamin Labaree offered an influential argument that the Atlantic acted simultaneously as bridge and moat for European settlers of North America. The paradox of these overlapping functions provided a touchstone for understanding the maritime realm, but it is time to recognize the ocean as more than the flat surface implied by it. Two further pairings, *repository–mirror* and *destination–home*, testify to the duration of the human connections with the sea, including its depths, and also to the distinct ocean relationships forged by different cultures. The blue humanities provide a mooring for considering not only the ocean's past and present but its future as well.



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Introduction

Scientific study of the ocean emerged relatively recently in human history. Yet, as the historian John Gillis reminds us, "We have come to know the sea as much through the humanities as through science." People have for millennia known the oceans through work and play as well as myth, art, music, and stories. Fiction has imagined the undersea world far earlier than humans could investigate it. The emerging field of "blue humanities" invites exploration of cultural connections between people and oceans, past and present. What can anthropologists, literary scholars, and historians tell us about our profound interconnections with the ocean?

Henry Doyle's illustration of an Irish family bidding farewell to members emigrating by sea in the nineteenth century, from the first edition of Mary Frances Cusak's *Illustrated History of Ireland from AD 400 to 1800* (1868). European immigration to North America was the classic example of maritime historian Benjamin Labaree's articulation of how the Atlantic acted simultaneously as bridge and moat for emigrants.

Engraving by Henry Doyle, 1868.
Accessed via Wikipedia on 13 January 2021. Click here to view source.

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In 1975, the maritime historian Benjamin Labaree published an influential essay arguing that the Atlantic Ocean had acted simultaneously as bridge and moat for North American colonists and citizens of the early United States. The paradox of these overlapping functions of the sea has since provided a touchstone for maritime history. Yet this approach has tended to treat the ocean as a horizontal surface, a stage for human history. Natural scientists, by contrast, consider the ocean as a complex, three-dimensional environment. So should humanists. It is time to recognize that the ocean has been, and remains, much more than simply the flat surface implied by the concept of bridge or moat.

To fully explore the ocean's place in human culture, consider two further pairings: repository–mirror and destination–home. Like bridge–moat, these pairs convey a rich tension: they are oppositions, but each word in the pair coexists in the frame of the other. Together these paradoxes represent the spectrum of interconnections between people and the marine environment. The representations of the ocean as bridge, moat, repository, mirror, destination, and home cover deep time and a broad geography. They testify to the duration of the human connections with the sea and to the disparate ocean relationships forged by different cultures. The importance of the oceans today, in terms of climate, health, food, economy, and other areas, has inspired an international call to expand ocean literacy, an effort that must extend beyond the natural sciences to include historical and cultural relationships with the ocean.

Websites linked in image captions:

- https://en.wikipedia.org/wiki/File:Emigrants_Leave_Ireland_by_Henry_Doyle_1868.jpg

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Moat–Bridge

The Atlantic Ocean separated the Americas from Europe and Africa until the Columbian Exchange, when Europeans initiated an uneven biological exchange of people, plants, animals, and pathogens between the Old and New Worlds. The Atlantic crossings grew from an economic desire to reach the fabled riches of China, but the ocean was bridged as well by "islands of the mind." Actual islands, as well as imagined ones such as St. Brendan's Isle or Hy-Brasil, reassured mariners by dividing the frightening, open ocean into crossable segments. For English Puritans seeking religious freedom, the remoteness of their new home made American shores seem a sanctuary for God's chosen people. The only way for immigrants, both voluntary and involuntary, to reach the Americas involved a long, often dangerous, and uncomfortable crossing by ship. This experience contributed to the United States' sense of its national history as unique and separate from the Old World. American resistance to involvement in European affairs sustained the idea of ocean as moat, even as the nation expanded into the Caribbean and across the Pacific.

Maritime history traditionally touts the role of ocean as bridge. Seas provided linkages between groups of people, along a coast or around the globe, for trade, migration, or pursuit of resources. This function dates far back in time and continues in the present. Archaeologists now think the Americas were first settled by voyagers who moved easily in boats along the western, northern, and eastern coasts of the North Pacific. Following the "kelp highway," they used resources from both land and sea, the latter provided by the rich kelp beds that formed a consistent environment with familiar and predictable resources. Chinese treasure fleets of the fifteenth century forged tributary relationships between the Emperor and communities as far away as East Africa. European explorers in the sixteenth century discovered sea routes between the earth's known lands. They found the New World and the enormous Pacific Ocean as they searched for ways to reach Asia and its storied trade goods. Today, while people travel between terrestrial destinations by plane, almost 90 percent of every consumer product arrives by ship, making the global shipping industry as important as it is invisible.

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The original virtual exhibition features an interactive gallery of maps. View the images on the following pages.

World map from 1570 by Abraham Ortelius, showing sea monsters in the Pacific and in the Southern Ocean near the supposed southern continent. The most exotic of such creatures on world maps in the Age of Discovery appeared in unknown areas of the sea or on the margins of maps, perhaps representing warnings or challenges to safe navigation and suggesting the role of the oceans as moats.

Map by Abraham Ortelius, c. 1570. Public domain.
Courtesy of the National Library of Australia .
Accessed via Wikimedia on 24 February 2021. Click here to view source .

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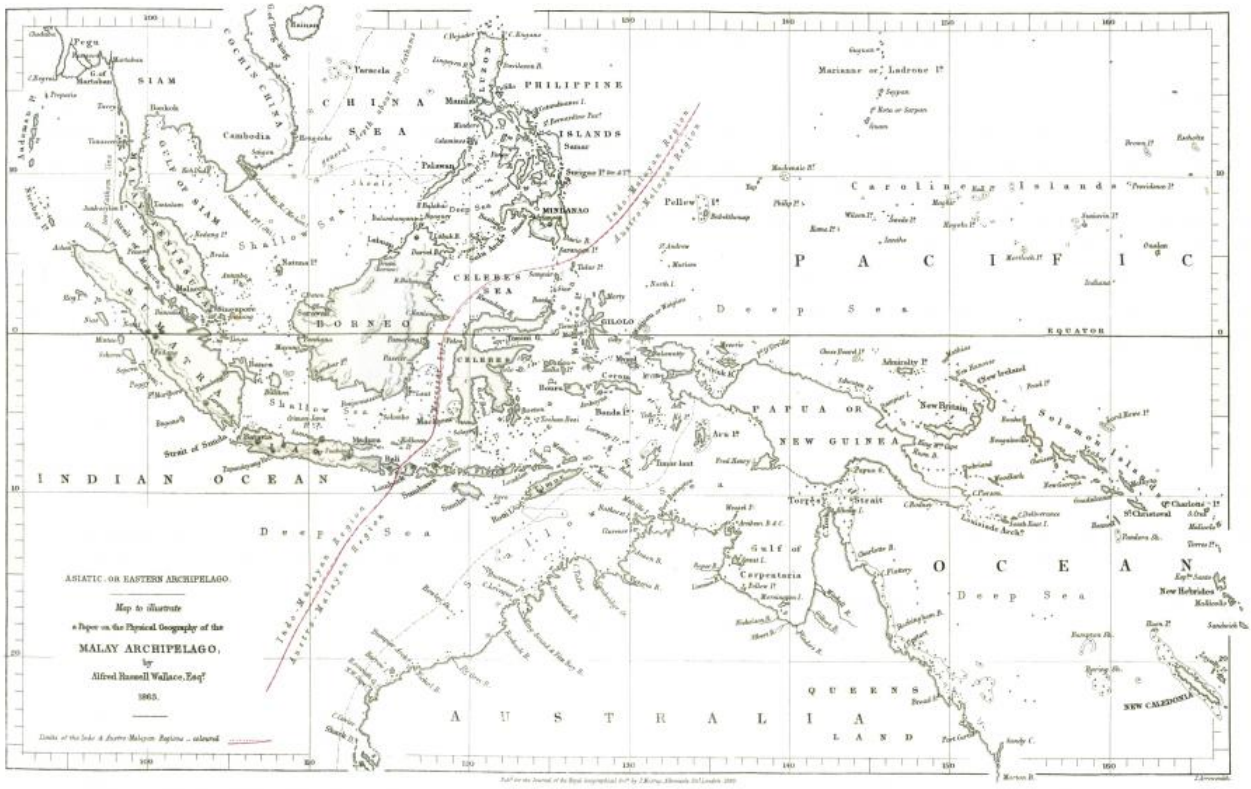

Drawing of the Wallace Line, recognized by British naturalist Alfred Russel Wallace as the world's most pronounced biogeographic moat on earth, an oceanic barrier that separated mammals from marsupials and giant lizards after the last Glacial Maximum about 21,000 years ago and which today's marine scientists recognize also as a natural impediment to the distribution of marine species. However, the distribution of hominid species demonstrates that some of them crossed the Wallace Line by sea, bridging the two biogeographic zones as they—and later on also *Homo sapiens*—transported other species as they migrated.

Map by Alfred Russel Wallace and J. Arrowsmith, 1863. Public domain.
Accessed via Wikimedia on 24 February 2021. Click here to view source .

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Well-known representations of sea monsters cavort on the sixteenth-century *Carta Marina* by the Swedish cleric Olaus Magnus. In it the sea is as detailed as the land, full of active marine animals, some recognizable as economically valuable whales and seals and others more monstrous. The presence of these creatures along with other cartographic choices like the textured surface of the sea call attention to what is usually hidden in the depths, while the ships conducting maritime work demonstrate human success at bridging the at-times-threatening sea.

Map by Olaus Magnus, 1539. Public domain.
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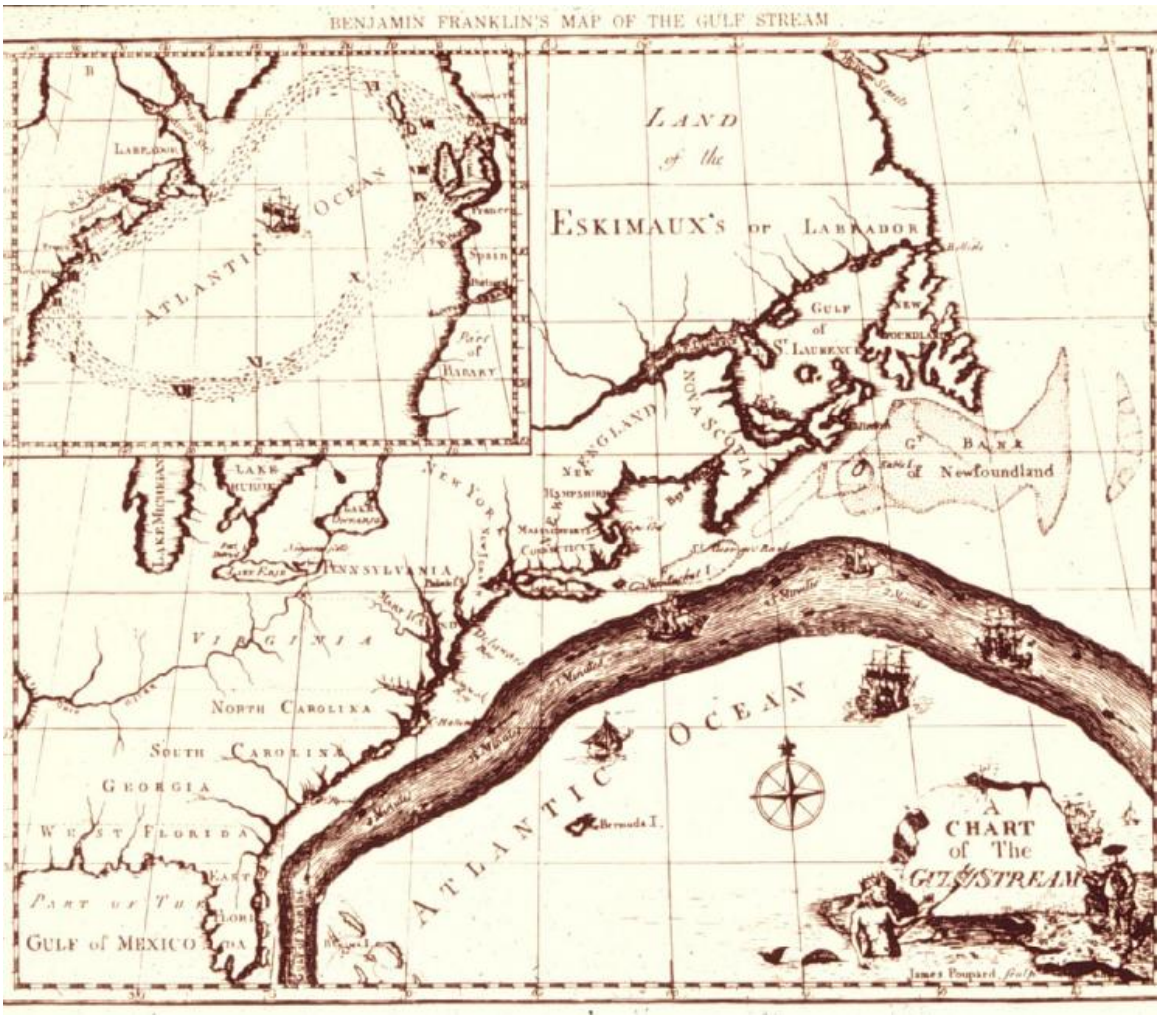

As Deputy Postmaster General for the American colonies, Benjamin Franklin's investigations into why ships carrying the mail from England across the Atlantic using a northern route took longer to arrive than those following a more southerly route led him to knowledge gained by whalers. Because whales avoided the Gulf Stream, whalers recognized it as a feature whose waters were of a different color and temperature than those surrounding it. Franklin used whalers' experience to draw the first Gulf Stream chart, which conveyed knowledge that enabled merchant ship captains to cross the Atlantic faster and at a more predictable speed.

Map by Benjamin Franklin, c. 1782. Public domain.
Courtesy of NOAA Photo Library. Click here to view source .

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Gravestone with a lateen-rigged sail and other maritime motifs in a twelfth- or thirteenth-century Muslim cemetery in Istanbul, Turkey. The rise and spread of Islam promoted sea trade through laws that benefitted trade, the use of the Arabic language as a lingua franca, and the knowledge and experience of Arab navigators. Photograph by Daniel Hornstein, 2016.

Unknown sculptor, n.d.

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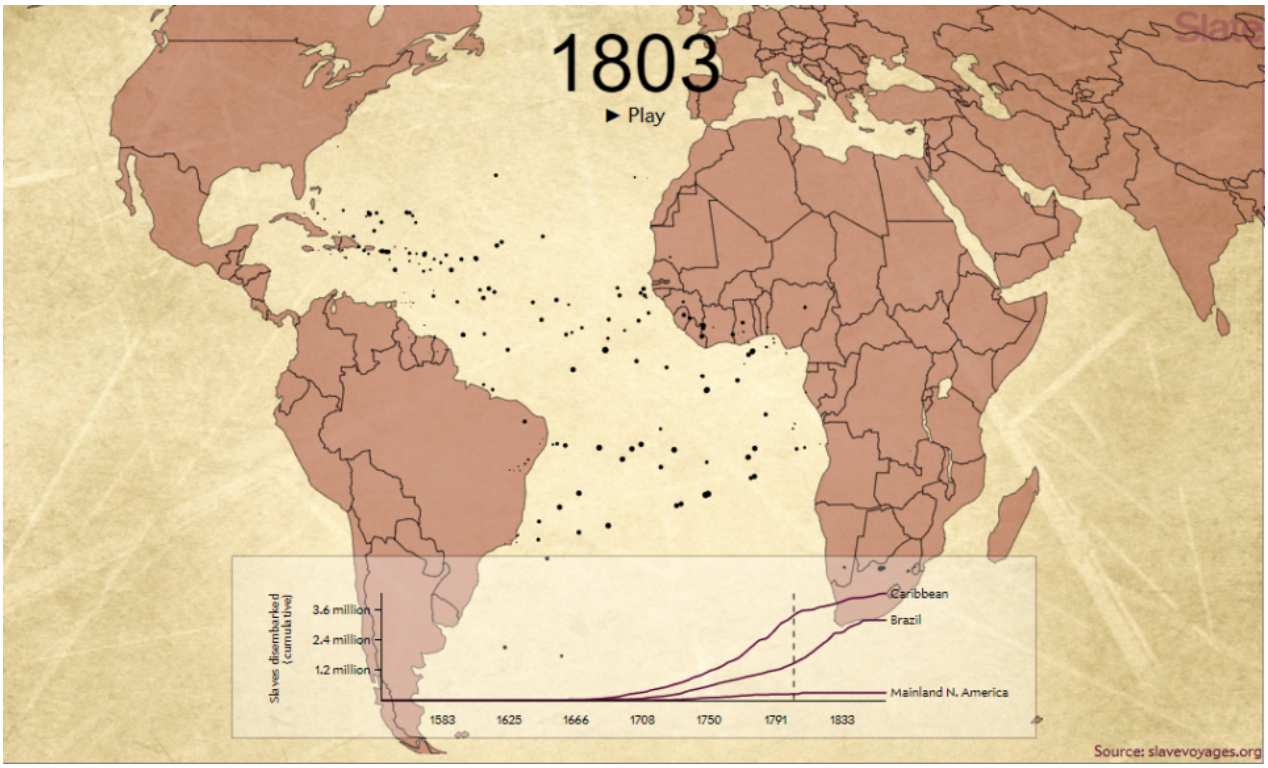
The original virtual exhibition features an interactive, animated map. Interactive by Andrew Kahn. Background image by Tim Jones. View the animated map online here: http://www.slate.com/articles/life/the_history_of_american_slavery/2015/06/animated_interactive_of_the_history_of_the_atlantic_slave_trade.html?wpsrc=sh_all_dt_tw_ru .



Interactive media, "The Atlantic Slave Trade in Two Minutes," displays over 20,000 voyages from the sixteenth to the nineteenth centuries that brought over ten million enslaved Africans across oceans to the Caribbean, Brazil, and North America. Not only did the sea serve as a bridge to move these people against their will to other continents but it then served as moat preventing their return. Click the map to see the interactive version. Interactive by Andrew Kahn and background image by Tim Jones, 2015.

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Allegorical scene celebrating the successful 1866 laying of the transatlantic telegraph cable, bridging Britain, represented by the lion, and the United States, represented by the eagle. King Neptune rests on the ocean floor as if welcoming and protecting the wires and the instantaneous communication between continents they enabled. Submarine telegraphy represents a rare instance when the ocean acting as bridge (or moat, in the years in which efforts to lay the cable were unsuccessful) involved the seafloor rather than its surface. Illustration by Kimmel & Forster, 1866.

Courtesy of the Library of Congress. Click here to view source .

After the Second World War, the American entrepreneur Malcolm McLean developed technology for transporting materiel during wartime into a system for moving cargo easily and quickly between land and sea by carrying it in standardized containers that could be transferred between trains, trucks, and ships. Containerization decreased the cost of shipping and kept it low but decimated employment for the stevedores who had previously loaded cargo piece by piece. Container ships, joined by other specialized vessels for transporting liquids, gasses, and bulk cargoes, enabled the transport over oceans of four hundred times more cargo in the early twenty-first century compared with the mid-nineteenth and helped create economic globalization, yet has rendered maritime laborers invisible and has transferred marine species around the world, altering coastal ecosystems in the process. Unknown photographer, 1957.

Courtesy of Mærsk A/S. The image has been cropped.
Accessed via Wikimedia on 5 April 2021. Click here to view source .

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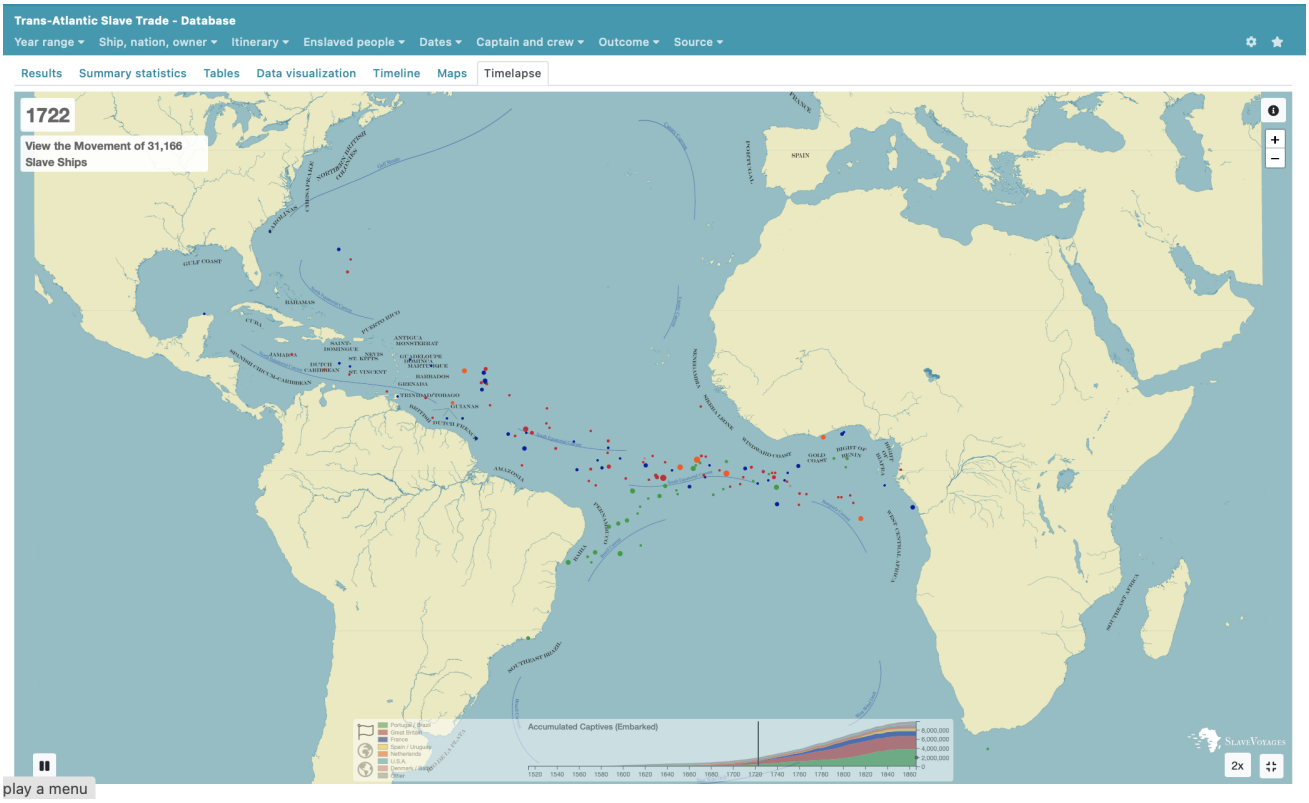
The original virtual exhibition features an interactive, animated map from the Trans-Atlantic Slave Trade database. View the animated map online here: https://slavevoyages.org/voyage/database#timelapse .



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- https://slavevoyages.org/voyage/database#timelapse

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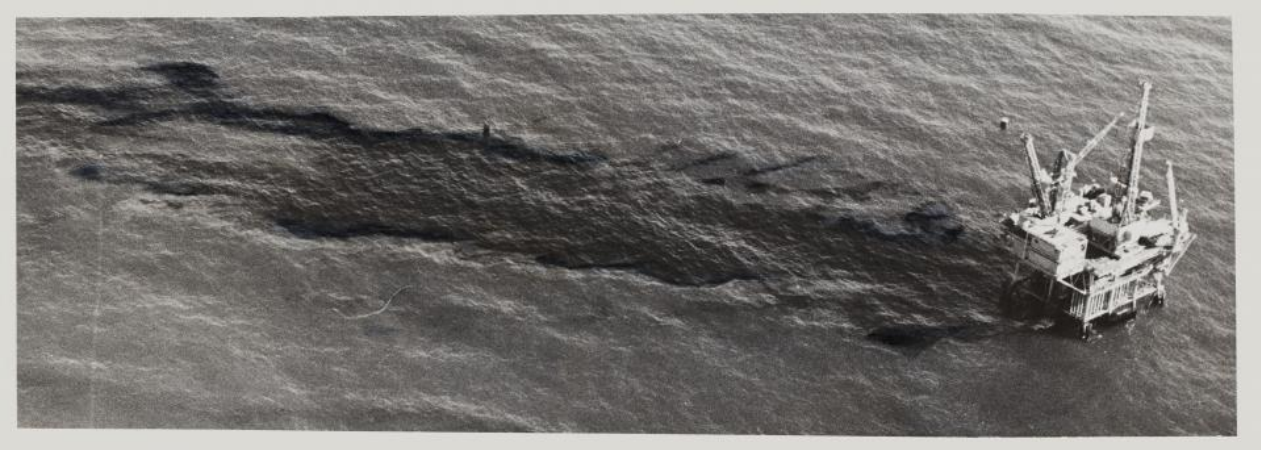
Repository–Mirror



In 1969 a blow-out of an oil rig off Santa Barbara, California, outraged the public with its visible effects on shorelines up and down the coast and on seabirds and marine mammals. Coming just two years after the oil tanker SS *Torrey Canyon* wrecked off the western coast of England, the spill helped promote environmental concern in the US and Europe. Despite continuing worry about coastal oil spills and fear over radioactive waste disposal at sea, most marine scientists for decades after the spill adhered to the traditional dictum that the solution to pollution is dilution, continuing to view the open ocean as an appropriate repository for waste. Unknown photographer, n.d.

Evidence in shell middens and elsewhere tells archaeologists that early *Homo sapiens* and their hominid ancestors used aquatic resources whenever they were available. Commercial fisheries for herring, tuna, cod, and whales date back centuries or more. Many fisheries exerted profound effects on fish populations even before industrialization and mechanization. Fisheries sparked exploration of near and distant waters and contributed to the development of regional, then global economies. Yet subsistence fishing continued, and remains important today, in many places around the globe. People have not only viewed the ocean as a storehouse of raw materials and commodities but equally as a sink for waste. Despite this, many people through the twentieth century continued to see the ocean as a source of virtually limitless resources as well as a dumpsite of endless capacity. For some, this perception remains unchanged in the present, as reflected in oil and natural gas drilling, bioprospecting for pharmaceuticals, plans for seafloor mining, and the continued introduction of plastic and carbon into the oceans. Regardless of its use as storehouse or dump, the ocean as repository is experienced by users as volumetric space rather than a flat surface.

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Seascape showing female Ama divers from the Japanese coastal city of Ise harvesting abalone, a culturally and economically important fishery developed between the eighth and twelfth centuries. Before that, both men and women practiced breath-hold diving for subsistence gathering, and in the late nineteenth century the cultured pearl industry continued to employ Ama divers for an emerging tourist market. Woodblock print by Utagawa Kunisada 歌川 国貞, c. 1830.

Courtesy of Cleveland Art Museum. Click here to view source .

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This strikingly unusual example of the Hudson River style of American landscape art, Edward Moran's *Valley in the Sea* (1862), depicts an imagined panoramic view of the Atlantic seafloor. Probably commissioned in honor of the first successful transatlantic cable laying of 1858, this painting reflects the mid-century cultural discovery of the deep ocean that was also manifested by the popularity of marine natural history, beach holidays, yachting, maritime novels, and other ways that ordinary people engaged experientially and imaginatively with the sea.

Edward Moran, *The Valley in the Sea, 1862. Oil on canvas.*

Courtesy of the Indianapolis Museum of Art. Click here to view source .

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The Hawaiian double-hulled voyaging canoe *Hōkūleʻa*, launched in 1975, is shown here arriving in Tahiti the following year after a transit using Polynesian navigation techniques. Subsequent voyages around the Pacific have contributed to cultural revival in Hawaii and in islands throughout Polynesia. Traditional voyaging reflects islanders' identification of home as "seas of islands" in which the ocean forms part of their cultural and social space. In 2017, *Hōkūleʻa* completed a three-year circumnavigation blending traditional and modern technologies to promote Mālama Honua, which translates to "caring for our island Earth." Photograph by Phil Uhl, 1976.

Accessed via Wikimedia on 7 April 2021. Click here to view source .

Whether we view the ocean optimistically as full of resources or fearfully as full of pollution, its opacity guarantees that we see reflected back from its surface in part what we bring to it: our fears, desires, ambitions, and preconceptions. Perceptions of the ocean depend on human assumptions, beliefs, and ideas as much as they derive from experiences with salt water and things that live in it. Different cultures with unique relationships to the sea generate distinctive notions of it. European immigrants to the New World viewed the ocean as a frightening wilderness. In contrast, the anthropologist Epeli Hau'ofa explains that people in Oceania view the same element as "seas of islands." For them, the ocean forms part of their social and cultural space. Post–World War II embrace of the ocean as a "frontier" akin to the nineteenth-century United States West contributed to the tenaciously held view of the ocean as endlessly resilient in the face of human use. More recent media images of plastics in the sea or whales stranded, perhaps due to noise or other pollution, are reshaping perceptions of the human relationship with the ocean. The ocean as mirror helps explain how apparently contrasting uses, such as bridge or moat, can exist simultaneously. The repository–mirror pairing functions as a microcosm reflecting the cultural complexity of multiple, coexisting views of the world's oceans.

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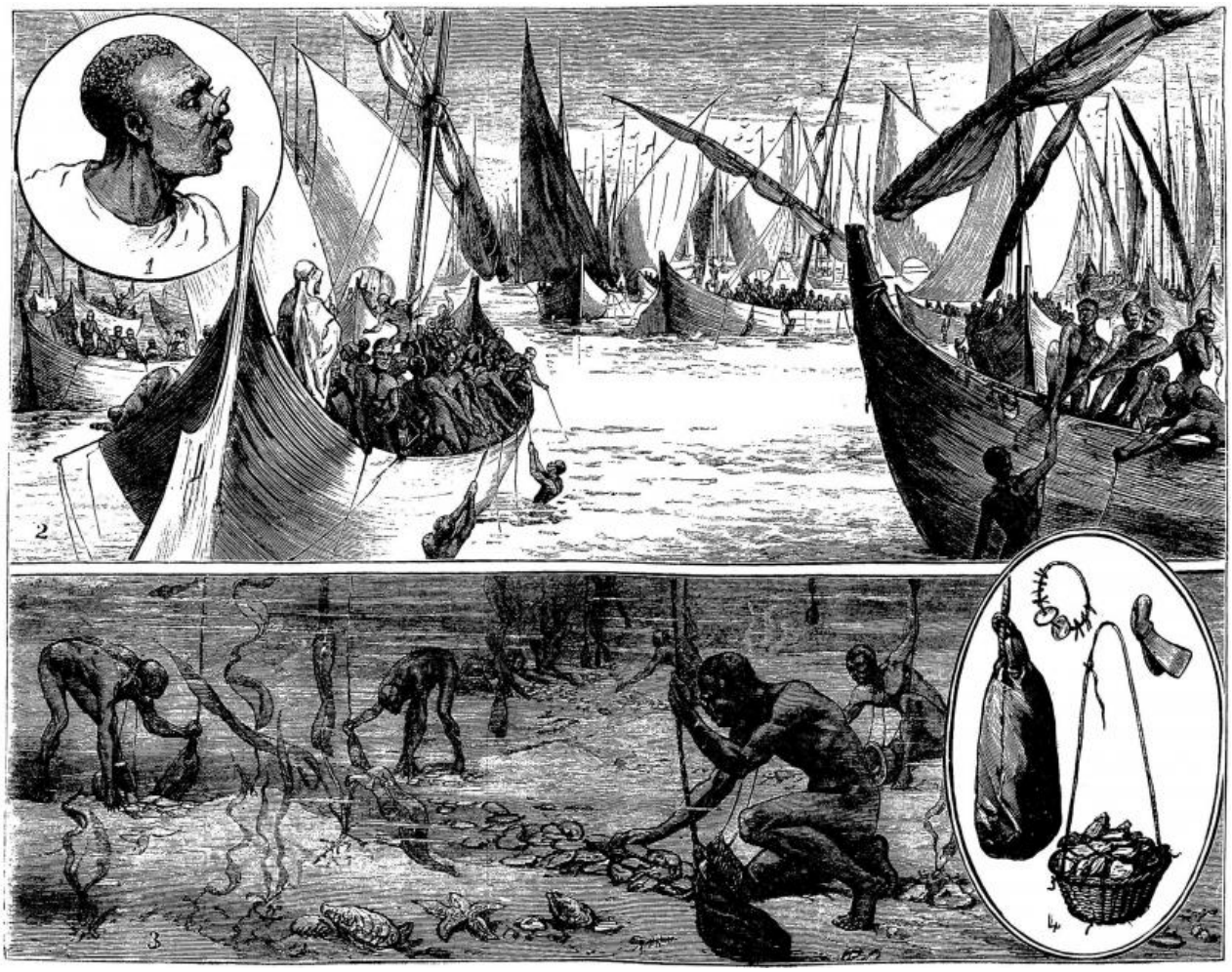

Illustration of the Persian Gulf pearl fishery, carried out by descendants of enslaved East Africans whom British salvagers purchased because of their diving skills. In the sixteenth century Spanish colonists on the so-called "Pearl Coast" of northern Venezuela and nearby islands began the practice of using African diving expertise when they brought enslaved Senegambian and Gold Coast divers to replace indigenous Guaiquerí Indians whose numbers were declining drastically. The undersea appeared to European enslavers and colonists an inaccessible source of wealth, yet indigenous and transplanted African divers who swam and dove regularly viewed the undersea realm as familiar.

Originally published in *The Graphic: An Illustrated Weekly Newspaper*, 1 October 1881: 356. Public domain.

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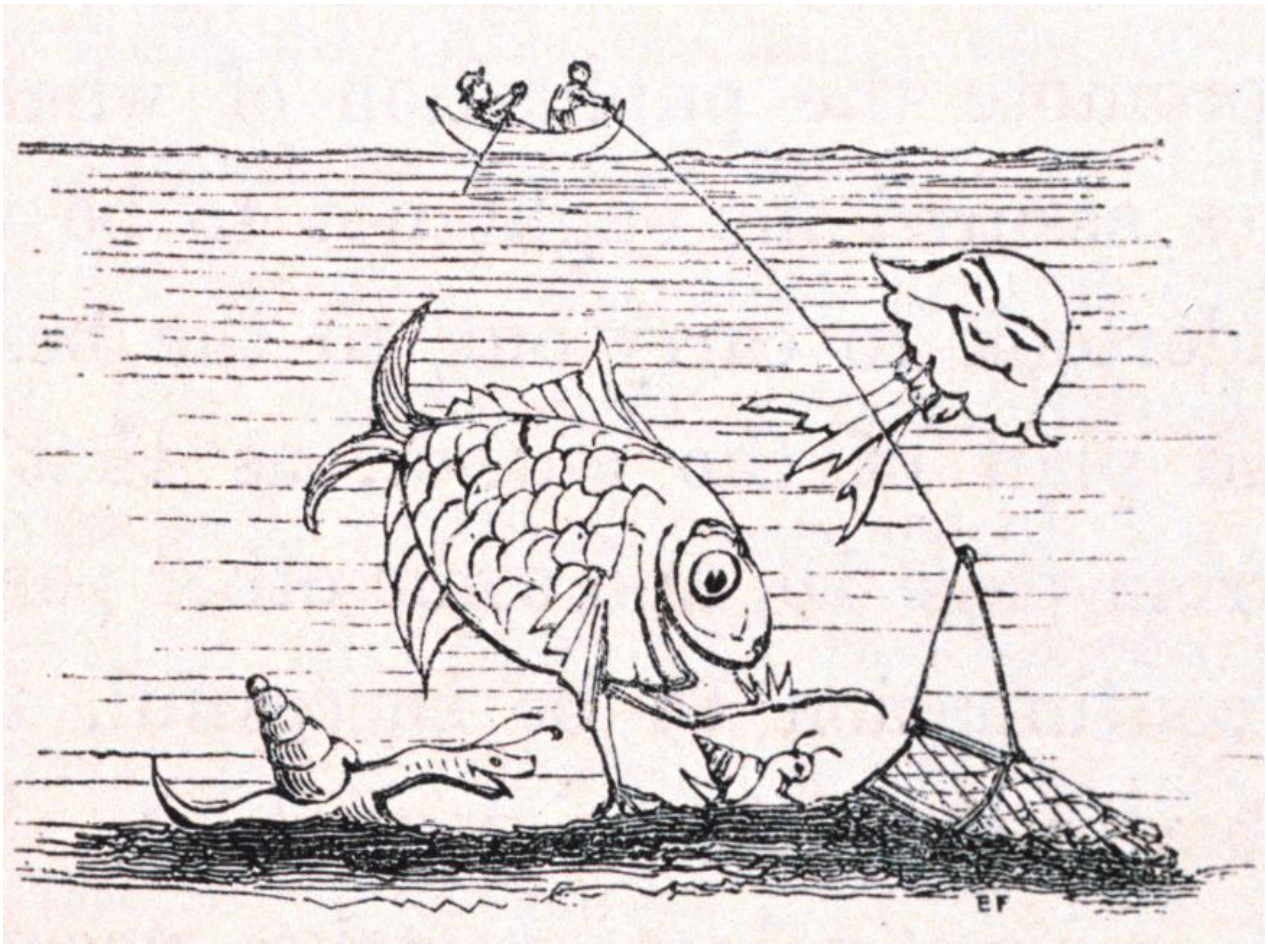

Cartoon by British naturalist Edward Forbes playfully suggesting that sea floor creatures, not scientists, might control what entered the dredges of the first generation of zoologists who studied marine fauna. Appearing as the frontispiece of his 1859 book, *The Natural History of the European Seas*, this sketch reflects the new mid-century understanding of the ocean as a site for science and the object of scientific scrutiny.

Frontispiece to Edward Forbes, *The Natural History of the European Seas* (London: John van Voorst, 1859). Public domain.

John Williamson, the first person to take photographs underwater, captured this image of an underwater actress from a submarine device called a Photosphere that extended beneath a ship down to the seafloor. His first film, *Thirty Leagues Under the Sea*, appeared in 1914 and featured Williamson himself fighting a shark. More successful at the box office was his 1916 *Twenty Thousand Leagues Under the Sea*, popular with audiences who followed news of submarine warfare. In addition to a career of making films about pirates, sunken treasure, mermaids, and sea monsters, Williamson also helped natural history museums collect specimens and create dioramas of undersea scenes in New York and Chicago. His work began a robust tradition of cinematographic representation of the undersea that would introduce the depths to a wide public.

Photograph by John Williamson, n.d. Public domain.
Originally published in J. E. Williamson, *Twenty Years Under the Sea* (Boston and New York: Hale, Cushman & Flint, 1936).

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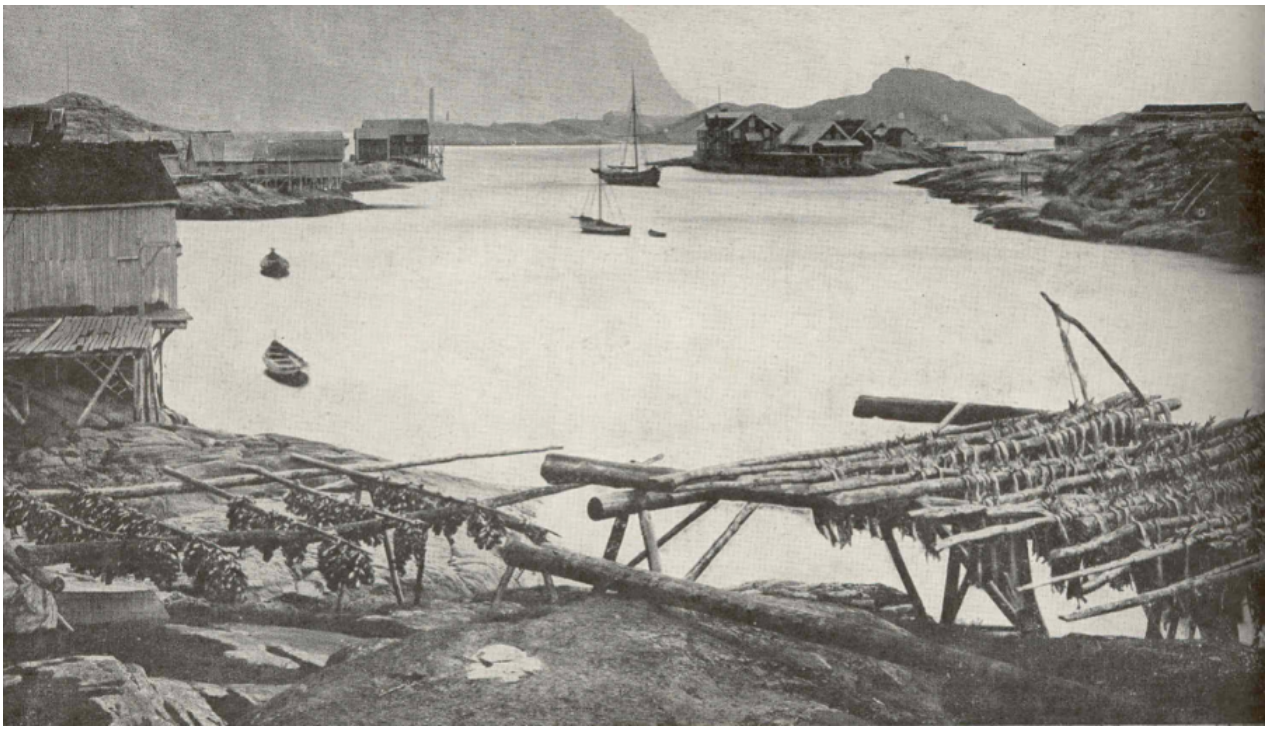

Cod drying onshore in Lofoten, Norway, in 1913 in a fishery using traditional methods that dated back centuries, including harvesting the fish with hook and line, then splitting, gutting, and drying them on wooden racks. Long before the mechanization of fisheries, fleets were able to decimate fish stocks. Between 1852 and 1859, for instance, schooners from Massachusetts fishing off Nova Scotia experienced a 50 percent decline in seasonal landings. A fishery prosecuted using dories launched from schooners to enable fishers to lay long lines with hooks attached to them over the ocean floor rendered the northwest Atlantic halibut population, first intentionally fished for market in the 1840s, commercially extinct in just fifty years.

Photograph by Cl. Boulanger, 1913. Public domain.
Courtesy of the Freshwater and Marine Image Bank and the Washington Unversity Libraries. Click here to view source .

The original virtual exhibition features the short film *Down to the Sea Again* (1945). 3:32 min. View the film online here .

The 1945 short film *Down to the Sea Again* chronicles the use of fishing vessels during the Second World War for minesweeping, cargo carrying, and attacking submarines and airplanes, followed by their refit to fish again in peacetime. Postwar food shortages and hunger in Europe, and also in Japan, made the resumption of fishing a high priority, while record catches fueled optimism that modern science and technology would enable ever-growing use of the ocean's resources. Many nations on both sides of the Cold War divide, viewing the oceans not only as a source of food and economic wealth but also as a politically strategic arena, subsidized the construction of fishing vessels such that the global fleet increased by 75 percent from the war's end to the present. This fleet has overfished three-quarters of the world's wild fish stocks and must cover increasingly large portions of the ocean to maintain global catches at a consistent level.

The original virtual exhibition features the short film *Science in Fishing* (1958). 2:42 min. View the film online here .

The short film *Science in Fishing,* released in 1958, features the Cornwall pilchard fishingvessel, *The Chichester Lass*, to demonstrate how fishers could use echo sounding technology, developed for anti-submarine warfare, to locate schools of fish hidden underwater. A large midwater trawl with a nylon net was deployed, capturing far more fish compared with the driftnets formerly used. This particular vessel was not fitted with an engine to haul the full net aboard, but power blocks came into increasing use in postwar fisheries for schooling species such as tuna, salmon, sardines, anchovies, and menhaden, paired with seine nets that could be set to surround a school found by sonar, making it easier to catch virtually every individual.

Websites linked in this text:

- https://youtu.be/iY8lysdAkfA
- https://youtu.be/zxdaSey0Pqo

Websites linked in image captions:

- https://www.clevelandart.org/art/1916.944
- http://collection.imamuseum.org/artwork/56245/
- https://commons.wikimedia.org/wiki/File:Hokule%27a.jpg
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Chapter: Repository–Mirror
Source URL: http://www.environmentandsociety.org/node/9197
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Destination–Home

View of the Earth seen and photographed by the Apollo 17 crew on 7 December 1972 as they traveled toward the moon. Dubbed the "Blue Marble," this image impressed viewers with the Earth's contrast to black, lifeless space and prompted reflections on the finite nature of the globe's resources. It also provided a glimmer of public recognition of the importance of the oceans for life on earth. Photograph by NASA, 7 December 1972.

Courtesy of NASA.
Click here to view source .

Rozwadowski, Helen. "Oceans in Three Paradoxes: Knowing the Blue through the Humanities." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 2. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9194.
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For most of history, the ocean has been a place for people to visit, either for resource use or to travel across *en route* from one land or island to another. The open ocean has not itself been a destination, as far as we know, for most of human history. It is for European eels seeking their spawning grounds in the Sargasso Sea or for young salmon heading to the open ocean to grow to maturity. Whalers may have been the first people to dwell on the high seas. Basques, who began commercial whaling by the eleventh century, left the Bay of Biscay for the North

Before European contact Africans from the Gulf of Guinea coast and southward to South Africa possessed water-spirit traditions of mostly female figures. This twentieth-century wooden statue from Ghana portrays Mama Wati, the water spirit carried by enslaved Africans to the Caribbean and celebrated across much of the African Atlantic. The snake in her grasp represents her power to control snakes, while her woman's torso and fish tail reflect her dual nature of good and evil, of earth and water, and of nature and culture. Unknown artist, 1900s.

Gift of Kenneth and Bonnie Brown to the Virginia Museum of Fine Arts. Object number 2015.414.
Click here to view source .

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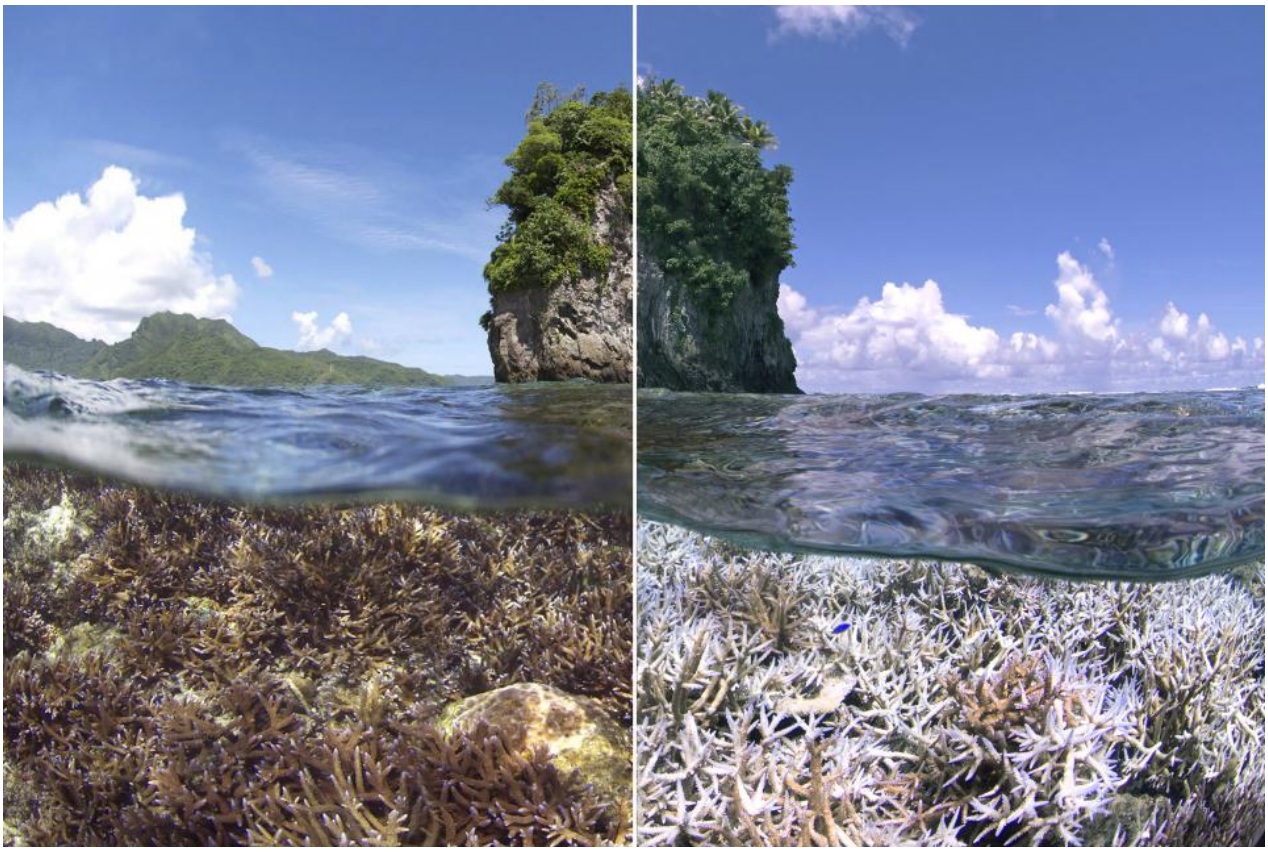
Atlantic by the sixteenth century as their quarry grew scarce near the coast. By the early nineteenth century, whalers installed tryworks to render whale blubber on board their ships. Freed from ties to land, they spent years hunting their prey at sea. Whaling contributed to the mid-century discovery of the deep ocean. This simultaneous scientific and cultural discovery involved submarine telegraph engineers, naval hydrographers, middle-class marine naturalists, and yachtsmen and women, as well as readers, aquarium keepers, and beachgoers. Together these interests in the deep sea helped redefine the ocean. Today's ocean is destination as well as highway: for spearfishers or underwater photographers a site of recreation; for cruise ship passengers a site of pleasure; for circumnavigators a personal challenge; and for some merchant mariners an enforced home, when they are not permitted ashore during brief stops of their gigantic tankers or cargo ships at industrial ports.



On the right is a healthy reef in American Samoa in December of 2014. In February 2015, during a bleaching event, the same reef is shown on the photograph on the left. Warmer than usual water temperatures can cause bleaching; the white color results from the coral expelling its symbiotic algae in response to the temperature shift, leaving the coral stressed and the reef covered with slime. This image comes from the Coral Reef Image Bank, a resource created in recognition of the importance of visual imagery in inspiring conservation and climate action. Scientists predict that if humans disappeared from Earth, reefs and most marine species would recover, reminding us that we need the ocean more than it needs us. Photograph by the Ocean Agency, n.d.

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Like all shipwrecks, this one from the Japanese attack on the United States at Pearl Harbor on 7 December 1941, demonstrates how the ocean is not home to people and their technology. The sunken USS *Arizona* is the resting place of 1,102 sailors and Marines killed on board. The colorful underwater life on this hull reminds us that shipwrecks become habitats for marine life, in this case even despite the slow leaking of oil from the wrecks at Pearl Harbor over the years. Photograph by Jill DeVito, 2014.

Accessed via Wikimedia on 5 March 2021. Click here to view source .

The ocean is not generally viewed as a home for people, as shipwrecks ancient and contemporary attest. Yet many cultures have explored the limits of life undersea. Groups of people in the Philippine Islands, Indonesia, Thailand, and China live on boats, depend on marine resources, and in some cases appear to have physical adaptations for breath-hold diving. Post–World War II dreams of technology enabling people to work and live underwater have not materialized. Instead, the recent increase in shark attacks reminds us that humans underwater trespass in an environment that is home for nonhuman species. We increasingly understand the scale and extent of overfishing, plastic pollution, and myriad other harms done to the marine environment by human activities. Similarly, we grow more aware of the unequal effects of this damage as a postcolonial legacy. Our actions as a species endanger home for many sea creatures but, ironically, also threaten the planetary-scale home

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that people share with all other forms of life. Ecologists believe that, without us, reefs and other oceanic places would recover—a reminder that we need the oceans more than they need us.

The original virtual exhibition features an interactive gallery of images. Please view the images on the following pages.

Warfare is one of the oldest uses of the ocean, after food and transportation. The Anglo-Dutch Wars of the second half of the seventeenth century were the first conducted entirely at sea, while twentieth-century submarine warfare drew the undersea realm into global geopolitics. This scene of a German submarine destroying an armed UK fishing vessel in 1916, by the German maritime painter Willy Stöwer, illustrates danger to ships coming from below. Submarine warfare in the Second World War stimulated the development of oceanography to produce knowledge about the operational environment for these crafts.

Willy Stöwer, *Deutsches U-Boot, einen bewaffneten englischen fischdampfer vernichtend*, 1916. Public domain.
Courtesy of the Library of Congress. Click here to view source .

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Many coastal people were proficient in finding and collecting or catching the animals and plants they relied upon. John White studied the fishing techniques of Indigenous people in North Carolina and in 1585 produced this composite watercolor, labeled "The manner of their fishing," to show the daytime techniques of dip netting and spearing of fish, the nighttime practice of using fire in a canoe to attract fish, as well as the weirs deployed to trap fish. Some of the species shown, such as the hammerhead shark and the larger fish, would have been found in deep water, suggesting that the people White observed were comfortable working in both shallow and deeper waters.

John White, *The Manner of Their Fishing*, 1585–1593. Public domain.
Courtesy of the British Museum. Click here to view source

This widely circulated illustration by the British geologist Henry de la Beche depicted Jurassic-era animals and their environment. Made in 1830, *Duria antiquior* (a more ancient Dorset), the first representation of deep time based on fossil evidence, drew upon discoveries by the professional collector Mary Anning. It also showed a novel underwater view decades before the invention of the aquarium, which helped emphasize to viewers how oceanic life dominated the globe in past geological ages.

Henry de la Beche, *Duria antiquior*, 1830. Public domain.
Accessed via Wikimedia on 21 April 2021. Click here to view source

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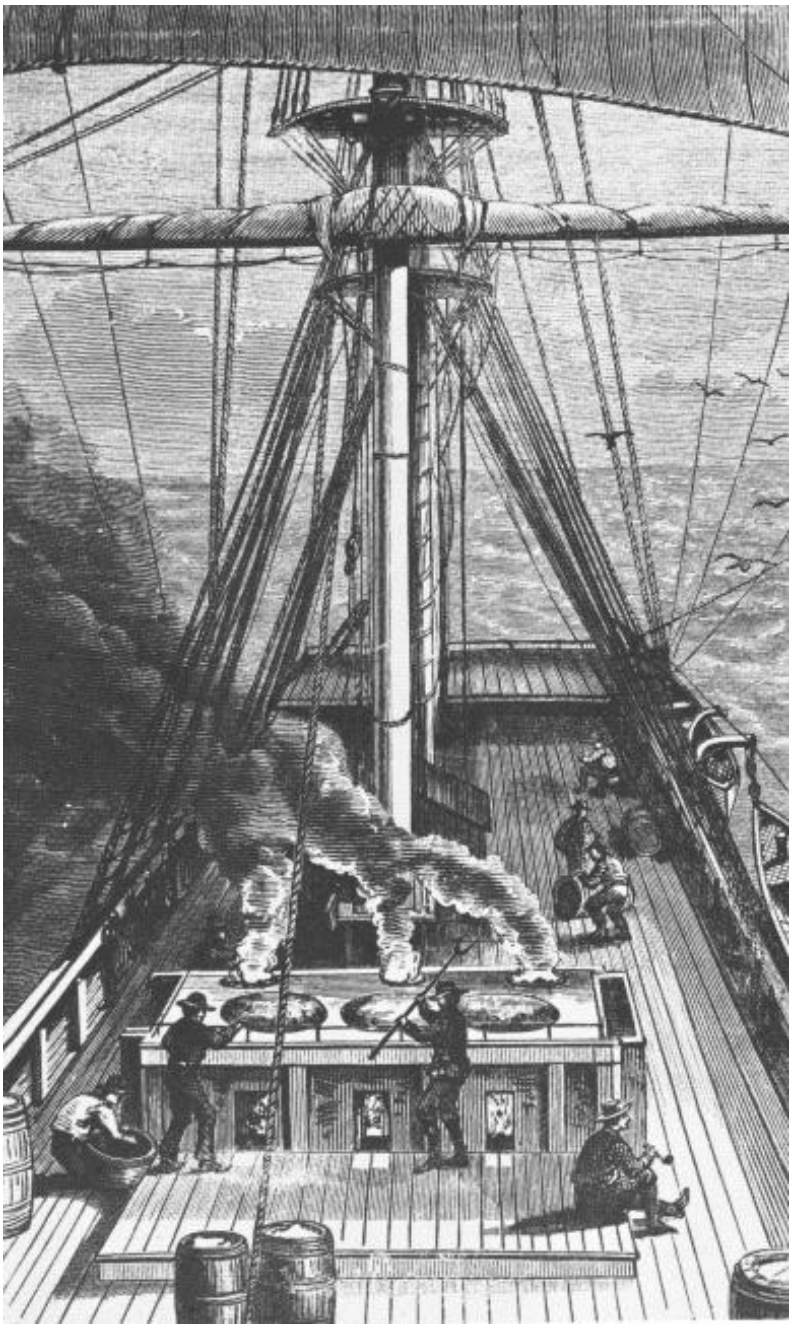

This 1874 engraving shows tryworks installed on the deck of a whaling vessel. A brick furnace holding cast iron pots, tryworks were used to render blubber to recover the valuable oil, which was put in casks and stored below deck. Before the mid eighteenth-century, colonial American whalers carried blubber back to shore for rendering. Adoption of tryworks made it possible to conduct all the activities associated with whaling from the ship, resulting in longer voyages that took whalers around the globe hunting for their quarry. Whaleships with tryworks made the open ocean into a destination for whalers, while the whaleships themselves served for long periods of time as home for these men and for the small number of women and children who voyaged with them.

Unknown engraver, n.d. Public domain.
Published in William M. Davis, *Nimrod of the Sea; or, The American Whaleman* (New York: Harper & Brothers, 1874).

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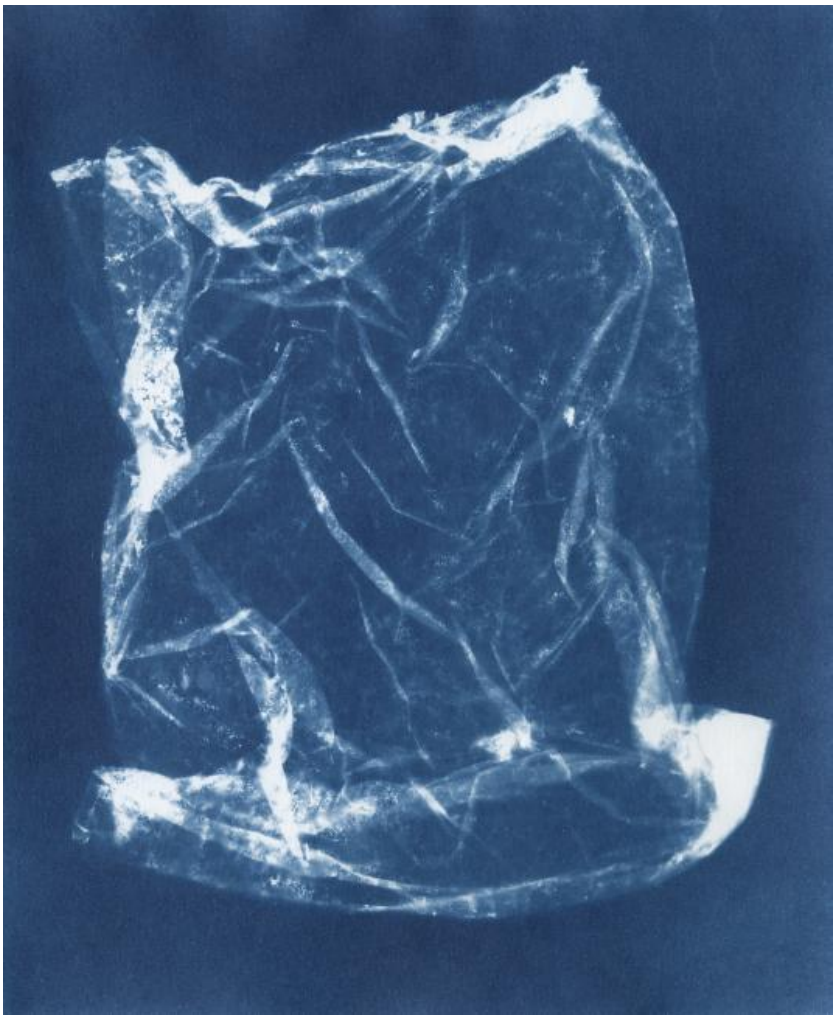
Illustration of Lady Anne Brassey writing her account of her family's 1876 circumnavigation, the first by a private yacht, which became a best-selling book titled *A Voyage in the "Sunbeam"*, and was translated into five languages. The book's subtitle, "Our Home on the Ocean for Eleven Months," speaks to the domestication of the ocean by Brassey, her husband, and their four children, aged 6 months to 13 years, as they sailed across long stretches of ocean, stopped to explore ports and to leave behind carved plaques marking their visits, staged a version of the traditional sailors' "crossing the line" ceremony when they crossed the equator, buried dead pets at sea, and otherwise imitated the actions of explorers and mariners, including chronicling their movements and adventures in a published narrative.

Engraving by A. Y. B., n.d. Public domain.
Published in Anne Brassey, *A Voyage in the "Sunbeam": Our Home on the Ocean for Eleven Months* (London: Spottiswood and Co., 1878: 423).



Photographer Elizabeth Ellenwood uses art to explore and draw attention to environmental issues such as the damaging effects of plastic in the ocean. With a photographic printing process used by the British botanist Anna Atkins to record seaweeds in the first photographically illustrated book in 1843, Ellenwood ironically documents a plastic bag she collected on Napatree Point in Watch Hill, Rhode Island, as part of her Among the Tides project. Cyanotypes like this are made by coating paper with an iron salt solution, then placing an object on the paper and exposing it to sunlight, which creates the image. Ellenwood's print prompts consideration of the tension inherent in people rendering the home of marine creatures into a dangerous or deadly environment for them by disposing of plastic that, while it does break down into microscopic size, remains in the ocean indefinitely.

Photograph by Elizabeth Ellenwood, 2019.
http://elizabethellenwood.com .
Used by permission.

The original virtual exhibition features the film trailer *No Word for Worry* (2012). 3:25 min. View the film online here .

The original virtual exhibition features the film *Whale Fall in Monterey Bay National Marine Sanctuary* (2019). 2:25 min. View the film online here.

The No Word for Worry film trailer introduces indigenous sea nomads who call themselves the Moken, or sea people. Living along the west coast of Burma and Thailand in the Mergui archipelago, the Moken face threats to their traditional way of life, which has involved living mostly on boats and deriving subsistence from the sea. Those threats come from overfishing by industrial fisheries and political persecution by governments that try to force them to settle permanently on land. In the trailer, Hook Suriyan Katale relates his peoples' plight and is filmed diving, demonstrating his impressive breath-holding and underwater swimming abilities. In 2004 some groups of Moken anticipated the tsunami and moved to high ground for safety, revealing the depths of their knowledge of oceanic phenomena.

Whale falls, like the one discovered by the 2019 Nautilus Expedition lying at over 3000 meters near the Davidson Seamount in the Monterey Bay National Marine Sanctuary, are carcasses of dead whales that sink to the deep ocean floor to become a bonanza-style food source for many kinds of marine creatures. First come scavengers such as hagfish or octopuses and then deep-sea specialized crabs, isopods, sharks, prawns, bacteria, microbes, and other fauna whose life cycles take advantage of the nutrients and fats provided in this otherwise challenging environment. In 2002 scientists discovered whale falls to be home to a previously unknown genus named *Osedax*, more commonly called bone-eating worms or zombie worms, and more recently they are beginning to recognize whale falls as significant for global carbon sequestration. Video by the National Oceanic and Atmospheric Administration (NOAA).

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Bibliographies

Two shared Zotero bibliographies may guide further reading.

The first, compiled by the International Commission of the History of Oceanography, includes works on the History of Marine Science:

https://www.zotero.org/groups/2526220/history_of_marine_science_icho_library?token=b985c0d5656026386c8166e1f52e216f

The second, compiled by the Coastal History Network, includes works on coastal studies across many disciplines:

https://www.zotero.org/groups/2503094/coastal_studies

Related links:

- Excerpt from *Vast Expanses: A History of the Oceans* by Helen Rozwadowski http://www.environmentandsociety.org/node/9106/

Websites linked in this text:

- http://doi.org/10.1038/35021135
- https://hypocritereader.com/95/tamara-fernando-mannar-pearls-cholera
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- https://www.zotero.org/groups/2503094/coastal_studies

About the Exhibition

Helen Rozwadowski aboard the schooner *Mystic Whaler*

Helen M. Rozwadowski is a professor of history and founder of the University of Connecticut's Maritime Studies program. Her award-winning book, *Fathoming the Ocean: The Discovery and Exploration of the Deep Sea*, chronicles the nineteenth-century scientific and cultural discovery of the depths. Her recent book, *Vast Expanses: A History of the Oceans* (Reaktion Books, 2018), was published by an independent publisher of innovative nonfiction and came out in a Korean edition in 2019 and a Chinese edition in 2020. She is co-editor of the new University of Chicago Press "Oceans in Depth" book series.

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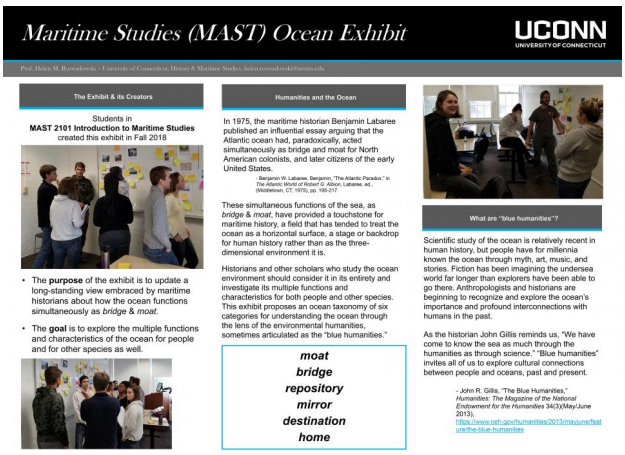
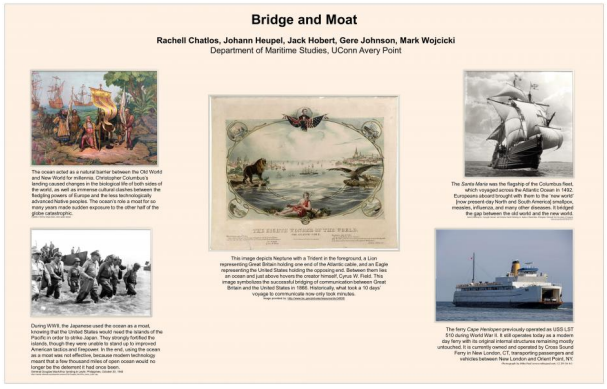
Acknowledgments

This virtual exhibit emerged from the fellowship period I was privileged to enjoy at the Rachel Carson Center in spring 2018, which gave me the time and freedom to think broadly about the intersections between the traditional field of maritime history, the emerging field of ocean history that I am actively promoting, and the environmental humanities, more specifically, the blue humanities. I would like to thank in particular Katharine Anderson, Kimberly Coulter, Kevin Dawson, Ruhi Deol, Elizabeth Ellenwood, Daniel Hornstein, Katherine Morrissey, Jonatan Palmblad, and two anonymous reviewers for their generous and helpful questions, contributions, assistance, and insights. As I worked on this exhibit, students in my fall 2018 Introduction to Maritime Studies course at the University of Connecticut created their own version of this exhibit, which opened at the University of Connecticut's Avery Point campus on April 9, 2018.

Two posters from the University of Connecticut's Maritime Studies Student Exhibit of 2018



This introductory poster to the University of Connecticut's Maritime Studies 1101 student exhibit in 2018 introduces viewers to the goals and overall argument of the exhibit as well as its connection to the "blue humanities."



One of the posters contributing to the 2018 student exhibit, this one examines the Bridge-Moat paradox. Others, not included here, explored Repository-Mirror and Destination-Home.

The last image, lower right corner, is a photograph by Mike Peel (www.mikepeel.net). CC BY-SA 4.0 .

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This strikingly unusual example of the Hudson River style of American landscape art, Edward Moran's *Valley in the Sea* (1862), depicts an imagined panoramic view of the Atlantic seafloor. Probably commissioned in honor of the first successful transatlantic cable laying of 1858, this painting reflects the mid-century cultural discovery of the deep ocean that was also manifested by the popularity of marine natural history, beach holidays, yachting, maritime novels, and other ways that ordinary people engaged experientially and imaginatively with the sea.

Edward Moran, *The Valley in the Sea, 1862. Oil on canvas.*

Courtesy of the Indianapolis Museum of Art. Click here to view source .

Edward Moran, *Valley in the Sea*, 1862.

Allegorical scene celebrating the successful 1866 laying of the transatlantic telegraph cable, bridging Britain, represented by the lion, and the United States, represented by the eagle. King Neptune rests on the ocean floor as if welcoming and protecting the wires and the instantaneous communication between continents they enabled. Submarine telegraphy represents a rare instance when the ocean acting as bridge (or moat, in the years in which efforts to lay the cable were unsuccessful) involved the seafloor rather than its surface. Illustration by Kimmel & Forster, 1866.

Courtesy of the Library of Congress. Click here to view source .

Kimmel & Forster, *The Eighth Wonder of the World*, 1866.

Photograph by John Williamson, n.d.

Originally published in J. E. Williamson, *Twenty Years Under the Sea* (Boston and New York: Halse, Cushman & Flint, 1936).

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On the right is a healthy reef in American Samoa in December of 2014. In February 2015, during a bleaching event, the same reef is shown on the photograph on the left. Warmer than usual water temperatures can cause bleaching; the white color results from the coral expelling its symbiotic algae in response to the temperature shift, leaving the coral stressed and the reef covered with slime. This image comes from the Coral Reef Image Bank, a resource created in recognition of the importance of visual imagery in inspiring conservation and climate action. Scientists predict that if humans disappeared from Earth, reefs and most marine species would recover, reminding us that we need the ocean more than it needs us. Photograph by the Ocean Agency, n.d.

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Photograph by Aaron Burden.

Photo by Aaron Burden on Unsplash

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- http://collection.imamuseum.org/artwork/56245/
- https://www.loc.gov/item/93510355/
- https://www.coralreefimagebank.org/before-after
- https://unsplash.com/@aaronburden?utm_source=unsplash&utm_medium=referral&utm_content=creditCopyText
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