

Finding the Mighty Whales:
Eighteenth Century Nantucket Whaling and the Development of Environmental Knowledge

by

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B.A., The University of Connecticut, 2008

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE DEGREE OF

MASTER OF ARTS

in

THE FACULTY OF GRADUATE STUDIES

(HISTORY)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

August 2010

Abstract

When Nantucket whalers moved from a shore based fishery to one prosecuted on the high seas, they had to devise a system to locate whale populations. To do this, the whalers systematically recorded their observations of the ocean and whales and developed a knowledge of the environment. This knowledge was rooted in new scientific ideas rather than traditional knowledge forms. As a result, when whale populations diminished over the eighteenth century Nantucket whalers were able to adapt and find new whaling grounds expanding from the North Atlantic south to the Azores, of the coast of Brazil and Guinea, and eventually into the Pacific. This public scientific approach to their work catapulted a small island into the forefront of the global whaling industry and underpinned the remarkable prosperity Nantucket enjoyed in the golden age of American whaling.

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Acknowledgements

First, I would like to thank my advisor Prof. Danny Vickers who has given me encouragement, advice, and direction as I worked on this project. Before him, Prof. Mary K. Bercaw Edwards and Prof. Helen Rozwadowski at the University of Connecticut led me on my academic path and continue to guide me. At the University of British Columbia Prof. Tina Loo, Prof. Coll Thrush, and Prof. Carla Nappi have offered thoughtful advice. My fellow graduate students in the Department of History and at Green College have been quite helpful: in particular I would like to thank Stephen Hay who has provided helpful advice and kind friendship.

Additionally, I would like to thank Mary K, Jason, Jim, Michelle, Chris, Carl, Peter, Ian, Barry, Karl, Trina, Matt, Sarah, Richard, Mort, and everyone involved in the Mystic Seaport Demonstration Squad who taught me much during my years working there.

I could not have completed this project without the help of the librarians and archivists at the New Bedford Whaling Museum Library, The Nantucket Whaling Museum Library, the Massachusetts Historical Association, The Nantucket Atheneum, and the Providence Public Library.

I would like to thank my family: my parents Patty and Tom, my sister Megan, my brother-in-law Hud, and their son Finley supported me immensely with their love and wisdom. Lastly, my girlfriend Carly has immeasurably helped me: without her love, support, and wisdom I never could have done this.

Introduction

In 1769 while serving as the Deputy Postmaster General in London Benjamin Franklin was consulted on the question of why New England merchant captains were able to make the Atlantic crossing faster than their London counterparts. According to Franklin he consulted “a Nantucket sea captain of my acquaintance” who believed the difference was due to New Englander's knowledge of the Gulf Stream. The Captain told Franklin “We are well acquainted with that stream because in our pursuit of whales, which keep near the sides of it, are not to be met within it, we run down along the sides and frequently cross it to change our sides.”¹ With the help of this captain Franklin was able to produce a map of the Gulf Stream along with directions for avoiding it on Atlantic crossings.²

The discovery of the Gulf Stream has long been associated with Franklin, who after the initial publication of his map on subsequent Atlantic crossings made further measurement of the current. He developed the theory that “this stream is probably generated by the great accumulation of water on the eastern coast of America between the tropics, by the Trade Winds which constantly blow there.”³ Although it was Franklin who announced this discovery to the world, his source was Captain Timothy Folger who belonged to the Nantucket whaling community that created the knowledge. What Franklin published was what whalers who

¹ Benjamin Franklin Letter to David Le Roy quoted in Franklin Bache “Where is Franklin's First Chart of the Gulf Stream?” *Proceedings of the American Philosophical Society* 76(1936) 735-736.

² Joyce Chaplin. *The First Scientific American: Benjamin Franklin and the Pursuit of Genius* (New York: Basic Books, 2006) 196-200

³ Bache, 736.

carefully observed and recorded information about the whales, weather, and ocean had actually discovered.

Whalemen were willing to share this information because it was not important to their business any more.”⁴ The area around the Gulf Stream was no longer a critical whaling ground for the Nantucket whalemen. Instead, they had moved on to whale in the southern Atlantic, around the Azores and beyond. In their quest to hunt whales Nantucketers had to continuously find new grounds as whale populations in previously hunted areas dwindled.

Whaling was the source of remarkable growth on Nantucket during the eighteenth century. Europeans settled on the island in 1659 and although they did not begin whaling there until 1672, they were so successful at it over the next hundred years that by 1770 the islanders were so prosperous that by 1775, British statesman Edmund Burke could declare:

No sea but what is vexed by their fisheries. No climate that is not witness to their toils. Neither the perseverance of Holland, nor the activity of France, nor the dexterous and firm sagacity of English enterprise ever carried this most perilous mode of hardy industry to the extent which it has been pushed by this recent people; a people who are still as it were, but in the gristle, and not yet hardened into the bone of manhood.⁵

That Burke had even noticed the Nantucket whale fishery is a testament of how important it had become in less than a century. His quote raises a question: what were Nantucketers doing differently that allowed them to thrive in the deep sea whale fishery?

The Franklin Gulf Stream story lends a clue. Nantucket whalemen used scientific knowledge to aid their business in a way no others had. Rather than rely solely upon the whales that swam close to the shore as most other whalers did Nantucket whalers used new methods to

⁴ Chaplin, 197.

⁵ Obed Macy. *The History of Nantucket*. (Boston: Hilliard, Gray, and Co. 1835) 8, 28. Edmund Burke. “Resolutions for Conciliation with the Colonies, quoted in Nathaniel Philbrick. “Every Wave is a Fortune’: Nantucket Island and the Making of an American Icon” *The New England Quarterly* 66(Sep., 1993) 435.

find whales in the open ocean. Through careful observation and record keeping the whalers were able to learn where whales were likely to be.

Most historical accounts of whaling take for granted the whaling grounds to which men from Nantucket sailed in order to hunt the leviathan. Historian Elmo Hohman in his treatise *The American Whalemen* writes of the period after the War of 1812 that “New and fertile whaling grounds were opened in rapid succession” but Holman never describes how these grounds were first discovered.⁶ For early eighteenth century whalemen, however, offshore whaling grounds were an unknowable idea. Until that point almost all whaling had been conducted near to the shore where the Dutch, English, and New Englanders had chased after the whales that swam close enough to the coast to be seen. In order to successfully pursue whales into the deep ocean whalemen needed to find them and to do that they needed to learn about whales and the ocean environment. They pursued whales in a scientific manner; keenly observing, recording, and communicating with each other information about the ocean and whales so that they could learn where whales were likely to be found. In this way, they developed a knowledge of the ocean environment unlike any other early modern person.

Much of the historical scholarship on whaling, such as Hohman's *The American Whaleman* or more recently Davis, Gallman, and Gleiter's *In Pursuit of Leviathan*, has studied the economic importance of the whaling industry.⁷ Over the last thirty years, historical scholarship on whaling shifted to examine the social aspects of whaling and the men and women

⁶ Elmo P. Hohman. *The American Whaleman: a Study of Life and Labor in the Whaling*. (New York: Longmans, Green and Company 1928 Reprinted Augustus M Kelley Publishers 1972) 39.

⁷ Lance Edwin Davis, Robert E Gallman, Karin Gleiter. *In Pursuit of Leviathan: Technology, Institutions, Productivity, and Profits in American Whaling, 1816-1906* (Chicago: The University of Chicago Press, 1997)

involved in the labor. Historians such as Daniel Vickers, Margret Creighton, and Lisa Norling looked at the labor, society, and gender involved in 18th and 19th century American whaling.⁸

For the most part historians have not recently re-examined the American Whaling industry in light of the environmental historiography of recent decades. As Jeffery Bolster has argued, environmental history in the United States has focused on the American West and largely ignored the ocean.⁹ My thesis aims to correct some of this and bring together the history of whaling with insights gained from environmental history and history of science. As a field, environmental history has largely shown how humans have changed the natural environment and how the natural environment changed human behaviour.

One recent and notable history of whaling that takes into account aspects of science or the environment is D. Graham Burnett's *Leviathan*. Burnett examines an early 19th century trial concerning whale oil to study 18th and 19th century scientific investigations of cetacean.¹⁰ Burnett, however, does not examine whalers as potential scientists but instead looks at the more formal scientific community and how they affected popular understandings of whales.

Taking a lead from environmental historian Richard White, I argue that whalers knew the environment through their work. According to White, “Work that has simultaneously changed nature has produced much of our knowledge of nature...[labourers] have known nature

⁸ Daniel Vickers, “The First Whalers of Nantucket” *The William and Mary Quarterly* 40 (October 1983) 560-583. Daniel Vickers “Nantucket Whalers in the Deep-Sea Fishery: The Changing Anatomy of an Early American Labor Force” *The Journal of American History* 72(September 1985) 277-296; Margret Creighton, *Rites and Passages: The Experience of American Whaling, 1830-1870* (New York: Cambridge University Press, 1995); Lisa Norling *Captain Ahab Had a Wife: New England Women and the Whaleshery, 1720-1870* (Chapel Hill: University of North Carolina Press, 2000).

⁹ W. Jeffery Bolster. “Opportunities in Marine Environmental History,” *Environmental History* 11(July 2006): 567-597.

¹⁰ D. Graham Burnett. *Trying Leviathan: The Nineteenth-Century New York Court Case That Put the Whale on Trial and Challenged the Order of Nature* (Princeton: Princeton University Press, 2007).

by shaping wood and stone, by living with animals, nurturing them, and killing them.”¹¹ This is true even though “for all the knowledge they yielded, [they] were not necessarily kind to the land.”¹² The knowledge of Nantucket whalers, however, was far more scientific than the folk knowledge that White argues working people had and have. I do not argue that these whalers shared the same ecological understanding that Donald Worster discusses when he argues that “the modern history of ecology begins in the eighteenth century, when it emerged as a more comprehensive way of looking at the earth's fabric of life: a point of view that sought to describe all of the living organisms of the earth as an interacting whole, often referred to as the 'economy of nature.’”¹³ Instead, I argue, that Nantucket whalers used new standardized methods of observing and recording the ocean and whales that were quite different from the traditional and informal ways of knowing the ocean environment that fishermen, shore whalers, and merchant sailors used.

¹¹ Richard White. “Are You an Environmentalist or do You Work for a Living?": Work and Nature” *Uncommon Ground: Rethinking the Human Place in Nature* ed. William Cronon. (New York: W.W. Norton & Co., 1995) 172.

¹² *Ibid*, 172.

¹³ Donald Worster. *Nature's Economy: A History of Ecological Ideas*. (Cambridge: Cambridge University Press, 1994 2nd edition) X.

Nantucket and Whaling

The island of Nantucket sits about thirty miles south of Cape Cod, near the edge of the Gulf Stream. Isolated from the rest of Massachusetts, it has so little in the way of agricultural resources that in the eighteenth century, residents complained, “the soil it was so barren, that though fifteen miles in length, and three in breadth, its produce was scarce sufficient for the maintenance of twenty families.”¹⁴ While this description exaggerates the island's infertility, the island had supported about 2,500 native people before European settlers arrived, and the most bountiful resource for Nantucketers, native and European, was the sea.¹⁵ While the land might not have been able to grow produce for export, the sea offered fish, seabirds, shellfish, and whales. Grey, Bowhead, and occasionally sperm whales swam by the island's shores and the Wampanoag and Nauset, who had been the sole inhabitants before the late seventeenth century when Europeans arrived, harvested the whales the washed upon the beach and possibly hunted them from the shore.¹⁶

Whaling was a natural occupation for the Europeans after they settled on Nantucket in the 1660s. John Smith explored the New England coastline hunting for whales in the early 17th century and early settlers of Massachusetts commented upon the abundance of whales.¹⁷ The Reverend Richard Mather remarked in 1635, as his ship approached the coast, that, “In ye

¹⁴ Society of Friends “Petition to Parliament 1774” quoted in Obed Macy, 73.

¹⁵ According to Walter Folger, in 1794 the island alternated planting about 675 acres of corn or a combination of rye and oats. Walter Folger. “A Topographical Description of Nantucket” Collections of the *Massachusetts Historical Society for the year 1794* (Boston, Apollo Press, 1794) 155.

¹⁶

¹⁷ John Smith. *A Description of New England; or Observations and Discoveries in the North America in the Year of Our Lord 1614*. (Boston: William Veazie, 1865 Original 1616) 19.

afternoon wee saw mighty whales spewing up water in ye ayre like ye smoke of a chimney, and making ye sea about them white and hoary as it is said in Job; of such incredible bigness yt I will never wonder yt ye body of Jonas could bee in ye belly of a whale.”¹⁸ Taking advantage of the abundant resource, many communities of early America rendered the blubber of whales that washed up dead upon the shore into oil. Soon after, settlers took to hunting whales from small, shore-based boats.¹⁹

Shore whaling, unsurprisingly, began on the shore where lookouts scanned the ocean watching for whales. Frequently this was done from atop a spar or other elevated position that enabled the lookout to see farther out.²⁰ When the whale was spotted a cry would go out and a group of men would launch a boat over the breaking surf to chase the whale. If the hunt was successful and a whale was killed the boat would tow the whale back to shore. There, the blubber was cut off the whale and rendered into oil.

Shore whaling didn't require specialized knowledge of the environment but did require a good deal of skill. The whalers needed to be able to row quickly after the whale and effectively harpoon it so that it could get away. But, because the whalers were only passively waiting for whales to swim by, they did not need much knowledge of the ocean or whales beyond the ability to identify their prey to know if it could be caught and would yield good quality oil.

Although shore whaling was profitable, it was limited by the availability of whales. By the 1730s the right and bowhead whales became scarce because of over-hunting but

¹⁸ Richard Mather. *Journal and Life of Richard Mather: 1596-1669*. (Boston: David Clapp, 1850) 20.

¹⁹ Long Island, NY in the mid 17th century was likely the first location of shore whaling in the American Colonies. Alexander Starbuck. *The History of the American Whale Fishery: From Its Earliest Inception to the Year 1876* (New York: Argosy-Antiquarian, 1964, 1878) 9.

²⁰ Obed Macy, 31.

Nantucketers continued whaling from shore boats until about 1760 when, as Zaccheus Macy stated in 1794, “the whales appeared generally to have deserted the coast.”²¹ For whaling to grow, the Nantucketers needed to go into the deep ocean to find more prey. According to Nantucket legend, the first sperm whale was killed in 1712 by Christopher Hussey after his vessel was blown southward during a storm.²² Although this legend has been shown to be untrue, it illustrates how large a jump the move to off shore whaling was.²³ Deep sea whaling presented a host of new challenges. No longer could whalers wait on the shore for whales to swim by; rather they needed to search the deep ocean actively for their kill.

About the 1720s Nantucketers began to catch sperm whales regularly and by mid-century each spring they sailed from their harbor in small sloops and schooners to hunt sperm whales off the coast of Virginia and the Carolina's.²⁴ Then, after delivering the blubber to Nantucket, the whalers headed north to the Grand Banks off the coast of Newfoundland. There the whalers spent the summer and early fall before finally returning home to Nantucket at the end of the season. Although the southern fishery was producing the more valuable sperm whales, whalers who spent from May until August in the Northern Fishery of the Davis Straits were entitled to a bounty from the British government.²⁵

²¹ Randall R. Reeves et al. “Putative Historical Occurrences of North Atlantic Right Whales in Mid Latitude Offshore Waters” *Marine Ecology Progress Series* (282: 2004) 295. Zaccheus Macy “Short Journal of the First Settlement of the Island of Nantucket...” *Collections of the Massachusetts for the Year 1794* (Boston: The Massachusetts Historical Society, 1794) 158.

²² Obed Macy, 36.

²³ Ben Simons. “Christopher Hussey Blown Out(Up) to Sea” *Historic Nantucket* 53 (2004) 9-10. Obed Macy, 37-38. Vickers “Nantucket Whalers in the Deep-Sea Fishery” 281.

²⁴ Obed Macy, 37-38. Additionally, my own database of whaling voyages 1750-1800 supports this for the 1750s. The database is of logbooks and journals 1750-1800 based upon Starbuck, *History of American Whaling*, Folger, *Remarkable Observations*, Nantucket Atheneum Online Database of logbooks, New Bedford Whaling Museum Online Database, and Stuart C. Sherman. *The Voice of the Whaleman*. (Providence: Providence Public Library, 1965).

²⁵ George Brown Goode *The Fisheries and Fishery Industries of the United States* Section V Volume II

The move to an offshore whale fishery involved a commitment to the deep sea that was a radical departure. Until about 1760 this meant staying on or near the North American continental shelf while they went south and hunted whales off the Carolina coast or north and sailed around the Canadian maritime provinces. However, as the century wore on, the whalers sailed further from home as they hunted whales around the Azores, Brazil, and Guinea. With these longer trips the whalers were spending more time at sea looking for whales and less time on shore.

Longer whaling voyages led to social, technological, and epistemological changes in the Nantucket whaling community. The hardships of a whaling voyage and the paucity of available labor led to a restructuring of the island's social structure and to changes in the whaling's wage system.²⁶ With longer voyages and the increased danger and hardship they presented, it became more difficult to man the whaleships leaving Nantucket. Furthermore, the population of natives, who had previously supplied much of the labor for the islands whaling, declined in number because of disease and other factors. Because of this shortage of labor whaling merchants instituted a lay system where whalers earned a fraction of their voyages profits rather than a regular wage.

The technological change in mid eighteenth century whaling was, perhaps, even more important than socio-economic changes. The longer offshore voyages meant that the whale blubber turned rancid before it was returned to shore and thus the oil produced was much poorer in quality. As a result, shipboard try works were developed that allowed the whalers to stay at sea and render the whale's blubber into oil. The extra weight of the try works along with the

(Washington: Government Printing Office, 1887) 102.

²⁶ Vickers, "The First Whalers of Nantucket"; Vickers "Nantucket Whalers in the Deep-Sea Fishery."

longer voyages into rough waters and the desire to carry more oil back to shore meant that whaling merchants were forced to build larger and stronger vessels that could survive repeated voyages.

What made the offshore whaling industry possible was the development of knowledge and skill. While some scholars have noted the skill needed to find whales, the significance of whalemen's knowledge has not been fully appreciated. Whalemen were not blindly hunting for whales, taking those leviathan that they chanced upon. Instead, whalemen knowledgeably sought them out. Certainly luck was always a part of the business; the great successes of many captains, however, proved time and again that they were more than lucky. Successful whaling captains relied upon knowledge of the behaviour of whales that had been learned by generations of whalemen. This knowledge aided whalemen as they made careful observation of the ocean and of the whales they did luck upon. Furthermore, a successful whaling voyage was the result of many captains combining and exchanging their knowledge and observations.

Whaling on the open ocean was not well suited in traditional knowledge forms that were place based. In the ocean, whalemen could not rely upon any physical geographic markers to identify where they were. Instead, they had to use new tools to find their location and use record keeping to sort out the information that they gathered.

The Acquisition of Knowledge

The time that whalers spent at sea was different from other mariners. For most sailors and the merchants they worked for, the ocean was a passage way that allowed goods to be transported around the world and sold for a profit. The ocean is and was dangerous and inhospitable, but it also allowed large quantities of goods to be transported great distances far cheaper than any other method. For these sailors, or perhaps more importantly the captains that employed them, the ocean was a means to an end; it was something to be crossed as quickly as possible to get to the next port. Although it was not until the nineteenth century with the advent of packet ships that speed and regularly scheduled voyages became a critical aspect of trade, even prior to that development, few merchant sailors sought to prolong an ocean crossing.

Mid-eighteenth century Nantucket whalers viewed the ocean quite differently. Rather than sail from one terrestrial location to another with the ocean merely a passage way, whalers cruised around the grounds sailing back and forth in a limited geographic area as they searched for whales. These different approaches to a voyage related to the tools of navigation merchants employed: while some merchant vessels would only carry a compass to make sure they steered correctly, a whaling vessel would need a quadrant or other device that could identify their location without any other navigational aid.²⁷ According to historian Elmo Hohman, “whalers made a systematic survey of the vaguely bounded space of water known as a whaling ground,

²⁷ “Inventory Showing Rig Equipment and Cargo Capacity of a Small Trading Sloop of 1762” *Reports of Cases In the Vice Admiralty court of the Province of New York and in the Court of Admiralty of the State of New York 1715-188* (New Haven: Yale University Press 1925) 293-294; Douglass C. Fonda. *Eighteenth Century Nantucket Whaling*. (Nantucket: Privately Printed, 1969) 8.

leaving little of its area unscanned as possible. With this end in view a vessel stood along under easy sail, keeping the same course for days at a time until the ground had been completely traversed from one side to the other.”²⁸ This cruising, along with whalemens attention to the ocean surface as they scanned for whales, was quite different from merchant sailors for whom keeping lookout was primarily important only when nearing land. While whalemens looked for whales and observed the ocean currents, winds, and weather, merchant sailors warily watched for obstacles that would impede a safe passage.

Observing the ocean environment was a key aspect of the whaling business. Whaling captains had a great deal of autonomy from the owners they worked for and thus had to make decisions about where to hunt based on their own observations and the experiences of their voyage. The whaling merchant Aaron Lopez described the importance of the captain's observations and decision making in his instructions to Captain Thomas Lothrop in 1773. Lopez wrote:

You are to proceed to the Canary Islands, Off which you are to Cruize as long as you may see a prospect of success in the Whale Fishery, & doubt not you'll be able to compleat your Cruize in the Latitude without going further, But should you be disappointed, & find a Scarcity of Whales round those Islands, & that by what Observation you can make they are to be met with in any other Part of the Ocean, You are then to pursue their Tract, & follow them for the Space of Eight Months.²⁹

While Lopez had ideas about where Lothrop and the whalemens should sail, he realized that his captain would ultimately have to make those decisions based on the events of the voyage. The success of an individual voyage was largely predicated on the captain's knowledge of where to look for whales and his ability to interpret the particularities of a voyage in order to adapt and

²⁸ Hohman, 153.

²⁹ Aaron Lopez Letter Subgroup 13 Box 8 Series 8-0 Brig Leviathan of Newport Folder 1. Nicholson Whaling Collection (Providence Public Library, Providence, R. I.).

decide where he should sail next. Beyond the individual voyages, whalemens acquisition of this knowledge of whales and the ocean was key to the expansion of American whaling away from the North American coast and into the rest of the world's oceans.

Whalemens utilized both informal or vernacular and formal or almost scientific knowledge. The informal knowledge of whalemens was what historian Peter Pope, in describing early modern Newfoundland fishing, terms a “vernacular industry.” This allowed the whalemens of New England, like Pope's fishermen, to “transmit skills from one generation to another, irrespective of literacy, through informal apprenticeship systems.”³⁰ The vernacular knowledge of whaling was embodied in the men doing the work of the industry. The labour of whalemens was strenuous and dangerous but also connected to the ocean environment.³¹ When out at sea a member of the ship's crew was constantly at the top of the mast looking out for whales.³² Then, while hunting, the men got within a few feet of the creature when they darted a harpoon into its back and the whale³³ All of this observation led to a great deal of knowledge about both whales and the rest of the ocean environment.

Perhaps the most visible form of whalemens vernacular knowledge of the environment under the ocean surface was the way they often navigated while on the North American continental shelf. Although in the deep ocean whalemens, like most other mariners, navigated by the stars or by deduced reckoning, when these same whalers neared their home of Nantucket they navigated by the ocean bottom. While they could not actually see the ocean floor with their eyes,

³⁰ Peter Pope. *Fish into Wine: The Newfoundland Plantation in the Seventeenth Century*. (Chapel Hill: University of North Carolina Press, 2004) 30.

³¹ Vickers, *Deep Sea Whaling*, 279.

³² J. Hector St. John de Crevecoeur “Account of the Whale Fishing From J. Hector St. John's Letters” *The Boston Magazine* American Periodicals Series Online (April 1784) 243.

³³ Ibid

whalemen used a weighted line called a sounding lead to measure the depth of the water. A cup of tallow at the end of the lead brought to the surface a sample of the sea bottom. The combination of depth and bottom substance and how these changed as the vessel sailed allowed a whaling captain to determine where his ship was and in what direction they were headed. For example on June 17th, 1751, Nantucket whaleman Peleg Folger recorded in his journal that at two hour intervals the crew of the *Grampus* sounded depths of 42 then 39 and again 39 fathoms with fine black sand.³⁴ With these observations, the captain of the *Grampus* knew that he had to sail Northwest to reach Nantucket.

Whalemen and fishermen could employ this type of navigation only because they repeatedly sailed over the same ocean bottom and learned what changes in water depth and bottom consistency meant. In the novel *Captains Courageous* Rudyard Kipling illustrated the knowledge that whaling and fishing captains possessed after years of sailing when the Captain's son Dan Troop describes the process of sounding to newcomer Harvey Cheyne:

"'Tain't soundin's dad wants. It's samples. Grease her up good, Harve." Harvey would tallow the cup at the end, and carefully bring the sand, shell, sludge, or whatever it might be, to Disko, who fingered and smelt it and gave judgment As has been said, when Disko thought of cod he thought as a cod; and by some long-tested mixture of instinct and experience, moved the *We're Here* from berth to berth, always with the fish, as a blindfolded chess-player moves on the unseen board.³⁵

While Disko Troop is a fictional character, his knowledge is based in the real experience of whalemen and fishermen. Troop and real life fishermen and whalers returned to the same places again and again and through that repetition learned enough about the ocean bottom that they could make very accurate guesses as to where they were.

³⁴ Peleg Folger Journal June 17, 1751(Nantucket Athenaeum, Nantucket, MA)

³⁵ Rudyard Kipling *Captains Courageous* (New York, 1896) Chapter 5.

In the deep sea fishery, however, these informal methods of knowledge collection and transmission did not work; the fluidity of the ocean and the lack of any landmarks or distinguishing features created the need for new forms of recorded knowledge. Whaling in the deep ocean, unconnected to the land, even the ocean bottom, presented new challenges. Whalers needed to be able to identify a place without landmarks and return there in future years to find whales again. To do this whalers need a quadrant to verify their location and a logbook to record it. Whalers' logbooks are largely a record of what they sighted while out on the ocean. Since whale sightings were a relatively infrequent event, logbooks mostly contained information about the weather, currents and winds that were observed each day.

This written, logbook-based knowledge resulted in the type of observations about nature that could lead to Benjamin Franklin's map of the Gulf Stream. The specific locations of Folger and Franklin's map could not have been created through vernacular knowledge that could find specific locations in a vast and unmarked ocean. Instead, it required repeated observation and recording of the current to identify the path it took through the North Atlantic.

Knowledge about ocean bottom and currents allowed whalers to know where they were and where things, like plankton and whales, were moving. Knowledge of the ocean alone, however, did not allow whalers to find their prey. Whalers needed to know a great deal about the whales themselves. Combined with information about the ocean, knowledge of whales appearance, feeding behaviour, and breathing patterns could allow whalers to make a reasonable guess as to where whales were.

In his journal, Peleg Folger provided a description of the types of whales his ship has hunted, how the whales could be identified, and how much oil they yielded. Folger wrote that

sperm whales were: “a Large whale; they will make from 10 to 100 barrels of oyl. They have no bone in their head and their brains is all oyl. They have a hump on the after part of their back; one Spouthole; their under jaw is full of hard ivory teeth, and tongues very small.”³⁶ Having information allowed Folger and other whalers to identify a whale in the ocean and know if it was a one that should be pursued.

While the whalers clearly knew a good deal about the whales, it is unclear how much they understood about whales' feeding habits. The lawyer and natural scientist Paul Dudley in 1725 wrote that “an experienced Whale-man tells me, that he has seen this Whale in still Weather, skimming on the Surface of the Water, to take in a sort of reddish Spawn or Brett as some call it, that at some Times will lie upon the Top of the Water, for a Mile together.”³⁷ It is unclear if eighteenth century whalers were able to use that knowledge to track plankton to whales but in the “Brit” chapter of his 1851 novel *Moby-Dick* Herman Melville describes the practice of following “vast meadows of brit, the yellow substance, upon which the Right Whale largely feeds” to find whales.³⁸

By making a connection between the patterns of the physical environment and the behaviour of whales Nantucketers could make a reasonable attempt to accurately find their prey. This connection was made by the whalers themselves: in their logbooks, while records of navigation were a distinctly separated section, on the rest of the page reports of the weather, whale sightings, and soundings blended together to form a running narrative of the voyage. The Log of the Nantucket whaleship *Juno* in 1766 offers a typical entry:

³⁶ Folger, June 25, 1753.

³⁷ Paul Dudley, "An Essay upon the Natural History of Whales, with a Particular Account of the Ambergris Found in the Sperma Ceti Whale," Royal Society of London, *Philosophical Transactions*, XXXIII (1725)

³⁸ Herman Melville. *Moby-Dick* edited by Harrison Hayford and Hershel Parker (New York: W.W. Norton & Company, 1967) 223.

Small Breas for part of these 24 hours and a scalding heat. This fore hours a fine Large
wind to ye S E Saw plenty of porpoises Sound now a bottom
Seven of ye clock Stuck Sounding In 60 Fathom of water on Gorge bank small black
stone Gray Sand Gravel³⁹

Although the weather, soundings and animal observations were all separate, an account of the voyage was not complete without all of them. Along these same lines, when Samuel Atkins set out to write a poem recounting his whaling voyage on the Brig Polley he tied the scarcity of whales with the environment they were working with saying:

So we Arrived a Round these Islands a fort nits time
Though the wether was good the whails was Scars
And away to the Costs of Guinea boys it was then
So we Shaped a Cors to the Southward the joy and mercy⁴⁰

The knowledge of the ocean environment was necessary to find whales. Whalemen understood their voyages not only by thinking about how many whales they took and how much money they made, but also by the where those whales had come from and what the ocean was like.

³⁹ Logbook of the Juno, September 16, 1766. Nicholson Whaling Collection (Providence Public Library, Providence, R. I.).

⁴⁰ Samuel Atkins Journal, brig Polley "A New Song." Nicholson Whaling Collection (Providence Public Library, Providence, R. I.). For more on Atkins and the development of off shore whaling see Daniel Vickers "Nantucket Whalemen in the Deep-Sea Fishery" 277-296.

Knowledge Exchanges

Although the whale fishery was quite widespread across many oceans, the captains and officers of the American vessels originated from few communities: Nantucket, New Bedford, and a handful of other New England towns. Indeed, many whaling captains and officers came solely from Nantucket. This close community allowed information to be collected and shared; sharing allowed the entire community of Nantucket whaling captains to extrapolate from their collective experiences and realize the large trends of whaling grounds and migration patterns. In this way, Nantucket became what Bruno Latour calls a “Centre of Calculation.”⁴¹ The whaling captains of Nantucket, like the scientist that Latour describes, brought knowledge about currents, whales, and their food from a distance to the centre. Through the recordings of logbooks the whalers had information about whales and tides “mobile” and “stable”: that is they could be “brought back” to Nantucket without “additional distortion, corruption, or decay.”⁴² The whalers's information also were “combinable,” as Latour describes, to be “cumulated, aggregated, or shuffled like a pack of cards.”

Although the results of aggregating and interpreting whaling logbooks was published first by Matthew Fontaine Maury in 1853 and then in 1930 by Charles Haskin Townsend, it is likely that whaling captains and merchants had undertaken this process much earlier.⁴³ Nantucket

⁴¹ Bruno Latour *Science in Action: How to Follow Scientists and Engineers through Society* (Milton Keynes, England: Open University Press, 1987) 232-233.

⁴² Latour, 223.

⁴³ Matthew Fontaine Maury *A Chart Showing the Favourite Resort of the Sperm and Right Whale* reproduced in Randall Reeves et al. “Putative historical Occurrence of North Atlantic Right Whales in Mid-latitude Offshore

whaling captains who first sailed into the Pacific at the end of the eighteenth century made a point to inform their colleagues of the location of sperm whales and other information about navigation and tides that would be helpful.⁴⁴

In many ways, it was not Nantucket the place that acted as the centre of calculation but instead the more abstract notion of Nantucket as a community. This was because much of the communication about whales and whaling took place at sea rather than on land. Nantucket whaling captains, only some of whom were related or had formal business ties, communicated with each other at sea providing valuable information on the location of whales.

One critical way that whalers exchanged information was through gams. These mid-ocean meetings of two or more whaleships allowed letters, stories, and knowledge about whaling and the environment to flow between vessels. During the mid eighteenth century, when most of the whaleships on the whaling grounds were from Nantucket, gams were meetings of neighbours, friends, acquaintances, and business partners. Gams served to break up the isolation and monotony of a whaling voyage and allow the officers and crew of vessels a chance to interact with people other than those they saw day in and day out.

In addition to their social function, gams also were a valuable opportunity for two both whaleships to gain information. While outward bound vessels brought with them letters from home, in exchange, those vessels that were already on the whaling grounds provided information about whales spotted and the amount of oil they had already gathered.

The most crucial information exchanged during gams related to the number and location of whales. A journal from the Ship Dighton in 1769 offers a typical example of a gam: “we

Waters: 'Maury's Smear' is Likely Apocryphal" *Marine Ecology Progress Series* 282(2004) 297.

⁴⁴ Document dated May 22, 1797 Nantucket Atheneum Ships' papers Box 2 Folder 4.

spook with a good many Vessels that came from the westward & the most of them had Sume oil and the whail was prity plenty but the wather was roged so they run down hear.”⁴⁵ This information allowed the captain of the Dighton to make his decision where he wanted to sail his ships. He knew where whales had been and the weather conditions and this information, along with his prior knowledge, allowed him to go where he thought whales could be found.

Related, but separate, to gamms was the practice of mating. While mated, two whaling ships would work together to find, kill, and process whales. Then, the two vessels shared the blubber that had been stripped from the whale. Mating appears to largely have been an informal practice that was accomplished through the familiarity between Nantucket whaling captains. While some ships left port mated, many more joined together while out at sea.

Mating did not provide the same exchanges of new information from the whaling grounds that gamming did, but it could be helpful in other ways. Most noticeably, mating allowed captains and crews to cover more ground and to make the work of finding, killing, and processing a whale much easier. With the two ships sailing in concert they were more likely to spot a whale and get to it than one ship sailing alone. Additionally, with the relatively small whaling crews of the mid eighteenth century (compared to their size in the nineteenth) having twice as many men to help pull a dead whale back to a ship and then process the blubber.

While the exchange of information on the whaling grounds was important, whalemens needed to bring this information back to Nantucket to ship-owners and other whalemens. In order for the knowledge of whalemens to travel back to Nantucket it had to be put into what Bruno Latour terms “an immutable form.” For whalemens, this immutable form was the logbook. On

⁴⁵ Journal of a Whaling Voyage aboard the Ship Dighton, Silas Paddock Master. New Bedford Whaling Museum Library MSS# 778. June 4, 1769.

the whole, logbooks from the eighteenth century followed a standard form: multiple times a day the location of the vessel was recorded along with wind and weather conditions. Additionally, the whalers recorded any sightings of whales along by using a whale's tail stamp; a practice that signals the standardization of record keeping. Logbooks were quite different from journals or diaries. Rather than personal recordings of voyages, logbooks were intended to be systematized in order to convey a specific type of knowledge. Nearly every extant logbook from the eighteenth century follows the same method of recording a voyage with very little commentary or discussion within the text of the logbook.

Whalers kept logbooks for reasons similar to why the explorer Lapérouse kept records of his voyage. As Latour writes about Lapérouse and his crew, “Why are they all so hard-pressed to take precise notes,...to stay awake at night writing down everything they have heard and seen...Because the people who sent them away are not so much interested in their coming back as they are in the possibility of sending *other* fleets *later*.”⁴⁶ For the masters of 18th century whaleships, the cargo of whale oil these ships brought back was the primary concern, but the information brought back in the logbooks meant that future voyages might be even more profitable.

The meticulous recording of whales sighted was quite different from the way similar maritime traders recorded voyages. As historian Helen Rozwadowski notes, “whalers...noted carefully where and when they saw or took whales. Sealers, by contrast, often did not keep logbooks or destroyed them after the voyage, to keep the location of profitable islands secret.

⁴⁶ Latour, 217 emphasis original.

Fishermen, who tended to return to the same, familiar grounds, did not usually keep logbooks.”⁴⁷

This points to the different types of knowledge these occupations were using. Sealing and fishing were tied to the land or at least to grounds near enough to land that the ocean bottom could be reached with a lead line. Nantucket whalers, however, journeyed into the deep ocean where they could not rely upon any type of landmark to guide them. For them, logbooks and their written information replaced the vernacular knowledge other professions.

For whalers, logbooks became such an integral part of their operations that as the eighteenth century wore on printers began to sell books that already contained lined forms for recording a voyage. In 1794 the printer Ebenezer Larkin of Boston advertised that his printed logbooks provided, “columns and spaces [that] are properly ruled and divided for the Entrance of every necessary observation; and the several departments arranged in the most regular and conspicuous manner.”⁴⁸ This is in marked contrast to logbooks from mid century that were often written on whatever paper was available.⁴⁹

For all the purpose they served, logbooks were still only an abstraction of the ocean environment. As Latour alludes, the immutable form has already changed the natural environment into a written form. Logbooks record latitude, longitude, winds, waves, whales but that is not all a whaling voyage is. Mistakes may have been made in transcription, critical details may have gone unrecorded because they did not fit into the prescribed form of the logbook, the numbers on the page and a poor memory might transform a voyage in the retelling.

Little archival whaling material remains that would tell us what happened to logbooks at

⁴⁷ Helen Rozwadowski. *Fathoming the Ocean: The Discovery and Exploration of the Deep Sea* (Cambridge MA: The Belknap Press of Harvard University Press, 2005). 18.

⁴⁸ Log of the Whaleship Lennox, New Bedford Whaling Museum Library.

⁴⁹ See for example Log of the Sloop Rochester, 1757 (Nantucket Atheneum Box 4, Folder 2) which was printed on the blank pages of an Almanac.

the end of a voyage: not until the mid nineteenth century are there clearly documented instances in which whaling logbooks were used to derive the location of whaling grounds. That so many have survived in archives and libraries to the present day, however, suggests that they were saved for a purpose.⁵⁰ Whaling masters retained their logbooks and could refer to previous voyages to aid in the search for their prey. Thus, it is valuable to ask what a logbook would have told a whaling captain examining it on land. In the mid nineteenth century U.S. Navy officer Matthew Fontaine Maury used whaling logbooks to create charts of ocean currents and identify areas where whales were most commonly found.⁵¹ Folger and Franklin's map of the Gulf Stream demonstrates that whalers, like Maury, had the knowledge to identify ocean patterns. Even without the formal charts the Maury created from his analysis of logbooks, captains could identify where they had found whales previously and return to those locations.

⁵⁰ In fact, a large volume of the archival material on 18th and 19th century American whaling is made up of log books. This is probably largely a fact of the material nature of logbooks: a bound logbook has a better chance of surviving than loose papers of letters or other written material. But many of the logbooks take other forms such as wrapped in cloth or one that was written on the blank pages of an unbound almanac.

⁵¹ Matthew Fontaine Maury. "Important notice to whalers" *Hunts Merchants Magazine* 24(1851) 773-777. The process of analyzing logbooks was repeated by Charles Townsend in 1935 and more recently by multiple historical ecologists.

Knowledge Beyond the Nantucket Whaling Community

As with Folger and Franklin's map of the Gulf Stream knowledge about the ocean and whales travelled beyond Nantucket and the world of whalers. This knowledge entered into scientific discussions and became part of popular understandings of the ocean. According to Joyce Chaplin, "Folger marked the chart in red, and Franklin sent it to the Post Office to engrave and distribute to packet boat captains. The Post Office dutifully printed the chart, complete with Folger's instructions. The teamwork between a philosopher and a mariner was crucial; the philosopher's generosity in giving the mariner co-authorship unusual."⁵² Co-authorship might have been unusual but whalers had frequently provided information to a more formal scientific community.

A critical aspect of this relationship between labour and science was the provenance of the knowledge. Eighteenth century natural philosophers frequently sought to show that their information came from whalers who could attest to the findings from repeated observation. Chaplin writes of Franklin that "to make his case, he named his source, 'Captain Folger a very intelligent Mariner of the Island of Nantucket.' and appeared to be quoting a conversation he had with him. Folger knew the Nantucket whalers, who in turn knew 'that Whales are found generally near the Edges of the Gulph Stream.'"⁵³

Reports on whales published in the early eighteenth century in the Royal Society of London's Philosophical Transactions explicitly state that their information came from whalers.

⁵² Chaplin, 197.

⁵³ Chaplin, 196.

These reports made it clear that the whalers could offer information to which knowledgeable people otherwise would not have access. A 1724 “communication” from Dr. Boylston of Boston on Ambergris explained that “The most learned Part of Mankind [were] at a Loss about... what is called Ambergris, until our Whale Fishermen of Nantucket, in New-England, some three or four Years past, made the Discovery.”⁵⁴ After a description of how the whalers have determined that ambergris comes from sperm whales by dissecting them, Boylston ends his letter with “Whether or not (from the Account above) the Ambergris be naturally or accidentally produced in that Fish, I leave to the Learned to determine.”⁵⁵

Written at the same time as Boylston's communication, Paul Dudley's “Essay upon the Natural History of Whales” is as explicit in the provenance of information. Furthermore, Dudley rooted his report by connecting to the location his information came from. He clarified that, “the following Account respects only such Whales, as are found on the Coast of New England.”⁵⁶ When Dudley describes how he discovered that ambergris came from whales he is careful to describe the source of his information: a whaler. Dudley says,

The best and most exact Account of Ambegirs, that I have been able to procure (and I may truly say I have taken a great deal of Pains for it) I very lately received from one Mr. Atkins, now an Inhabitant at Boston in New England, who used(sic) the Whale Fishery, for ten or twelve Years together, and was one of the first that went out a fishing for the Sperma Ceti Whales, about the Year 1720, and then began to discover the Ambergris; and being a sober and ingenious Man, what he says may safely be depended on; tho', for Substance, I have had it from several of the Whale-men.⁵⁷

Dudley's and Boylston's accounts of whaling focus on the products of whaling: they are

⁵⁴ Dr. Boylston. “Ambergris Found in Whales” *Philosophical Transactions of the Royal Society of London*, XXXIII (1724) 193.

⁵⁵ Ibid

⁵⁶ Paul Dudley, “An Essay upon the Natural History of Whales, with a Particular Account of the Ambergris Found in the Sperma Ceti Whale,” *Philosophical Transactions of the Royal Society of London*, XXXIII (1725) 256.

⁵⁷ Ibid, 267.

primarily interested in the ambergris and oil that could be sold for money.

The connection between whalemens labour and knowledge to science changed over the course of the eighteenth century. In 1783 Sir Joseph Banks presented the account of Dr. Schwediawer to the Royal Society.⁵⁸ Rather than rely solely on the testimony of a whaler, Schwediawer presented the Royal Society with examples of ambergris and the beaks of squid in order to demonstrate that sperm whales produced ambergris when they digested squids' beaks. Instead of utilising a trusted informant, the members of the Royal Society could observe Schwediawer's findings for themselves. Schwediawer did use a New England whaler as a source, but this information was presented quite differently from the manner of Dudley or Boylston. Combining the whaler's information with that from other captains Schwediawer stated, "From these three persons I have collected the following facts: Ambergrise is sometimes found in the belly of the whale but in that particular species which is called the spermaceti whale, and which from its description and delineation appears to be the *Phystes Macrocephalus Linnaei*."⁵⁹ Schwediawer could not rely only on an informant for knowledge; instead, he had to assert himself to be a learned man and allow the other members of the Royal Society to make a decision based on the evidence he presented.

Whalemens knowledge, however, was not only appropriated by natural philosophers. It also made an appearance in popular magazines and other publications. Late in the eighteenth century, as whalemens travelled away from their typical whaling grounds into the southern ocean, they gained new insight onto their old whaling grounds in the North Atlantic and this

⁵⁸ Dr. Schwediawer and Joseph Banks, "An Account of Ambergris" *Philosophical Transactions of the Royal Society of London*. Vol. 73 (1783) 226-241.

⁵⁹ *Ibid*, 230.

information was published. Most critical of whalers' observations at the end of the eighteenth century was that the whale populations they had been exploiting for the previous century were now changed and that this was the result of whaling. As one observer wrote in the *American Museum* magazine in 1791, "It has been observed by experience that whales change their places of resort in consequence of the continual warfare upon them...The whale fishery...was formerly very productive; but of late years, vessels frequently returned home without the least success."⁶⁰ The *American Museum* was one of the most widely read American magazines during the 18th century with readership of about 1,250 people.⁶¹ Critically, the author of this piece does not state that the whale population declined but that "whales change their places of resort."

Eighteenth century whalers, however, did believe they had changed whale populations through hunting. Captain William Scoresby Jr. echoed the article from the *American Museum* magazine when reflecting on the British whale-fishery in the North Atlantic at the end of the 18th century. Scoresby noted that as "the [whale hunt] increased, and the annoyance of [the whales] became so very great that they took alarm and gradually receded from their favourite haunts, a suitable change in the fishery was requisite."⁶² These recognition that whalers had changed the natural environment originated in the knowledge of whalers even if their explanation of what happened was incorrect.

It would not be until late in the nineteenth century, after the renowned scientist Thomas Henry Huxley was disproved, that there would be agreement that fish populations were even able

⁶⁰ "Observations on the Whale Fishery and Seal Catching" *The American Museum, or, Universal Magazine, Containing Essays on Agriculture...* 9 (June 1791) 332.

⁶¹ Frank Mott. *A History of American Magazines Vol. I.* (Cambridge, MA: Belknap 1958) 14.

⁶² William Scoresby Jr.. *An Account of the Arctic Regions with a History and Description of the Northern Whale-Fishery* Volume II (Edinburgh: Archibald Constable and Co., 1820) 178.

to decline.⁶³ Seemingly, the idea that whale populations could diminish was equally difficult to accept. By the mid-nineteenth century Herman Melville would question “Does the Whales Magnitude Diminish—Will He Perish?” and provide a tongue-in-cheek answer “we account the whale immortal in his species.”⁶⁴ For eighteenth century whalers the answer seems to have been no,

⁶³ Michael L. Weber. *From Abundance to Scarcity: A History of U.S. Marine Fisheries Policy*. (Washington D.C.: Island Press, 2002) 4-5; Bolster, “Opportunities,” 575.

⁶⁴ Melville, 351-354.

Conclusion

In his classic 1851 novel *Moby-Dick*, Herman Melville presents the monomaniacal whaling captain Ahab on a quest to find and take revenge upon the white whale Moby Dick. What separates Ahab from the rest of the novel's whaling captains is not Ahab's relentless pursuit of whales, but rather his relentless pursuit of one whale, forsaking all others. When the *Pequod* meets another whaling vessel the gam between the two ships is primarily about whales: for Ahab the question for the other ship is always "Hast seen the White Whale?" although the other captains want nothing to do with the dangerous Moby Dick. Ahab seeks every sliver of information about Moby Dick that he can obtain so that he can find the whale and exact his revenge. As Melville's narrator recounts, Ahab, through years of personal experience and the collective knowledge of generations of Nantucket whalers, could identify where Moby Dick was likely to be. "To Ahab, who knew the sets of all tides and currents; and thereby calculating the driftings of the sperm whale's food; and, also, calling to mind the regular, ascertained seasons for hunting him in particular latitudes; could arrive at reasonable surmises, almost approaching certainties, concerning the timeliest day to be upon this or that ground in search of his prey."⁶⁵

The knowledge and experience of Ahab was not purely Melville's fictional creation. During the eighteenth century, Nantucket whalers created new ways of observing and recording the ocean environment that allowed them to learn many of the habits of the sperm whale in the Atlantic Ocean, allowing for more effective hunting and processing. Then, in the

⁶⁵ Melville, 171-172.

early nineteenth century, the Americans translated this knowledge into an understanding of the location of breeding grounds and migration routes in the Pacific and Indian Oceans.

Furthermore, this ability to collect, interpret and share information about spermaceti whales led to the American dominance of the Pacific whale fishery during the nineteenth century.

On September 1st, 1788 when the whaling ship *Amelia* sailed from England to the Pacific Ocean on a whaling voyage although it was headed to an area no whaler had previously been they were not green hands.⁶⁶ The first mate of the *Amelia*, Archelus Hammond, who became the first European or American to kill a sperm whale in the Pacific was not British; neither were most of the crew. They hailed from the Massachusetts island of Nantucket.⁶⁷ When the vessel returned more than a year and a half later it was fully laden with sperm whale oil: about 139 tons of the valuable product. The decision to enter the Pacific may have been novel, but the knowledge that made it possible was a Nantucket inheritance.

In the eighteenth century whaling was a difficult business. Not only was the physical task of killing and processing a whale daunting enough; the act of finding the whales was also an enormous challenge. Unlike the whalers of many other nations and even their earlier shore-based predecessors in the Americas, Nantucket whalers chased the leviathan into the deep ocean. In order to find their prey whalers needed to observe the natural environment keenly and look for clues to where whales might be found. These observations were only useful because whalers had recorded earlier observations of the ocean and whales and through these

⁶⁶ A. Howard Clark. "The Whale Fishery: History and Present Condition of the Fishery" in *The Fisheries and Fishery Industries of the United States by George Brown Goode Section V Volume II* (Washington: Government Printing Office, 1887) 67. Clark is quoting from Thomas Beale's *Natural History of the Sperm Whale* (Oxford: Oxford University Press, 1839). Later, Clark gives the year as 1787. Clark, 197.

⁶⁷ *Ibid.*

past experiences they accrued a great deal of knowledge about the behaviour of whales and where they would likely be found. Thus, the act of finding whales in the eighteenth century was neither random nor a matter of luck; instead, it was result of careful observation, record keeping, and collaboration with other whalers that created the knowledge that made the difficult task of finding whales in the ocean possible.

Although Nantucket whalers employed traditional or vernacular forms of knowledge much like fishermen, shore whalers, and other occupations, their success in deep sea whaling was the result of new, scientific knowledge that allowed them to probe the deep ocean in ways that no others had. The deep ocean presented challenges that were very different from coastal whaling and fishing. This required the use of quadrants and other tools to determine location. It required look-outs to watch for changes in the wind, weather and waves. It also required that all of these observations were regularly recorded in order to track what had happened during a voyage. This system of observing and recording was quite different from fishermen and inshore whalers' vernacular knowledge that relied on landmarks and did not require literacy. This new scientific system of knowledge was a modern addition to a traditional industry.

Deep sea whalers' new form of knowledge was primarily used to find whales but it also led to information for the burgeoning scientific community. Whalers communicated with a number of natural philosophers during the eighteenth century from Paul Dudley to Benjamin Franklin. Whalers' knowledge also enabled them to realize when whale populations had changed. This led to whalers to discover new whaling grounds, but it also gave them an understanding that change in whale populations was the result of human behaviour.

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