

A Hypothesis of Wealth-Maximizing Norms: Evidence from the Whaling Industry

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This essay analyzes the rules that high-seas whalers used during the heyday of their industry to resolve disputes over the ownership of harvested whales. The evidence presented sheds light on two important theoretical issues of property rights.

The first issue is the source or sources of property rights. According to what Williamson calls the “legal-centralist” view (1983:520), the state is the exclusive creator of property rights. Many scholars, including Thomas Hobbes (1909:97–98), Garrett Hardin, and Guido Calabresi (1972:1090–91), have at times succumbed to legal-centralist thinking. An opposing view holds that property rights may emerge from sources other than the state—in particular, from the workings of nonhierarchical social forces. The whaling evidence refutes legal-centralism and strongly supports the proposition that property rights may arise anarchically out of social custom.¹

The second theoretical issue is whether one can predict the content of

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1. For more evidence to this effect, and also a taxonomy of alternative systems of social control, see Ellickson (1987). Perhaps the classic description of the emergence of informal property rights in a relatively anarchic environment is Umbeck (1977), a study of mining claims during the early years of the California gold rush.

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informal property rights (norms) that informal social forces generate. This essay advances the hypothesis that when people are situated in a close-knit group, they will tend to develop for the ordinary run of problems norms that are wealth-maximizing. A group is "close-knit" when its members are entwined in continuing relationships that provide each with power and information sufficient to exercise informal social control.² A norm is "wealth-maximizing" when it operates to minimize the members' objective sum of (1) transaction costs, and (2) deadweight losses arising from failures to exploit potential gains from trade. This theory of the content of norms is proffered as the most parsimonious explanation of variations among whaling rules.

1. THE PROBLEM OF CONTESTED WHALES

Especially during the period from 1750 to 1870, whales were an extraordinarily valuable source of oil, bone, and other products.³ Whalers therefore had powerful incentives to develop rules for peaceably resolving rival claims to the ownership of a whale. In *Moby-Dick*, Melville explained why these norms were needed:

It frequently happens that when several ships are cruising in company, a whale may be struck by one vessel, then escape, and be finally killed and captured by another vessel. . . . [Or] after a weary and perilous chase and capture of a whale, the body may get loose from the ship by reason of a violent storm; and drifting far away to leeward, be retaken by a second whaler, who, in a calm, snugly tows it alongside, without risk of life or line. Thus the most vexatious and violent disputes would often arise between the fishermen, were there not some written, universal, undisputed law applicable to all cases. . . .

The American fishermen have been their own legislators and lawyers in this matter. (1851:504-05)

Melville's last sentence might prompt the inference that whalers had some sort of formal trade association that established rules governing the ownership of contested whales. There is no evidence, however, that this was so. Anglo-

2. Close-knittedness enables a member to monitor others and to use informal means of self-help against deviants. In my forthcoming book I will investigate more fully the linkage between this social condition and the emergence of wealth-maximizing norms. For some glimpses of social control among the close-knit, see Acheson (1988), a description of the customs of Maine lobstermen, and Ellickson (1986), an account of how close-knit rural residents in California informally discipline ranchers who carelessly manage cattle. The present article contains one scrap of evidence that the loss of close-knittedness makes informal cooperation more difficult: American whalers increasingly turned to litigation when their industry began to decline, a trend that would make them see their relationships as less enduring. See n. 39.

3. Mid- to late-nineteenth-century judicial opinions recorded the value of single whales (of unreported species) caught in the Sea of Okhotsk, located north of Japan, at over \$2,000: *Swift v. Gifford*, 23 Fed. Cas. 558 (D. Mass. 1872) (No. 13,696), \$3,000; *Taber v. Jenny*, 23 Fed. Cas. 605 (D. Mass. 1856) (No. 13,720), \$2,350. In the latter part of the nineteenth century, mean family income in the United States was on the order of \$600 to \$800 per year. See Bureau of the Census, 1 *Historical Statistics of the United States: Colonial Times to 1970*, at 322 (1975).

American whaling norms seem to have emerged spontaneously, not from decrees handed down by either organizational or governmental authorities.⁴ In fact, whalers' norms not only did not mimic law; they *created* law. In the dozen reported Anglo-American cases in which ownership of a whale carcass was contested, judges invariably held proven whalers' usages to be reasonable and deferred to those rules.⁵

2. THE WHALING INDUSTRY

At first blush it might be thought that whalers would be too dispersed to constitute the membership of a close-knit social group. During the industry's peak in the nineteenth century, for example, whaling ships from ports in several nations were hunting their prey in remote seas of every ocean. In fact, however, the entire international whaling community was a tight one, primarily because whaling ships commonly encountered one another at sea, and because whalers' home and layover ports were few, intimate, and socially interlinked. The scant evidence available suggests that whalers' norms of capture were internationally binding.⁶

The Greenland fishery was the first important international whaling ground. The Dutch were the leaders there during the period around 1700, but later encountered increasing competition from French, British, and American whaling vessels. After 1800, ships from the two English-speaking nations became dominant both in Greenland and elsewhere. By the mid-1800s the United States, a fledgling international power, had emerged as the preeminent whaling nation.⁷

American whalers were concentrated in a handful of small ports in southern New England. Nantucket, the dominant North American whaling port in the eighteenth century, was home to over half the New England whaling fleet in 1774 (Stackpole, 1953:53–54). New Bedford, which during the 1820s

4. Melville (1851:505) asserted that the only formal whaling code was one legislatively decreed in Holland in 1695. The code's contents evoked no description from Melville and also drew no mention in the subsequent Anglo-American case reports.

5. See, for example, *Addison & Sons v. Row*, 3 Paton 339 (1794); *Swift v. Gifford*, 23 Fed. Cas. 558 (D. Mass. 1872) (No. 13,696); see generally Holmes (1881:212). But compare *Taber v. Jenny*, 23 Fed. Cas. 605 (D. Mass. 1856) (No. 13,720) (holding for plaintiff on the basis of general common law regarding abandoned property, despite defendant's [doubtful] assertion that the usage was otherwise).

6. A dictum in *Fennings v. Lord Grenville*, 1 Taunt. 241, 127 Eng. Rep. 825, 828 (Ct. Comm. Pleas 1808), asserts that the fast-fish "usage in Greenland is regarded as binding on persons of all nations." The loneliness of the high seas prompted whalers of different backgrounds to interact with one another. Melville, in chapter 81, provides a fictional account of a mid-Pacific meeting in which the *Jungfrau* of Bremen hailed the *Pequod* of Nantucket in order to obtain needed lamp oil. An actual high-seas trade between a British and a New England ship is described in n. 11.

7. See Ashley (1938:23–29); Hohman (1928:5–6, 20–22). The U.S. industry peaked in about 1846, when its whaling fleet consisted of over 700 vessels. At that same time the combined whaling fleets of all other nations totaled 230 ships (Stackpole, 1953:473).

finally supplanted Nantucket as the leading American whaling center, in 1857 berthed half the whaling ships in the United States (Hohman, 1928:9). Life within these specialized ports centered on the whaling trade. Because of its remote island location and strong Quaker influence, Nantucket was particularly close-knit. "There is no finer example in history of communal enterprise than the Nantucket Whale Fishery. The inhabitants were uniquely situated for united effort. . . . Through intermarriage they were generally related to one another, and in fact were more like a large family than a civic community. . . . The people were so law-abiding that there was little or no government in evidence on the Island" (Ashley, 1938:31). Many Nantucketers shifted to New Bedford when it emerged as the leading whaling center. There whaling also became a "neighborhood affair."⁸

The captains who commanded the whaling ships occupied pivotal positions in the development and enforcement of whaling norms. Two captains based in the same small whaling port were unquestionably members of a close-knit group and would be vulnerable, for example, to gossip about misconduct at sea. The captains' social circles tended, moreover, to extend well beyond their home ports. Migrants from Nantucket, the world's wellspring of whaling talent, became influential not only in other New England ports but also in foreign whaling nations. By 1812, for example, 149 Nantucketers had commanded British whaling ships.⁹

Even whalers sailing from distant ports tended to socialize at sea. Herman Melville, who in *Moby-Dick* portrays eight meetings between the *Pequod* and other whaling vessels, devotes a chapter to the gam (1851: chap. 53). The gam was a friendly meeting between the officers of two whaling ships that had encountered each other at sea. Typically, the two captains would meet for several hours or more on one ship, and the two chief mates on the other. One reason for the gam was to obtain whaling intelligence. ("Have ye seen the White Whale?") In addition, whaling ships might be on the high seas for three or more years at a stretch. More than most seamen, whalers were eager to pass on letters to or from home¹⁰ and to trade to replenish supplies.¹¹ Although the gam was hardly a mandatory ritual among whalers, only they, and no other seamen, engaged in the practice.¹²

Whalers also congregated in specialized layover ports. When the Pacific

8. Ashley (1938:99). Byers (1987) provides a comprehensive history of early Nantucket.

The hypothesis offered here takes social conditions as exogenous. A more ambitious theory might attempt to attribute the close-knittedness of the whalers' home ports to their recognition that a tight land-based social structure would abet cooperation at sea.

9. Ashley (1938:26). See generally Stackpole (1953:133-44, 390).

10. Melville (1851:341); Hohman (1928:87).

11. See, for example, Chatterton (1926:111) quoting the 1836 journal of Samuel Joy, a New England whaling captain: "I got an anchor from an English ship for 40 lbs tobacco and a steering oar."

12. "So then, we see that of all ships separately sailing the sea, the whalers have most reason to be sociable—and they are so" (Melville, 1851:342). See also Ashley (1938:103-04), Hohman (1928:16), Morison (1921:325).

fisheries developed, for instance, the Maui port of Lahaina emerged as a whalers' hangout in the Hawaiian Islands.

3. THE CALCULUS OF WEALTH MAXIMIZATION

Wealth-maximizing norms are those that minimize the sum of transaction costs and deadweight losses that the members of a group objectively incur. By hypothesis, whalers would implicitly follow this calculus when developing norms to resolve the ownership of contested whales. As a first cut, this calculus would call for a whaling ship's fraction of ownership to equal its fractional contribution to a capture. For example, a ship that had objectively contributed one-half the total value of work would be entitled to a one-half share. In the absence of this rule, opportunistic ships might decline to contribute cost-justified but underrewarded work, leading to deadweight losses.¹³

This first cut is too simple, however, because utilitarian whalers would be concerned with the transaction costs associated with their rules. They would tend to prefer, for example, bright-line rules that would eliminate arguments to fuzzy rules that would prolong disputes. Finding a cost-minimizing solution to whaling disputes is vexing because there is no ready measure of the relative value of separate contributions to a joint harvest. Any fine-tuning of incentives aimed at reducing deadweight losses is therefore certain to increase transaction costs.

4. HYPOTHETICAL WHALING NORMS

In no fishery did whalers adopt as norms any of a variety of rules that are transparently poor candidates for minimizing the sum of deadweight losses and transaction costs. An easily administered rule would be one that made the possession of a whale carcass normatively decisive. According to this rule, if ship *A* had a wounded or dead whale on a line, ship *B* would be entitled to attach a stronger line and pull the whale away. A possession-decides rule of this sort would threaten severe deadweight losses, however, because it would encourage a ship to sit back like a vulture and freeload on others' efforts in the early stages of a hunt. Whalers never used this norm.

Equally perverse would be a rule that a whale should belong entirely to the ship whose crew had killed it. Besides risking ambiguities about the cause of a whale's demise, this rule would create inadequate incentives for whalers both to inflict nonmortal wounds and to harvest dead whales that had been lost or abandoned by the ships that had slain them.

13. The present discussion assumes that wealth-maximizing whalers would ignore the risk that their actions might excessively deplete the stocks of whales. This assumption will be examined in section 6.

To reward early participation in a hunt, whalers might have developed a norm that the first ship to lower a boat to pursue a whale had an exclusive right to capture so long as it remained in fresh pursuit. This particular rule would create numerous other difficulties, however. Besides being ambiguous in some contexts, it would create strong incentives for the premature launch of boats and might work to bestow an exclusive opportunity to capture on a party less able than others to exploit that opportunity.¹⁴

Somewhat more responsive to incentive issues would be a rule that a whale belonged to a ship whose crew had first obtained a "reasonable prospect" of capturing it and thereafter remained in fresh pursuit.¹⁵ This rule would reward good performance during the early stages of a hunt and would also free up lost or abandoned whales to later takers. A reasonable-prospect standard, however, is by far the most ambiguous of those yet mentioned, invites transaction costs, and, like the other rules so far discussed, was not employed by whalers.

5. ACTUAL WHALING NORMS

Whalers developed an array of norms more utilitarian than any of these hypothetical ones. Evidence of the details of whaling usages is fragmentary. The best sources are the court reports in which evidence of usages was admitted, especially when the contesting whalers agreed on the usage and disputed only its application.¹⁶ Seamen's journals, literary works such as *Moby-Dick*, and historical accounts provide additional glimpses of the rules in use.

Whaling norms were not tidy, certainly less tidy than Melville asserted in *Moby-Dick* (1851; chap. 89). Whalers developed three basic norms, each of which was adapted to its particular context. As will be evident, each of the three norms was sensitive to the need to avoid deadweight losses because each not only rewarded the ship that had sunk the first harpoon, but also enabled others to harvest dead or wounded whales that had seemingly been abandoned by their prior assailants. All three norms were also sensitive to

14. According to Bockstoe (1986:61), whalers in the western Arctic had informally agreed to defer to the first boat in the water, but tended to ignore this agreement when whales were scarce. Bockstoe's authority for this proposition is thin. He apparently relies on Williams (1964:368), an old man's remembrance of a whaling voyage taken at age fifteen. The incident that prompted Williams's mention of this purported practice was one in which the ships that chose to defer to another's lowered boats were "too far off to take any interest in the affair." More probative would have been an incident in which a ship nearer to a whale had deferred to a prior lowering by a more distant ship.

15. In his dissent in the staple Property casebook decision, *Pierson v. Post*, 3 Cai. R. 175, 2 Am. Dec. 264 (Sup. Ct. N.Y. 1805), Judge Livingston argued that a fox hunter with a "reasonable prospect of taking" his prey should prevail over the actual taker.

16. See *Hogarth v. Jackson*, 1 Moody & M. 58 (1827) (parties agreed that the fast-fish rule prevailed in the Greenland fishery); *Swift v. Gifford*, 23 Fed. Cas. 558 (D. Mass. 1872) (No. 13,696) (parties stipulated that New England whalers honored the first-iron rule).

the problem of transaction costs. In particular, norms that bestowed an exclusive temporary right to capture on a whaling ship tended to be shaped so as to provide relatively clear starting and ending points for the time period of that entitlement.

5.1. FAST-FISH, LOOSE-FISH

Prior to 1800, the British whalers operating in the Greenland fishery established the usage that a claimant owned a whale, dead or alive, so long as the whale was fastened by line or otherwise to the claimant's boat or ship.¹⁷ This fast-fish rule was well suited to this fishery. The prey hunted off Greenland was the right whale.¹⁸ Right whales, compared to the sperm whales that later became American whalers' preferred prey, are both slow swimmers and mild antagonists.¹⁹ The British hunted them from heavy and sturdy whaling boats. Upon nearing one, a harpooner would throw a harpoon with line attached; the trailing end of the line was tied to the boat.²⁰ So long as the harpoon held fast to the whale and remained connected by the line to the boat, the fast-fish norm entitled the harpooning boat to an exclusive claim of ownership as against subsequent harpooners. If the whale happened to break free, either dead or alive, it was then regarded as a loose-fish and was again up for grabs. Although whalers might occasionally dispute whether a whale had indeed been fast,²¹ the fast-fish rule usually provided sharp beginning and ending points for a whaler's exclusive entitlement to capture and thus promised to limit the transaction costs involved in dispute resolution.

The fast-fish rule created incentives well adapted to the Britishers' situation in Greenland. Because right whales are relatively slow and docile, a whale on a line was not likely to capsize the harpooning boat, break the line, or sound to such a depth that the boatsmen had to relinquish the line. Thus the fast-fish rule was in practice likely to reward the first harpooner, who had performed the hardest part of the hunt, as opposed to free riders waiting

17. *Addison & Sons v. Row*, 3 Paton 339 (1794); *Hogarth v. Jackson*, 1 Moody & M. 58 (1827). Melville (1851: chap. 89) identified the fast-fish, loose-fish distinction as the governing principle among American whalers. He also noted at several points, however, that an American whaler who had merely placed a waif on a dead whale owned it so long as he evinced an intent and ability to return (1851:500, 505). The evident tension between these two rules drew no comment from Melville.

18. The ambiguous term *right whale* is used here to refer to a family of closely related species of baleen whales. The two most commonly hunted species were the Biscayan right whale and the Greenland right whale (or bowhead).

19. Ashley (1938:65); Hohman (1928:180); Jackson (1978:3-11). Some whaling crews, "though intelligent and courageous enough in offering battle to the Greenland or Right whale, would perhaps—either from professional inexperience, or incompetency, or timidity, decline a contest with the Sperm whale" (Melville, 1851:279). Melville's fictional and ferocious Moby-Dick was, needless to say, a sperm whale.

20. See Ashley (1938:93).

21. See *Hogarth v. Jackson*, 1 Moody & M. 58 (1827) (whale merely entangled in a line is fast).

in the wings. Not uncommonly, however, a right whale sinks shortly after death, an event that requires the boatsmen to cut their lines.²² After a few days a sunken whale bloats and resurfaces. At that point the fast-fish rule entitled a subsequent finder to seize the carcass as a loose-fish, a utilitarian result because the ship that had killed the whale might then be far distant. In sum, the fast-fish rule was a bright-line rule that created incentives for both first pursuers of live whales and final takers of lost dead whales.

5.2. IRON-HOLDS-THE-WHALE

Especially in fisheries where the more vigorous sperm whales predominated, whalers tended to shift away from the fast-fish rule. The evidence on whalers' usage is too fragmentary to allow any confident assertion about when and where this occurred. The fast-fish rule's main alternative—the rule that iron-holds-the-whale—also provided incentives to perform the hardest part of the hunt. Stated in its broadest form, this norm conferred an exclusive right to capture upon the whaler who had first affixed a harpoon or other whaling craft to the body of the whale. The iron-holds-the-whale rule differed from the fast-fish rule in that the iron did not have to be connected by a line or otherwise to the claimant. The normmakers had to create a termination point for the exclusive right to capture, however, because it would be foolish for a Moby-Dick to belong to an Ahab who had sunk an ineffectual harpoon days or years before. Whalers therefore allowed an iron to hold a whale for only so long as the claimant remained in fresh pursuit of the iron-bearing animal. In some contexts, the iron-affixing claimant also had to assert the claim before a subsequent taker had begun to “cut in” (strip the blubber from) the carcass.²³

American whalers tended to adopt the iron-holds-the-whale rule wherever it was a utilitarian response to how and what they hunted.²⁴ Following Native

22. Hohman (1928:165n). Melville (1851:468) asserted that twenty slain right whales sink for every sperm whale that does.

23. Although the phrase “fresh pursuit” does not appear in whaling lore, it nicely expresses the notion that the crew of the first ship to affix a harpoon had rights only so long as it both intended to take the whale and had a good chance of accomplishing that feat.

24. “The parties filed a written stipulation that witnesses of competent experience would testify, that, during the whole time of memory of the eldest masters of whaling ships, the usage had been uniform in the whole fishery of Nantucket and New Bedford that a whale belonged to the vessel whose iron first remained in it, provided claim was made before cutting in” (*Swift v. Gifford*, 23 Fed. Cas. 558, 558 [D. Mass. 1872] [No. 13,696]). The *Swift* opinion also cited *Bourne v. Ashley*, 3 Fed. Cas. 1002 (D. Mass. 1863) (No. 1698), to the effect that the usage of the first iron had been proven to exist as far back as 1800. *Swift* held that this usage was a reasonable one and was applicable to a dispute over a whale caught in the Sea of Okhotsk, located east of Siberia and north of Japan.

It is highly doubtful, however, that the usage of the first iron was as universal among New Englanders as the parties had stipulated in *Swift*. The *Swift* opinion itself mentioned British cases that described other usages in effect among the international community of whalers in the Greenland and mid-Pacific fisheries. See also Melville (1851:505) for the irreconcilable assertion that the fast-fish rule was the overriding one among American whalers.

American practices, some early New England seamen employed devices called drogues to catch whales. A drogue was a float, perhaps two feet square, to which the trailing end of a harpoon line was attached. The drogue was thrown overboard from a whaling boat after the harpoon had been cast into the whale. This device served both to tire the animal and also to mark its location, thus setting up the final kill.²⁵ Because a whale towing a drogue was not connected to the harpooning boat, the fast-fish rule provided no protection to the crew that had attached the drogue. By contrast, the iron-holds-the-whale rule, coupled with a fresh-pursuit requirement, created incentives suitable for drogue fishing.²⁶

This rule had particular advantages to whalers hunting sperm whales. Because sperm whales swim faster, dive deeper, and fight more viciously than right whales do, they were more suitable targets for drogue-fishing. New Englanders eventually did learn how to hunt sperm whales with harpoons attached by lines to boats (Ashley, 1938:65–66, 92–93). The vigor of the sperm whale compared to the right whale, however, increased the chance that a line would not hold or would have to be cut to save the boat. A “fastness” requirement would thus materially reduce the incentives of competing boatsmen to make the first strike. The iron-holds-the-whale rule, in contrast, was a relatively bright-line way of rewarding whoever won the race to accomplish the major feat of sinking the first harpoon into a sperm whale. It also rewarded only the persistent and skillful because it conferred its benefits only so long as fresh pursuit was being maintained.

Most important, unlike right whales, sperm whales are social animals that tend to swim in schools (Ashley, 1938:75; Melville: chap. 88). To maximize the total catch, when whalers discovered a school their norms had to encourage boatsmen to kill or mortally wound as many animals as quickly as possible, without pausing to secure the stricken whales to the mother ship.²⁷ Fettering whales with drogues was an adaptive technology in these situations. The haste that the schooling of whales prompted among hunters also encouraged the related usage that a waif holds a whale. A waif is a pole with a small flag atop. Planting a waif into a dead whale came to signify that the whaler who had planted the waif claimed the whale, was nearby, and intended soon to return. When those conditions were met, the usages of American whalers in the Pacific allowed a waif to hold a whale.²⁸

25. See Ashley (1938:89–93); Melville (1851:495). The barrels used to slow the great white shark in the film *Jaws* are modern equivalents of drogues.

26. In *Aberdeen Arctic Co. v. Sutter*, 4 Macq. 355, 3 Eng. Ruling Cas. 93 (1862), the defendant had seized in the Greenland fishery a whale that the plaintiff's Eskimo employees had previously fettered with a drogue. The court held for the defendant, finding that no exception to the fast-fish usage, well established for the Greenland fishery, had been proven.

27. In two instances in the Galápagos fishery single ships came upon schools of sperm whales and singlehandedly killed ten or more in one day (Stackpole, 1953:401).

28. In two cases arising in the Sea of Okhotsk, the defendants had slaughtered whales that the plaintiffs had waived and anchored on the previous day. The plaintiffs prevailed in both. See

Because a ship might lose track of a whale it had harpooned or waifed, whaling norms could not allow a whaling iron to hold a whale forever. When a mere harpoon (or lance) had been attached, and thus it was not certain that the harpooning party had ever fully controlled the whale, the harpooning party had to be in fresh pursuit and also had to assert the claim before a subsequent taker had begun to cut in.²⁹ On the other hand, when a waif, anchor, or other evidence of certain prior control had been planted, the planting party had to be given a reasonable period of time to retake the whale and hence might prevail even after the subsequent taker had completed cutting in.³⁰

Because the iron-holds-the-whale usage required determinations of the freshness of pursuit and sometimes of the reasonableness of the elapsed time period, it was inherently more ambiguous than the fast-fish norm was. By hypothesis, this is why the whalers who pursued right whales off Greenland preferred the fast-fish rule. The rule that iron-holds-the-whale, however, provided better-tailored incentives in situations where drogues were the best whaling technology and where whales tended to swim in schools. In these contexts, according to the theory, whalers switched to iron-holds-the-whale because they saw that its potential for reducing deadweight losses outweighed its transaction-cost disadvantages.

5.3. SPLIT OWNERSHIP

In a few contexts whaling usages called for the value of the carcass to be split between the first harpooner and the ultimate seizer.³¹ According to an En-

Bartlett v. Budd, 2 Fed. Cas. 966 (D. Mass. 1868) (No. 1,075) (plaintiff, who proved the usage that a waif holds a whale, was independently entitled to recover as a matter of property law); *Taber v. Jenny*, 23 Fed. Cas. 605 (D. Mass. 1856) (No. 13,720) (plaintiff, who had a high probability of retaking the whale, should prevail as a matter of property law over defendant, who should have known from the appearance of the whale that it had been killed within the previous twelve hours).

29. See *Heppingstone v. Mammen*, 2 Hawaii 707, 712 (1863); *Swift v. Gifford*, 23 Fed. Cas. 558, 558-59 (D. Mass. 1872) (No. 13,696). Hohman (1928:166) asserted, without citing authority, that a subsequent taker of a sperm whale bearing whaling craft also had to give the owner of the craft a reasonable length of time to retake the whale.

Cutting-in was a laborious process that involved all hands for as long as a day or more. It could not be begun until after the crew had chained the whale to the ship and rigged up special slaughtering equipment. See Melville (1851: chaps. 66-67); Hohman (1928:167). Hohman (1928:166) has alleged that if the first vessel to have attached a harpoon or lance were to come upon a subsequent taker that had justifiably begun to cut in, the first vessel remained entitled to any blubber still in the water.

30. See *Bartlett v. Budd*, 2 Fed. Cas. 966 (D. Mass. 1868) (No. 1,075) (defendant had cut in on the day after the plaintiff's crew had killed, anchored, and waifed the whale); see also Hohman (1928:166): "Thus a carcass containing the 'waif' of a vessel believed to be in the general vicinity was never disturbed by another whaler."

31. A fact-specific example of this solution is *Heppingstone v. Mammen*, 2 Hawaii 707 (1863), where the court split a whale fifty-fifty between the owner of the first iron and the ultimate taker. The crew of the *Oregon* had badly wounded the whale but was on the brink of losing it when it was caught and killed by the crew of the *Richmond*. The *Richmond* then

glish decision, in the fishery around the Galápagos Islands a whaler who had fettered a sperm whale with a drogue shared the carcass fifty-fifty with the ultimate taker.³² The court offered no explanation for why a different norm had emerged in this context, although it seemed aware that sperm whales were often found in large schools in that fishery. The utilitarian division of labor in harvesting a school of whales is different than for a single whale. The first whaling ship to come upon a large school should fether as many animals as possible with drogues and relegate to later-arriving ships the task of capturing and killing the encumbered animals.³³ The Galápagos norm enabled this division of labor. It also showed sensitivity to transaction costs because it adopted the simplest focal point for a split: fifty-fifty.

Better documented is the New England coastal tradition of splitting a beached or floating dead whale between its killer and the person who finally found it. The best known of the American judicial decisions on whales, *Ghen v. Rich*,³⁴ involved a dispute over the ownership of a dead finback whale beached in eastern Cape Cod. Because finback whales are exceptionally fast swimmers, whalers of the late nineteenth century slew them from afar with bomb-lances. A finback whale killed in this way immediately sank to the bottom and typically washed up on shore some days later. The plaintiff in *Ghen* had killed a finback whale with a bomb-lance. When the whale later washed up on the beach, a stranger found it and sold it to the defendant tryworks. The trial judge held a hearing that convinced him that there existed a usage on the far reaches of Cape Cod that entitled the bomb-lancer to have the carcass of the dead animal, provided in the usual case that the lancer pay a small amount (a "reasonable salvage") to the stranger who had found the carcass on the beach. As was typical in whaling litigation, the court deferred to this usage and held the tryworks liable for damages: "Unless it is sustained, this branch of industry must necessarily cease, for no person would engage in it if the fruits of his labor could be appropriated by any chance finder. . . . That the rule works well in practice is shown by the extent of the industry which has grown up under it, and the general acquiescence of a whole community interested to dispute it."

The norm enforced in *Ghen* divided ownership of a beached finback whale roughly according to the opportunity costs of the labor that the whaler and finder had expended. It thus ingeniously enabled distant and unsupervised specialized laborers with complementary skills to coordinate with one another by implicit social contract. The remote location and small population of eastern Cape Cod fostered close-knit social conditions that the theory

surrendered the carcass to the *Oregon*, whose captain refused the *Richmond*'s request for a half share. In light of the uncertainty that the *Oregon* would have retaken the whale, the court rendered the Solomonic solution that the *Richmond*'s captain had proposed.

32. *Fennings v. Lord Grenville*, 1 Taunt. 241, 127 Eng. Rep. 825 (Ct. Comm. Pleas 1808).

33. In *Fennings* the plaintiff had in fact left the drogued whale in order to pursue another.

34. 8 Fed. 159 (D. Mass. 1881).

supposes were conducive to the evolution of utilitarian norms. Under those intimate circumstances, offshore whalers were apparently able to use their general community ties to obtain informal control over beachcombers who were not connected to the whaling industry.³⁵

The choice between entitling an ultimate seizer to a preestablished fraction of the whale, such as the half awarded in the Galápagos, or to a "reasonable reward," as on Cape Cod, is a typical rule/standard conundrum. "Reasonableness" standards allow consideration of the exact relative contributions of the claimants. Compared to rules, however, standards are more likely to provoke disputes about proper application. For low-level norms, the hypothesis of wealth-maximizing norms supposes that normmakers, seeing that rules best reduce transaction costs and that standards best reduce dead-weight losses, make a utilitarian stab at picking the cost-minimizing alternative.³⁶

6. CONCLUDING REMARKS

The example of the high-seas whalers illustrates, contrary to the legal-centralist view, that informal social networks are capable of creating rules that establish property rights. Whalers had little use for law or litigation.³⁷ The five reported American cases resolving the ownership of whales at sea all arose out of the Sea of Okhotsk. With the exception of an 1872 decision,³⁸ in which the year of the whale's capture is not indicated, all involved whales caught during the period 1852 to 1862. The lack of litigation over whale ownership prior to that time is remarkable for two reasons. First, it suggests that for more than a century American whalers had been able to resolve their disputes without any reassurance from American courts. Second, whalers succeeded in doing this during a time period in which all British decisions on whale ownership supported norms other than the iron-holds-the-whale rule that the Americans were increasingly adopting.³⁹

35. Two centuries before *Chen* New Englanders had enacted ordinances to solve an analogous problem. The seventeenth-century hunters of right whales in the near-shore Gulf Stream were better at killing them than at controlling their carcasses. In 1688 the Plymouth colony had rules that called for whalers to place identifying marks on their lances and that specified how many shillings a finder who towed a dead whale ashore was to receive from the lancer. See Dow (1925:9–10). Long Island laws of the same period called for the killer and the finder of a dead whale at sea to split it equally and also entitled the finder of a whale carcass on a beach to receive a reward (*id.* at 15).

36. The seminal works on choices between *legal* rules and standards are Ehrlich and Posner (1974) and Kennedy (1976:1687–88). See also Diver (1983).

37. Maine lobstermen continue this New England maritime tradition. Informal "harbor gangs" use self-help, not law, to police lobstering territories. See Acheson (1988:73–77).

38. *Swift v. Gifford*, 23 Fed. Cas. 558 (D. Mass. 1872) (No. 13,696).

39. Why litigation burst forth from incidents in the Sea of Okhotsk in the 1850s is unclear. One possibility is suggested by the fact that most of the whales found in that vicinity were bowheads, a relatively passive species (Bockstoce, 1986:28–29). For these baleen whales it may have been utilitarian for whalers to revert from the first-iron rule to the fast-fish rule. American

Because informal norms are in many contexts an important source of rules, analysts should be interested in their content. This essay has offered and defended the hypothesis that members of a close-knit group define their low-level property rights so as to maximize their joint objective wealth. A hypothesis of this sort is most persuasively supported through successful *ex ante* predictions, not *ex post* explanations such as those just provided.

An analyst equipped with the hypothesis of wealth-maximizing norms might be unable to predict the precise whaling norms that would develop in a particular fishery. Information about costs and benefits is inevitably fuzzy, both to the normmakers themselves and to analysts. An analyst, however, could confidently identify a large set of norms that would *not* be observed, such as, in the whaling case, "possession decides," "the first boat in the water," or "a reasonable prospect of capture." The content of the three basic norms the whaling community developed tends to support the hypothesis because all three were consistently sensitive to both production incentives and transactions costs and varied in utilitarian fashion with conditions prevailing in different fisheries.

Any *post hoc* explanation risks being too pat, and this one is no exception. A critic might question the analysis on a number of grounds. First, the discussion suggests that whalers might have been wise to use the first-iron rule for sperm whales, and the fast-fish rule for right whales. They did not, and instead varied their rules according to the location of the fishery, not according to species. Perhaps whalers anticipated that species-specific rules would engender more administrative complications than their fishery-specific rules did. It is relevant that there are dozens of whale species other than sperm and right whales. In light of that fact, it may have been simplest to apply to all species of whales in a fishery the rule of capture best suited to the most commercially valuable species found there. In addition, a cruising whaling ship had to have its boats and harpoons at the ready (Chatterton, 1926:140). Richard Craswell has suggested to me that this necessity of prearming may have limited the whalers' ability to vary their capture techniques according to the species encountered.

Second, a critic could assert that the whalers' norms described were too short-sighted to be wealth-maximizing. By abetting cooperation among small clusters of competing hunters, the norms aggravated the risk of overwhaling.

whalers, accustomed to hunting sperm whales in the Pacific, may have had trouble making this switch.

A more straightforward explanation is that the New England whaling community was becoming less close-knit when this spate of litigation occurred. The American whaling industry had begun to decline during the 1850s and was then decimated during the Civil War when several of these cases were being litigated (Hohman, 1928:290-92, 302). The deviant whalers involved in the litigated cases, seeing themselves nearing their last periods of play, may have decided to defect. In two of the five reported cases arising out of the Sea of Okhotsk (*Swift and Bourne*), both litigants even operated out of the same port, New Bedford. When the whalers' informal system of social control began to unravel, apparently even its core was vulnerable.

The nineteenth-century whalers in fact depleted their fisheries so rapidly that they were impelled to seek whales in ever more remote seas. Had they developed norms that set quotas on catches, or that protected young or female whales, they might have been able to keep whaling stocks at levels that would support sustainable yields.

The arguments that respond to this second criticism point up some shortcomings of the informal system of social control, as compared to other methods of human coordination. Establishment of an accurate quota system for whale fishing requires both a sophisticated scientific understanding of whale breeding and an international system for monitoring worldwide catches. For a technically difficult and administratively complicated task such as this, a hierarchical organization, such as a formal trade association or a legal system, would likely outperform the diffuse social forces that make norms. Whalers who recognized the risk of overfishing thus could rationally ignore that risk when making norms on the ground that normmakers could make no cost-justified contribution to its solution.

Whalers might rationally have risked overwhaling for another reason. Even if overwhaling was not wealth-maximizing from a global perspective, the rapid depletion of whaling stocks may well have been in the interests of the club of whalers centered in southern New England. From their parochial perspective, grabbing as many of the world's whales as quickly as possible was a plausibly wealth-maximizing strategy. These New Englanders might have feared entry into whaling by mariners based in the southern United States, Japan, or other ports that could prove to be beyond their control. Given this risk of hostile entry, even if the New Englanders could have created norms to stem their own depletion of world whaling stocks, they might have concluded that a quick kill was more to their advantage. The whaling saga is thus a reminder that norms that enrich one group's members may impoverish, to a greater extent, those outside the group.

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