A Critique of the Fundamentals of the "Commercial Salvage" Model of the Excavation of Historic Shipwrecks: An Examination of the Profitability of Six Commercial Salvage Ventures

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ABSTRACT

Advocates of the commercial exploitation of historic shipwrecks contend that exploitation will produce a substantial economic surplus that can be used to fund archaeological research. This depends, however, on the assumption that commercially exploiting historic shipwrecks is a profitable endeavor. Several observers have already noted that the commercial salvage of historic shipwrecks is a generally unprofitable investment, but promoters of commercial salvage ventures still have little difficulty enticing investors. A financial analysis of six shipwrecks (*Atocha, Concepción, Whydah, De Braak, Central America,* and *Brother Jonathan*) shows that most of these commercial salvage recoveries lost money. The dollar amounts of the profits or losses are enumerated. Given that most commercial salvage ventures do not make money, the question then arises as to why people continue to invest in these ventures.

Critiquing the Fundamentals of the "Commercial Salvage" Model

Advocates of the commercial exploitation of historic shipwrecks contend that exploitation will produce a substantial economic surplus that can be used to fund archaeological research. For example, Mathewson (1986:121–122) has argued that

> Commercial salvors are the only ones who have the money to recover these precious time capsules before they dissolve in the seawater that surrounds them. . . . Archaeologists should learn to use the profit motive to preserve the integrity of wrecksites being legally salvaged by commercial companies.

Stemm (2010:viii) writes that Odyssey Marine Exploration has

> developed a private sector model that accomplishes our stated mission of discovering, protecting and gaining knowledge from shipwreck sites—while encouraging participation from the public and at no cost to the taxpayer. . . . Our model works and . . . it should be considered a viable option for managing underwater cultural heritage throughout the world.

Stemm (2011:x) writes further that this for-profit model "is the sole partner that possesses the potential to save the most archaeological and historical information from shipwrecks."

To the archaeological profession, the commercial exploitation of historic shipwrecks is not archaeology in any form whatsoever (Elia 1992; Johnston 1997; Cockrell 1998). But Elia (1992:114) also observes that the attraction of profit overcomes the archaeological arguments: "[s]omehow it always seems to come down to money. The commercial value of some shipwrecks motivates treasure hunters and keeps underwater archaeological resources apart from other cultural resources in terms of treatment under the law, in public policy, and in the popular mind."

Unfortunately, the strictly archaeological arguments lack resonance among the public in general, the media, and politicians (Cockrell 1998:86, 95; Delgado 2000:12). The public responds to the cult of the entrepreneur, celebrity, and wealth. The media want a good story: thus for the sportswriter Pete Axthelm (1979:49–50), Melvin A. Fisher was a "hero" and "heroic." Politicians follow the lead of the general public and the media. One small but very influential group comprises the federal judges who rule on admiralty cases. Admiralty courts treat underwater archaeological sites as classic maritime salvage cases, and decide the case according to who can raise the artifacts in the most expeditious manner and realize the greatest profit. Admiralty courts, however, have also stated that where the salvor's expenses exceed the value of the shipwreck artifacts recovered, the salvor's actions will have caused a net economic loss to society, which is contrary to the result sought by salvage law (*Platoro* 1983:904; *Titanic* 2004:742).

If commercial salvage enterprises are not making large profits, but are breaking even or even suffering losses, the large economic surplus that they claim to have available to support scholarly research is not present, and the commercial salvage model becomes economically unsustainable. If salvors are causing a net economic loss to society, they are acting contrary to the results sought by salvage law, and admiralty courts should disfavor their claims.

The idea that these commercial salvage ventures are actually unprofitable seems counterintuitive. Yet Throckmorton (1998) chose as the title for his analysis of the commercial salvage business, "The World's Worst Investment." The attorney Edward W. Horan (1999:235), the brother and former partner of Melvin A. Fisher's longtime attorney, David Paul Horan, observed that investments in salvaging companies have "notoriously poor track records."

Although Throckmorton (1998:81) did analyze the return on investment, the manner in which he reported the figures leaves it unclear whether the ventures were profitable or not. Others, besides Throckmorton, have also noted in general terms the unprofitability of the commercial salvage of historic shipwrecks (Cohen-Williams 1995; Carrell 1996), but no further analysis of the return on investment has been published since Throckmorton. Castro (2005, [2008]) discussed the unprofitability of commercial salvage in general terms but did not examine the actual figures of the monetary returns.

In order to estimate the profitability (or otherwise) of these ventures, three numbers are needed: (1) the cost of recovering the artifacts, (2) the number of saleable artifacts recovered, and (3) the price at which the artifacts were sold.

Although there are other revenue sources that can be derived from these ventures, these alternative sources have not proven to be particularly lucrative. One alternative source is to lease out the artifacts on a traveling exhibit. The *Whydah* traveling exhibit just broke even: in the words of one investor, "[t]here isn't anything left over. It's enough to keep us in the water" (Barber 2011). Another alternative source of revenue is to sell replica coins and jewelry, which was done in the case of the *Atocha* (*Tampa Bay* 1989:47). However, given the high retail markups of 100% or more in the jewelry business (Bodde et al. 1981:23), it is plausible that most of this revenue would accrue to the retailer, rather than to the *Atocha* venture. Profits from books and movies have likewise proven to be elusive. Even the *Central America* venture, which was the basis of a bestselling book (Kinder 1998; Tatge and Gottfried 2006), is now said to have made an overall loss (*Williamson* 2008:47). These alternative sources of revenue do not appear to make a significant contribution to the profitability of commercial salvage ventures, and they will accordingly be omitted from the calculations.

Furthermore, because of this emphasis on profitability, intangible incentives will be disregarded. Barry Clifford presented the *Whydah* venture to stockbrokers at E. F. Hutton as "the chance to go on a great adventure. The goal is to find the long-lost gold of eighteenth-century pirates" (Clifford and Turchi 1993:190). Melvin A. Fisher has written of the *Atocha,* "I hope it inspires adventurous people all over the country who dare to dream the impossible" (Mathewson 1986:13). When the venture capitalist and investment banker Warren C. Stearns died, his obituary in the *Chicago Tribune* stated that he would be best known for financing the salvage of *Nuestra Señora de la Concepción*. The obituary added that Stearns had "a passion for adventure" and was "a dreamer" (*Chicago Tribune* 2010). The desire for adventure, "the impossible dream," "pirate gold," and posthumous fame are incentives that, for many people, outweigh any monetary loss. For them, commercial salvage is converted from an investment into a form of conspicuous consumption. These intangible incentives, however, will be left out of consideration here, to focus on profitability alone.

Case Studies

Wreck of Nuestra Señora de Atocha

Melvin A. Fisher's search for the *Atocha* was extraordinarily widely publicized (Daley 1977; Sullivan 1987; Weller 1996; Smith 2003; Jones 2011). The *Atocha* venture is repeatedly said to have been worth $400 million (Johnson 2000:152, 161; Smith 2003:197; Saar 2007:31). As will be demonstrated below, however, this figure is highly questionable.

Unfortunately, the *Atocha* is a difficult situation to subject to a financial analysis. Its value is difficult to estimate because the recovered artifacts were not sold in a single auction. Instead, Fisher put his company into liquidation and distributed the assets among the employees and investors using a point system (Smith 2003:168). The expenses of the search for the *Atocha* are also difficult to calculate because of the length of the search (the search lasted for two decades) and because Fisher financed his operations through a complex array of financial instruments and corporate entities (Shaw 1974; Daley 1977:190–191; Trupp 1986:136–138; *DiLucia* 1989). This makes it difficult to estimate both the economic value of the artifacts recovered and the expenses of the enterprise. Despite these problems with the data, the notoriety of the search for the *Atocha* and the widespread acceptance of the claim that the *Atocha* was worth $400 million make it important to examine the claimed value of the recovered artifacts and to estimate whether the enterprise was profitable in the end. Where there are strong arguments for alternative estimates, a range of estimates will be used in lieu of a single value.

The venture recovered 185,000 silver coins and 120 gold coins (Malcom 2000; Kleeberg 2009:29–31). The major auction of artifacts from the *Atocha* was held by Christie's in June 1988 (Christie's 1988). The Christie's auction, however, did not provide a realistic market price of the *Atocha* coins. The median price realized per silver coin was $528, but of the 331 silver coins offered in that auction, 246 coins (nearly three quarters of the coins offered) went unsold because the prices did not reach the reserve, which indicates that the reserves were set too high. In other words, $528 was not the actual price at which *Atocha* coins could have been sold in 1988 (the market clearing price), but a best case scenario involving the very best coins in an auction that itself was a selection of the very best objects recovered. Many *Atocha* coins are illegible lumps of corroded silver in poor condition. Fisher himself admitted that fewer than 10% of the coins were marketable (Fins 1988:71). Burt Webber (1986:248) states that based on his experience with the *Concepción,* collectors would end up paying a price that averages 3.5 times the melt value of the coins. Given their poor condition, Webber's estimate of 3.5 times the silver value is a reasonable estimate of the average price of an *Atocha* coin. As can be seen in Table 1, this results in the figure of $2,933,232.98 for the value of the *Atocha* silver coins.

Nine hundred and fifty-nine silver bars were recovered from the *Atocha* (Craig and Richards 2003:155–196[1]). Daley (1977:235–236) asserts that the IRS values bullion at three times melt for silver items, and seven times for gold. This, however, appears to be an overvaluation, given that there is no substantial collectors' premium on the silver bars. Frank Sedwick, the leading coin dealer specializing in Spanish American coinage, testified that he did not know anyone who collected bullion items (*Perdue* 1991:852). A few dozen bars recovered from a shipwreck will command a premium from collectors as a curiosity, but when hundreds are recovered the premium will collapse and the price will approach the melt price of bullion. This is borne out by the fate of bars recovered from both the *Atocha* (959 bars recovered) and the *Central America* (500 bars recovered), some of which have been melted to be marketed as jewelry and commemorative coins (*Tampa Bay* 1989:47; Tatge and Gottfried 2006). If there really were a significant collectors' premium, melting bars down to make jewelry and commemorative coins would not be an economic practice. It is thus more plausible to value the silver bars at the melt price. To account for the alternative possibility that what Daley claims as the IRS valuation is, indeed, correct, that figure will be used as well and the results reported in a range. As summarized in Table 1, this results in a value for the silver bars from the *Atocha* of $5,670,580.17, or, at the alternate valuation of three times melt, $17,011,740.51.

Besides the silver bars and silver coins, items recovered from the *Atocha* included non-coin artifacts. The more valuable items included three astrolabes and a coral rosary. Besides this, 120 gold coins were recovered from the *Atocha*, plus the artifacts recovered from another galleon that sank in 1622, the *Santa Margarita*. The items in these categories sold for $2,194,973 at the Christie's sale. Other artifacts were retained by Fisher and other investors and not sold in the Christie's sale, but the Christie's sale had most of the top quality items, so it is reasonable to assume that the artifacts retained were, at most, equal in value to the artifacts auctioned. To account for the retained artifacts, the value of the items from the

[1] Craig and Richards give the number as 963, but they miscounted, and rechecking their spreadsheet shows that the number was actually 959.

Table 1. Value of the artifacts recovered from the *Atocha* and *Santa Margarita*.

Denomination	No.	Silver per coin (troy oz)	Total silver (troy oz, rounded)	Value (ounces multiplied by 1988 silver price, rounded)
Silver coins:				
Spanish 1 reales	1,850	0.1013	187.41	$1,223.75
Spanish 2 reales	3,700	0.2026	749.62	$4,895.02
Spanish 4 reales	44,400	0.4051	17,986.44	$117,451.45
Spanish 8 reales	135,050	0.8102	109,417.51	$714,496.34
Total	185,000		138,340.98	$838,066.57
Multiplied by 3.5				$2,933,232.98
Silver bars: low estimate	959		868,389	$5,670,580.17
Silver bars: high estimate	959		868,389	$17,011,740.51
All other artifacts				$4,389,946.00
Total value: low estimate				$12,993,759.15
Total value: high estimate				$24,334,919.49
(Cost): low estimate				($52,500,000.00)
(Cost): high estimate				($20,000,000.00)
Profit (loss): low estimate				($39,506,240.85)
Profit (loss): high estimate				$4,334,919.49

Notes: The year 1988 was used for the silver price because it coincides with the date of the major auction of *Atocha* artifacts. The 1988 silver price per troy ounce was $6.53. The exact numbers recovered for each coin denomination have never been published. The number of each coin denomination is accordingly estimated from the proportions found in an *Atocha* treasure chest auctioned by Heritage Auctions of Dallas, Texas, namely 1% 1 reales, 2% 2 reales, 24% 4 reales and 73% 8 reales (Kleeberg 2009:30). All figures that are to be understood as negative numbers (cost, loss) are shown within round brackets. Dollar totals are calculated using non-rounded troy ounce figures. Due to rounding to the nearest hundredth, the numbers in this table, when summed, will not exactly match the totals; however, the discrepancy in every instance is less than a dollar.

Sources: Malcom 2000; Kleeberg 2009:29–31 (number of coins recovered); Cuhaj 2011:146–152, 1358–1360, 1438–1439 (silver content per coin); USGS 2013:170 (silver price); Craig and Richards 2003:155–196 (number of bars, weights, and fineness; note that Craig and Richards miscounted the number of bars as 963, but this figure has been corrected by reviewing their spreadsheets). For the derivation of the value of the bars, the additional artifacts, and the cost of the enterprise, see discussion in text.

Christie's sale will accordingly be doubled to $4,389,946. Adding this number to the figures already derived for the silver coins and the range for the silver bars results in a total value for the artifacts recovered from the *Atocha* and *Santa Margarita* ranging from $12,993,759.15 to $24,334,919.49 which is only 3–6% of the widely cited estimate of $400 million.

A proper insight into the cost of the search for the *Atocha* could be achieved if all financial statements (the balance sheets and the profit and loss accounts) for all Fisher's corporate entities were to be made available, but these have never been published. There is, however, one transaction that can be used as the basis for an estimate of the cost of finding the *Atocha*. Fisher sold the right to 10% of the *Atocha* and *Santa Margarita* to the Long Island investor Carl Paffendorf and his Vanguard Ventures for $5.25 million (*New York Times* 1985). If $5.25 million was what these business people considered the right price for 10% of the *Atocha* venture, then it is reasonable to assume that the total capitalization of the *Atocha* search was $52.5 million. The statement made by the stockbroker Jerome U. Burke (Trupp 1986:137) that Burke raised money for Fisher at an annual rate of $3–4 million in the mid-1980s strengthens the plausibility of the $52.5 million figure. Another investor, Merlin Stickelber, invested $100,000 in exchange for 0.5% of the *Atocha* (*Stickelber* 1998). This would result in an alternative capitalization for the cost of searching for the *Atocha,* namely $20 million. These two figures present a wide range, $20–52.5 million, but provide a reasonable estimate of the costs for the search and recovery of the *Atocha*.

Considering that the estimate of the value of the artifacts recovered ranges from $12,993,759.15 to $24,334,919.49 and the estimated cost of the search ranges from $20 million to $52.5 million, the net result of the entire enterprise ranges from a loss of $39,506,240.85 to a profit of $4,334,919.49. Two conclusions can be derived from these calculations. The first conclusion is that, given that the estimated value of the artifacts recovered in the *Atocha* venture ranges from $13 million to $24 million, the much publicized figure of $400 million is highly exaggerated. The second conclusion is that the *Atocha* venture probably lost money. The $4.3 million profit would only apply if the silver bars were sold for high prices (and it appears they were not) and if the cost of the venture was $20 million rather than $52.5 million.

Wreck of Nuestra Señora de la Pura y Limpia Concepción

Burt Webber, Jr., raised the money to search for the *Nuestra Señora de la Pura y Limpia Concepción (Concepción)* through a limited partnership called Operation Phips I, with an initial capital of $195,000 (Grissim 1980:106). Later, expenses increased and the amount spent grew to $250,000 (Grissim 1980:141). Operation Phips II, another limited partnership, raised $450,000 to search for the vessel (Grissim 1980:141). A third entity in the *Concepción* search, Seaquest International, Inc., raised $1,165,000 in common stock (Grissim 1980:132–133). This gives a total of $1,865,000 that was invested in the search. The search recovered 60,000 coins, all of which were silver (Christensen 1982; Kleeberg 2009:39–40). Half of the coins, and all the other artifacts, were turned over to the government of the Dominican Republic (Grissim 1980:105; Trupp 1986:143). Only one public auction (Christensen 1982) featuring coins from the *Concepción* was held, which grossed $70,069.50. The coins in that auction, which were the finest coins from the shipwreck, attained a median price of $200 apiece. William Christensen, the numismatic auctioneer who cataloged and sold the coins, did not think highly of the quality of the coins recovered. Christensen (1982) wrote, "[o]f those 60,000, only about 3 percent could be said to have any numismatic value; the rest were just too corroded and worn to be decipherable." Webber (1986:248) stated that based on his experience with the *Concepción,* collectors would end up paying a price that averaged 3.5 times more than the melt value. As can be seen in Table 2, this gives a value for the coins of $579,095.29, resulting in a net loss of $1,285,904.71.

Wreck of the Whydah Galley

The search for the *Whydah* was financed by a $6 million partnership, the Whydah Partners LP, underwritten in 1986 by E. F. Hutton (Clifford and Turchi 1993:188–190; Clifford and Perry 1999:194–195). The artifacts recovered from the *Whydah* included 8,370 silver coins and 9 gold coins (Clifford and Turchi 1993:210; Kleeberg 2009:75). Gold ingots, nuggets, bits, and dust were also recovered from the *Whydah,* but all the gold was tiny, certainly not adding up to more than five ounces worth. As can be seen in Table 3, the total value of the bullion on the entire shipwreck, using a 3.5 multiplier, was $94,255.60. Other artifacts also were recovered (such as one pistol), but they were in terribly eroded condition, making their value negligible. As a result, the money lost on this shipwreck would have been $5,905,744.41.

When an exhibit of *Whydah* artifacts opened in Denver in April 2011, the Denver television station KUSA-TV interviewed one of the original investors. George Youngman invested $1,000 in the *Whydah* venture in 1982. "At some point, I'd like to get a return on my investment," Youngman said (Barber 2011).

Wreck of HMS De Braak

The expenses of the excavation of HMS *De Braak* were $2.5 million. The excavation recovered 26,000 artifacts, including 650 coins. The artifacts recovered were appraised by Christie's at $298,265, and the hull was appraised at $50,000. Thus the salvage of HMS *De Braak* resulted in a loss of $2,151,735 (Shomette 1993:266–267, 282; Kleeberg 2009:149).

Table 2. Value of the silver coins recovered from the *Concepción*.

Denomination	Coins	Silver per coin (troy oz)	Total silver (troy oz, rounded)	Value (troy oz multiplied by 1982 silver price, rounded)
Silver coins:				
Spanish 1 reales	300	0.1013	30.39	$241.60
Spanish 2 reales	600	0.2026	121.56	$966.40
Spanish 4 reales	7,200	0.4051	2,916.72	$23,187.92
Spanish 8 reales	21,900	0.8102	17,743.38	$141,059.87
Total	30,000		20,812.05	$165,455.80
Multiplied by 3.5				$579,095.29
(Cost)				($1,865,000.00)
Profit (loss)				($1,285,904.71)

Notes: The year 1982 was used for the silver price because it coincides with the date of the major auction of *Concepción* artifacts. The 1982 silver price per troy ounce was $7.95. The exact numbers recovered for each coin denomination have never been published. The number of each coin denomination is accordingly estimated from the proportions found in an *Atocha* treasure chest auctioned by Heritage, namely 1% 1 reales, 2% 2 reales, 24% 4 reales and 73% 8 reales (Kleeberg 2009:30). It is assumed here that the relative proportions of the denominations of Spanish coinage in circulation did not change significantly between the date of the sinking of the *Atocha* (1622) and the date of the sinking of the *Concepción* (1641). All figures that are to be understood as negative numbers (cost, loss) are shown within round brackets. Dollar totals are calculated using non-rounded troy ounce figures. Due to rounding to the nearest hundredth, the numbers in this table, when summed, will not exactly match the totals; however, the discrepancy in every instance is less than a dollar.

Sources: Grissim 1980:105; Christensen 1982; Trupp 1986:143; Kleeberg 2009:39–40 (number of coins recovered); Cuhaj 2011:146–152, 1358–1360, 1438–1439 (silver content per coin); USGS 2013:170 (silver price). For information about the cost of the enterprise, see discussion in text.

Wreck of the SS Central America

The Columbus-America Discovery Group recovered 7,708 gold coins and 532 gold bars from the SS *Central America* (Kleeberg 2009:207–208). The recovery of so many gold coins and bars did result in a larger economic gain than shipwrecks such as the *Atocha,* where most of the coins were silver, but the money was still not enough to make a profit. The cost of recovery and other expenses, especially interest charges and legal expenses, resulted in expenditures totaling $57 million by 1999 (Cook 1999:44–45). The items recovered were sold to the California Gold Marketing Group in 2000 for $52 million (Gray 2011), resulting in a loss of $5 million. The salvors themselves have stated in court that "while gold and valuables were certainly found on the ship, the recovery efforts did not actually provide a return to the initial investors, much less a profit" (*Williamson* 2008:47).

Wreck of the SS Brother Jonathan

The recovery of items from the SS *Brother Jonathan* also had an unprofitable result. More than 1,200 coins were recovered from this wreck (Powers 2006:315), of which 1,006 went to the salvors, 200 were given to the State of California as part of a litigation settlement, and one to the Del Norte County Historical Society (Bowers 1998–1999:356; Powers 2006:307; Kleeberg 2009:224–225). The salvors also recovered 220 other artifacts and donated them to the Del Norte County Historical Society (Bowers 1998–1999:299, 344). The 1999 auction of the 1,006 gold coins recovered from the wreck resulted in net proceeds of $4,612,775, for an average price of $4,585.26 per coin (Powers 2006:323). After this sale, the investors barely broke even. One investor calculated that the time he had spent on the efforts to recover items from the ship had resulted in an economic return to him of $1.43 an hour

Table 3. Value of the silver and gold coins and bullion recovered from the *Whydah*.

Denomination	Coins	Bullion per coin (troy oz)	Total bullion (troy oz, rounded)	Value (ounces times 1987 bullion price, rounded)
Silver coins:				
Spanish ½ reales	751	0.05065	38.04	$266.65
Spanish 1 reales	1,619	0.1013	164.00	$1,149.67
Spanish 2 reales	2,257	0.2026	457.27	$3,205.45
Spanish 4 reales	935	0.4051	378.77	$2,655.17
Spanish 8 reales	2,795	0.8102	2,264.51	$15,874.21
English 6 pence	1	0.0895	0.09	$0.63
English ½ crown	1	0.4475	0.45	$3.14
English crown	1	0.895	0.90	$6.27
French 15 sous	2	0.2053	0.41	$2.88
French 20 sous	3	0.2466	0.74	$5.19
French 30 sous	2	0.4107	0.82	$5.76
French ½ *écus*	2	0.3993	0.80	$5.60
French 1 *écus*	1	0.7986	0.80	$5.60
Total silver coins	8,370		3,307.59	$23,186.20
Gold coins:				
Spanish 1 escudos	2	0.1012	0.20	$96.74
Spanish 2 escudos	5	0.2024	1.01	$483.69
Spanish 8 escudos	2	0.8095	1.62	$773.80
Total gold coins	9		2.83	$1,354.22
Uncoined gold bullion			5.00	$2,389.75
Total value				$26,930.17
Multiplied by 3.5				$94,255.60
(Cost)				($6,000,000.00)
Profit (loss)				($5,905,744.41)

Notes: The year 1987 was used for the silver and gold prices because it coincides with the date that the *Whydah* was sold to investors through limited partnerships floated by E. F. Hutton. The 1987 silver price per troy ounce was $7.01, and the gold price $477.95. All figures that are to be understood as negative numbers (cost, loss) are shown within round brackets. Dollar totals are calculated using non-rounded troy ounce figures. Due to rounding to the nearest hundredth, the numbers in this table, when summed, will not exactly match the totals; however, the discrepancy in every instance is less than a dollar.

Sources: Clifford and Turchi 1993:210; Kleeberg 2009:75 (number of coins recovered); Mossman 1993:73; Cuhaj 2011:146–152, 1358–1360, 1438–1439 (silver content per coin); USGS 2013:62, 170 (silver and gold prices). For information about the cost of the enterprise, see discussion in text.

(Powers 2006:323). However, the salvors thought that there was still more gold to be recovered. Thus they found another investor to put up $2.1 million to finance a final search attempt in 2000, which resulted in the recovery of 47 gold coins and 11 silver coins (Powers 2006:360). At $4,585.26 per gold coin, this search realized $215,507.22 for the 47 gold coins (the value of the corroded silver would be negligible). Including the $2.1 million cost of the final search, the total cost of the search for the *SS Brother Jonathan* was $4.9 million, versus a total of $4,828,282.22 in coins recovered, or a net loss of $71,717.78 (Powers 2006:360).

Conclusion

Of the six commercial salvage ventures analyzed above, the estimates from five of them indicate that they lost money. It is possible that the *Atocha* was moderately profitable, but it is quite probable that it lost money as well. The *Brother Jonathan* venture is a partial exception because it made a small profit as of 1999, but then the money was raised for a final exploration of the wreck, which turned the small profit into a loss. The figures for all the ventures are summarized in Table 4.

The question remains as to why commercial salvage ventures do not make money, and why people continue to invest in these operations even though they are unprofitable.

Commercial salvage ventures do not make money because ocean salvage is an expensive and dangerous operation; the expenditure on fuel, in particular, is very costly. The value of the artifacts that are found cannot cover these expenses. The most commonly found saleable artifacts that are recovered from these ventures are silver coins. Silver coins actively corrode in saltwater. Coin collectors will pay high premiums for rare dates, but only if the coins are in exquisite condition, and coins from the sea are not typically in good condition. The corroded coins from shipwrecks can only be sold for a small premium above the value of their silver content.

Investors in these ventures receive a below average return (usually, in fact, no return at all, rather a loss) for purchasing an asset with an above average risk. This violates all theories of corporate finance, such as the Capital Asset Pricing Model. So why do people invest? One reason is that people are poorly informed. The questionable figure of $400 million for the *Atocha* is quoted as if it were a solid fact. Another reason people join such ventures is an exaggerated machismo among commercial salvors and their investors, which leads them to ignore the numbers and to buy a piece of an "adventure." Moreover, the initial investment in these ventures can be quite low (in the case of the *Whydah* the initial capitalization was only $250,000 [Clifford and Turchi 1993:98–99]), so it is easy to get trapped as an investor. Once an investor has made that first investment, it is psychologically difficult to write it off and only too easy to keep throwing good money after bad.

These endeavors do not produce a justified economic return to the investor. However, even with the facts and numbers presented here, others will be drawn to these investments and see them as viable economic opportunities.

Table 4. Estimated profits (estimated losses) from commercial salvage ventures.

Shipwreck	(Estimated Cost)	Estimated Value of Recovered Material	Estimated Profit (Loss)
Atocha low estimate	($52,500,000)	$12,993,759.15	($39,506,240.85)
Atocha high estimate	($20,000,000)	$24,334,919.49	$4,334,919.49
Concepción	($1,865,000)	$579,095.29	($1,285,904.71)
Whydah	($6,000,000)	$94,255.60	($5,905,744.41)
De Braak	($2,500,000)	$348,265	($2,151,735)
Central America	($57,000,000)	$52,000,000	($5,000,000)
Brother Jonathan	($4,900,000)	$4,828,282.22	($71,717.78)

Note: All figures that are to be understood as negative numbers (estimated cost, estimated loss) are shown within round brackets. Due to rounding to the nearest hundredth, the numbers in this table, when summed, will not exactly match the totals; however, the discrepancy in every instance is less than a dollar.

Such opportunities disguise not only the economic loss that eventually follows after embarking on a commercial salvage expedition but also the destruction of archaeological context and information caused by such ventures. This information about the true economic nature of salvors' activities is provided in an effort to educate the public about the economic pitfalls of participating in these commercial salvage projects.

References

Axthelm, Pete
1979 Where Have All the Heroes Gone? *Newsweek* 6 August, 94(6):44–50.

Barber, Randy
2011 Colorado Investors Launched Pirate Ship Adventure, KUSA-TV 1 April. Denver, CO <http://www.9news.com/rss/story.aspx?storyid=190837>. Accessed 5 September 2013.

Bodde, Peter, Cynthia Wilson, and Jeff Meeks
1981 *Economic Impact on the Domestic Jewelry Industry of the Subdivision of Item 740.10 of the Tariff Schedules of the United States for the Purposes of the Generalized System of Preferences. Report to the Committee on Finance of the United States Senate on Investigation No. 332-122 of Tariff Act of 1930.* USITC Publication 1142. United States International Trade Commission, Washington, DC.

Bowers, Q. David
1998–1999 *The Treasure Ship* S.S. Brother Jonathan. *Her Life and Loss, 1850–1865.* Bowers and Merena Galleries, Inc., Wolfeboro, NH.

Carrell, Toni L.
1996 Review of *Walking the Plank: A True Adventure among Pirates*, Stephen Kiesling. *Historical Archaeology* 30(2):111–112.

Castro, Filipe
2005 Caçadores de tesouros: Proposta de uma taxonomia (Treasure Hunters: Proposal of a Taxonomy). *história e-história (History e-History)* 26 January <http://www.historiaehistoria.com.br/materia.cfm?tb=artigos&id=20>. Accessed 5 September 2013.

[2008] Treasure Hunting—Frequently Asked Questions <http://nautarch.tamu.edu/shiplab/treasurehunters_04faqs.htm>. Accessed 5 September 2013.

Chicago Tribune
2010 Death Notice: Warren C. Stearns. *Chicago Tribune* 17 October, 104(290)[sec. 1]:34. Chicago, IL.

Christensen, Henry
1982 *Numismatic Commentary and Auction Sale Featuring Treasures of the* Conception, Auction Catalog for 14 May. Henry Christensen, Madison, NJ.

Christie's
1988 *Gold and Silver of the* Atocha *and* Santa Margarita, Auction Catalog for 14–15 June. Christie's, New York, NY.

Clifford, Barry, and Paul Perry
1999 *Expedition Whydah. The Story of the World's First Excavation of a Pirate Treasure Ship and the Man Who Found Her.* HarperCollins, New York, NY.

Clifford, Barry, and Peter Turchi
1993 *The Pirate Prince. Discovering the Priceless Treasures of the Sunken Ship* Whydah. Simon and Schuster, New York, NY.

Cockrell, Wilburn A.
1998 Why Dr. Bass Couldn't Convince Mr. Gumbel. The Trouble with Treasure Revisited Again. In *Maritime Archaeology. A Reader of Substantive and Theoretical Contributions,* edited by Lawrence E. Babits and Hans Van Tilburg, pp. 85–96. Plenum Press, New York, NY.

Cohen-Williams, Anita G.
1995 Review of *The Search for Sunken Treasure: Exploring the World's Great Shipwrecks*, Robert F. Marx and Jenifer Marx. *Historical Archaeology* 29(2):102–103.

Cook, Herb, Jr.
1999 Ship of Debt. *Columbus Monthly* 25 June, (6):38–45 <http://www.columbusmonthly.com/June-2009/Ship-of-debt/>. Accessed 5 September 2013.

Craig, Alan K., and Ernest J. Richards, Jr.
2003 *Spanish Treasure Bars from New World Shipwrecks.* En Rada Publications, West Palm Beach, FL.

Cuhaj, George S. (editor)
2011 *Standard Catalog of World Coins, Seventeenth Century, 1601–1700,* 5th edition. Krause Publications, Iola, WI.

Daley, Robert
1977 *Treasure.* Random House, New York, NY.

Delgado, James P.
2000 Underwater Archaeology at the Dawn of the 21st Century. *Historical Archaeology* 34(4):9–13.

DiLucia
1989 *DiLucia v. Treasure Salvors, Inc.* 713 F.Supp. 1425 (S.D. Fla. 1989) <http://scholar.google.com/scholar_case?case=8769155035973172426&hl=en&as_sdt=2&as_vis=1&oi=scholarr>. Accessed 5 September 2013.

Elia, Ricardo J.
1992 The Ethics of Collaboration. Archaeologists and the *Whydah* Project. *Historical Archaeology* 26(4):105–117.

Fins, Antonio N.
1988 A Passion for Rifling Davy Jones's Locker. Lawsuits over Sunken Treasure Aren't Stopping Mel Fisher. *Business Week* 6 June, 3055:71, 74.

Gray, Kathy Linn
2011 Even Recovered, Ship's Gold Remains Mystery. Investors Still Have No Return on Treasure Salvaged in 1988–89. *Columbus Dispatch* 29 May. Columbus, OH <http://www.dispatch.com/content/stories/local/2011/05/29/even-recovered-ships-gold-remains-mystery.html>. Accessed 5 September 2013.

Grissim, John
1980 *The Lost Treasure of the* Concepción. *The Story of One of the World's Greatest Treasure Finds and Burt Webber—the Man Who Never Gave Up.* William Morrow, New York, NY.

Horan, Edward W.
1999 Organizing, Manning and Financing a Treasure Salvage Expedition. *Journal of Maritime Law and Commerce* 30:235–243.

Johnson, Stephen
2000 *The Complete Idiot's Guide to Sunken Ships and Treasure.* Macmillan USA, Indianapolis, IN.

Johnston, Paul F.
1997 Treasure-Hunting. In *Encyclopedia of Underwater and Maritime Archaeology,* edited by James P. Delgado, pp. 424–426. Yale University Press, New Haven, CT.

Jones, Syd
2011 Atocha *Treasure Adventures: Sweat of the Sun, Tears of the Moon.* Signum Ops, Merritt Island, FL.

Kinder, Gary
1998 *Ship of Gold in the Deep Blue Sea.* Atlantic Monthly Press, New York, NY.

Kleeberg, John M.
2009 *Numismatic Finds of the Americas. An Inventory of American Coin Hoards, Shipwrecks, Single Finds, and Finds in Excavations.* Numismatic Notes and Monographs 169. American Numismatic Society, New York, NY.

Malcom, Corey
2000 The Forgotten Coins of the *Atocha. The Navigator: The Newsletter of the Mel Fisher Maritime Heritage Society* November, 15 (10) <http://www.melfisher.org/pdf/Atocha_Maravedis.pdf>. Accessed 5 September 2013.

Mathewson, R. Duncan, III
1986 *Treasure of the* Atocha. E. P. Dutton, New York, NY.

Mossman, Philip L.
1993 *Money of the American Colonies and Confederation. A Numismatic, Economic and Historical Correlation.* Numismatic Studies No. 20. American Numismatic Society, New York, NY.

New York Times
1985 Investors to Share Treasure of Spanish Ship. *New York Times* 29 September, 135(46, 547)[sec. 1]:35. New York, NY.

Perdue
1991 *Franklin P. Perdue v. Commissioner.* 62 T.C.M. (CCH) 845 (T.C. 1991).

Platoro
1983 *Platoro Ltd., Inc. v. The Unidentified Remains of a Vessel.* 695 F.2d 893 (5th Cir. 1983) <https://bulk.resource.org/courts.gov/c/F2/695/695.F2d.893.81-1257.html>. Accessed 5 September 2013.

Powers, Dennis M.
2006 *Treasure Ship. The Legend and Legacy of the S.S.* Brother Jonathan. Kensington Publishing Corp, New York, NY.

Saar, Mayrav
2007 Booty Call. A Spectacular Find Reignites Interest in Undersea Loot. *New York Post* 4 November, 206(354):31. New York, NY.

Shaw, Robert D., Jr.
1974 Is Marquesas Find Worth Fortune? "Dream Treasure" Is Part Nightmare. *Miami Herald* 17 February, 64(79):1A, 32A. Miami, FL.

Shomette, Donald G.
1993 *The Hunt for HMS* De Braak. *Legend and Legacy.* Carolina Academic Press, Durham, NC.

Smith, Jedwin
2003 *Fatal Treasure. Greed and Death, Emeralds and Gold, and the Obsessive Search for the Legendary Ghost Galleon* Atocha. John Wiley & Sons, Hoboken, NJ.

Stemm, Greg
2010 Preface. In *Oceans Odyssey. Underwater Heritage Management & Deep-Sea Shipwrecks in the English Channel, Straits of Gibraltar & Atlantic Ocean,* edited by Greg Stemm and Sean Kingsley, pp. vii–viii. Odyssey Marine Exploration Reports 1. Oxbow Books, Oxford, UK.

2011 Preface. In *Oceans Odyssey 2. Underwater Heritage Management & Deep-Sea Shipwrecks in the English Channel & Atlantic Ocean,* edited by Greg Stemm and Sean Kingsley, pp. vii–xi. Odyssey Marine Exploration Reports 2. Oxbow Books, Oxford, UK.

Stickelber
1998 *Stickelber v. Fisher,* 11 F.Supp.2d 1374 (S.D. Fla. 1998) <http://scholar.google.com/scholar_case?case=6403980121800727195&hl=en&as_sdt=2&as_vis=1&oi=scholarr>. Accessed 5 September 2013.

Sullivan, George
1987 *Treasure Hunt. The Sixteen-Year Search for the Lost Treasure Ship* Atocha. Henry Holt, New York, NY.

Tampa Bay
1989 Treasure! *Tampa Bay. The Suncoast's Magazine* September/October, 4(5):47.

Tatge, Mark, and Miriam Gottfried
2006 Ship of Fools: Two Decades Ago, Investors Gave Tommy Thompson Millions for a Piece of Buried Treasure. Will They Ever See Their Money? *Forbes* 19 June, 177 (13):158–162 <http://www.forbes.com/forbes/2006/0619/158.html>. Accessed 5 September 2013.

Throckmorton, Peter
1998 The World's Worst Investment. The Economics of Treasure Hunting with Real-Life Comparisons. In *Maritime Archaeology. A Reader of Substantive and Theoretical Contributions,* edited by Lawrence E. Babits and Hans Van Tilburg, pp. 75–83. Plenum Press, New York, NY.

Titanic
2004 *R.M.S. Titanic vs. Wrecked and Abandoned Vessel.* 323 F.Supp.2d 724 (E.D. Va. 2004).

Trupp, Philip Z.
1986 *Tracking Treasure*. Acropolis, Washington, DC.

U.S. Geological Survey (USGS)
2013 *Metal Prices in the United States through 2010.* U.S. Geological Survey, Washington, DC < http://pubs.usgs.gov/sir/2012/5188/sir2012-5188.pdf>. Accessed 5 September 2013.

Webber, Burt D., Jr.
1986 Treasure Values and Profit Potentials: An Analysis. In Philip Z. Trupp, *Tracking Treasure,* pp. 245–248. Acropolis Books, Washington, DC.

Weller, Bob
1996 *The Dreamweaver. Mel Fisher and His Quest for the Treasure of the Spanish Galleon* Atocha. Fletcher, Charleston, SC.

Williamson
2008 *Williamson v. Recovery Limited Partnership LLC,* 542 F.3d 43 (2nd Cir. 2008) <http://scholar.google.com/scholar_case?case=538076350304690631&hl=en&as_sdt=2&as_vis=1&oi=scholarr>. Accessed 5 September 2013.

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