

Global Markets, Local Practice: Ottoman-period Clay Pipes and Smoking Paraphernalia from the Red Sea Shipwreck at Sadana Island, Egypt

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Shipwreck archaeology provides unique evidence for trade, commercial relationships, and the day-to-day existence of occupational communities defined by residence and employment within the industrial space aboard a ship. These concerns are addressed particularly well by finds of utilitarian items such as a small assemblage of 21 clay pipes and three other smoking-related artifacts recently excavated from the ca. 1765 Sadana Island ship which sank at anchor while loaded with coffee, porcelain, qulal, and other goods. Analysis of the assemblage specifically contributes to questions of chronology and typology and presents new evidence for regionalism, style, and the impact of far-reaching trade routes on markets with a global perspective.

KEY WORDS: clay pipes; Ottoman Empire; Sadana Island shipwreck; maritime archaeology.

INTRODUCTION

A number of recent publications (Flatman, 2003; Gibbins and Adams, 2001; Gould, 2000; Ward *et al.*, 1999) argue explicitly or implicitly for greater integration of terrestrial and maritime approaches to the study of shipwreck sites by using material culture to approach social relations and behavior. Ships sunk while engaged in trade present unique opportunities to address questions relevant to technology and to the movement of goods from place to place with the result that these topics consequently receive most attention, yet shipwreck archaeology enables us to investigate the lives of those living and working aboard. Many archaeologists who excavate maritime sites refer to shipboard life as an important

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category of knowledge in their research plans, and while a few studies exist to demonstrate how living conditions reflect cultural interaction at levels of hierarchy, power, authority and discipline, almost all focus on European examples (for example, Boxer, 1963; Castro, 2005, pp. 64–69; Einarsson, 1997; Gardiner, 2005; Rediker, 1987).

In this article, we consider a historic ship's final voyage in the Red Sea in about 1764 CE (Ward, 2000, 2001) and examine its assemblage of artifacts related to smoking for clues to the lives of people working and living aboard the vessel within the context of the wide-ranging market economy the ship's cargo and its utilitarian objects represent. The Sadana Island ship, like every ship, limited the physical environment of sailors, created working and social groups, and placed every aspect of their lives within an industrial context. The ship, as Rediker (1987) and Flatman (2003, pp. 148–149) have pointed out, also circumscribed social relationships, producing subcultures or "imagined communities" linked by occupation, attitudes, experience, and, in the case of the ship at Sadana Island, religion. Aspects of Islamic cultural practice are reflected not only in the style and decoration of artifacts found on the ship, but in the distribution of the largest category of personal finds, tobacco pipe bowls.

LONG DISTANCE TRADE, RED SEA SHIPS AND SHIPPING, AND GLOBAL MARKETS

The exchange of goods is commonly understood to be a focus of maritime trade, yet the exchange of ideas and exposure to different social practices and expressions of ethnicity or identity occurred at a similar pace. The Sadana Island shipwreck exemplifies the Red Sea component of global economic markets focused on acquisition of coffee and Chinese porcelain, highly desired products with limited production areas (Fig. 1). Pearson (1994, p. 152, 1988, p. 458), Panzac (1992), and Barendse (2000) point out that most studies of international trade of Asia or the Islamic world typically focus on European interactions, but trade between the countries of the Middle East was of equal importance and scale. In the later eighteenth century, Egypt's foreign commerce was divided into two spheres: African/Asia and Mediterranean. Egyptians acquired luxuries at a deficit, but re-exported most of those luxury goods to balance the national account and possibly provide a surplus (Raymond, 1974, p. 107). Although European discovery of new and direct routes resulted in appropriation of traditional market products (spices, coffee, textiles) and disrupted eastern markets, the strength of the internal Egyptian and Muslim markets for Red Sea commerce kept Cairo's international profile and global connections high.

The mechanism for political and social maneuvering was long distance trade, and the particular structure of ship traffic through the Red Sea was tightly

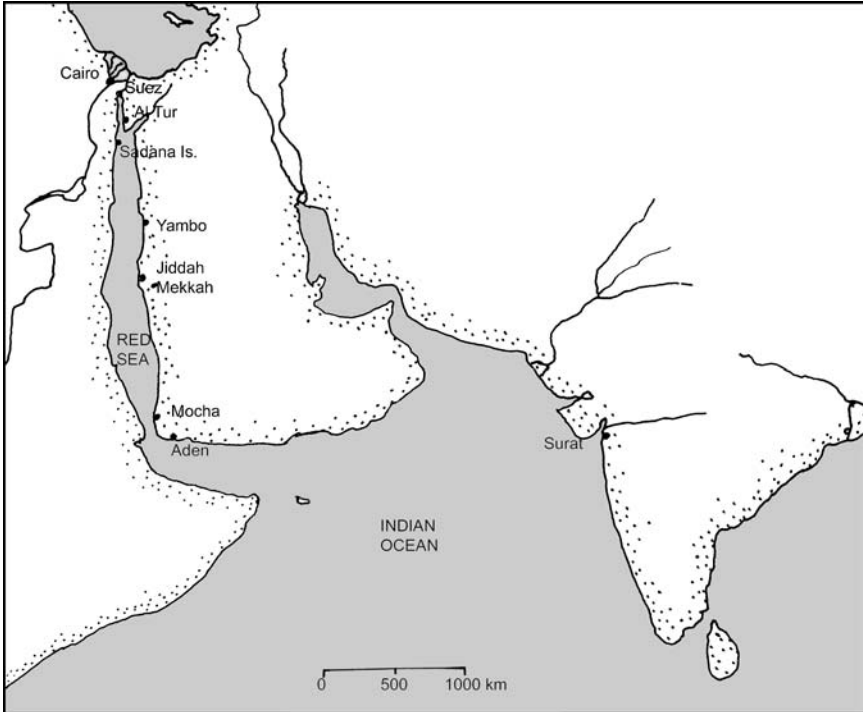


Fig. 1. The Red Sea was part of a trade network spanning thousands of kilometers.

controlled by a succession of governments for as long as possible, up until Napoleonic force in the Red Sea enabled Europeans finally to sail regularly to Suez (Raymond, 1974, p. 154, 2002, pp. 54–55). Ottoman concern that European ships be excluded from the Red Sea, originally from its entire length, and, as the 1700s progressed, solely from the area north of Jiddah, port of Mekkah, and the provision of governmental resources for the building of ships active on northern Red Sea routes reflect the importance of this trade. Red Sea shipwreck surveys and informants have documented twelve shipwrecks that date between the fourteenth and nineteenth centuries in the northern Red Sea; that six of these sites date to the 1700s and sank on northbound journeys with Chinese export porcelain aboard indicates the importance and scale of trade in the eighteenth century (Haldane, 1996b).

By the late seventeenth century, 50 large Egyptian ships with capacities of up to 1,000 tons of cargo regularly sailed between Suez and Jiddah. A. Raymond (1974) was the first to use the extensive textual records in Egypt to examine commercial activity in the Red Sea and its relationship to the transportation and sustenance of pilgrims, followed by Pearson (1994, pp. 152–162) and Tuchscherer

(1994, 2001). From Suez, ships laden with state-supplied food (wheat, barley, rice, beans and oils) and other commodities necessary to maintain the artificially large population in the land around Mekkah (Niebuhr, 1994, p. 236) also carried cochineal, paper, European fabrics and foods, and bullion for French and European merchants. It took about 20 days on a good trip to reach Jiddah from Suez, but two months or more to return with monsoon-influenced winds to Suez (Raymond, 1974, p. 115). Departures from Jiddah began in mid-March, with convoys of ships arriving at Suez until late May. In years when the ships were late leaving Jiddah, they stopped at Tor, halfway along the Gulf of Suez, rather than beat their way back to Suez against the north winds. Sailing schedules always considered the spiritually rewarding provisioning of Mekkah (Heywood, 1996), the financially rewarding carriage of pilgrims on the Muslim haj, and the availability of other lucrative cargoes, including coffee, for the return trip (Raymond, 1974; Pearson, 1994; Tuchscherer, 1994, 2001).

The global marketplace at Jiddah featured goods from half a world away that may have changed hands three or four times before arriving there. European ships sailed to China and India, trading iron, glass, and textiles from Europe for proven sellers in the Middle East: porcelain of particular shape and design (Ward, 2001, pp. 379–380), textiles and spices. Dutch- or Portuguese-controlled vessels, ships from India, Arabia and East Africa sailed from centers such as Surat in India on spring monsoons to Aden or Mocha in Yemen, all trading their cargoes for coffee before returning home (Brouwer, 2001). Brouwer (1991, 1992) describes the cosmopolitan nature of these ports, where sailors and merchants from anchored in harbors crowded with ships from three continents.

In the Red Sea, coffee came north in small ships from the coast of Yemen or in sewn dhows from Oman, and, at the time of Napoleon's record of Red Sea activity for *L'Description de l'Égypte* in 1798, in three or four British ships. Excavations at al-Tur indicate that trade in coffee had begun before 1497 and expanded throughout the sixteenth century along with the proliferation of coffee-related artifacts such as Chinese porcelain cups (Kawatoko, 2001). Coffee was well worth the cost of its freight (about 2–4% of its value for carriage by sea) as a single successful voyage between Suez and Jiddah paid for the ship's operation, the ship, and the next coffee cargo (Raymond, 1974, p. 111; Khan, 2001). Despite the high potential profit margin, these ships were twice as expensive to build as contemporary Mediterranean ships in Egypt, so individual Red Sea vessels often were owned by a group of merchants and captains to limit financial exposure (Raymond, 1974, pp. 110–111). Still, sinkings were not uncommon. Provisioning records for Mekkah from the 1670s typically showed losses of up to 10% due to shipwrecks (Heywood, 1996), and shipwrecks are regularly documented throughout the seventeenth and eighteenth centuries. European travelers typically described ships in the Red Sea trade as being quite large, but poorly built, long and deep, difficult to maneuver, and, according to some, nearly impossible to tack (Niebuhr, 1994, p. 176; Pearson, 1994, pp. 153–154). The ships anchored each night in small bays,

and it is at one of those that the Sadana ship sank on its return voyage in 1764 or immediately thereafter.

By 1764, only 15 to 17 ships of 900–1000 tons (*markab*) sailed regularly to Jiddah (Raymond, 1974, p. 112). The Sadana Island ship, reconstructed at about 50 m length on deck with a capacity of about 900 tons, was thus one of the last large ships operating under local ownership in the northern Red Sea. Most of these ships were built at Suez with imported wood and iron (Niebuhr, 1994, p. 176). Some, however, were built in India (Niebuhr, 1994, p. 177), purchased from Indian merchants who sailed fully laden ships to Mekkah, sold their cargo and the ship, and returned home as passengers on other vessels. As the eighteenth century progressed, average commercial ship size had decreased, primarily because smaller ships (*qaribs*) of only 200 tons were commissioned instead of the larger *markabs*. The state, however, preferred to operate fewer, larger ships to carry Mekkah's supplies of grains, lentils, oil, and other goods (Pearson, 1994; Tuchscherer, 1997, p. 60). When several large ships sank in 1761, the governor of the Red Sea province made an immediate request for assistance from the Ottoman state, a request approved immediately though it took five years to complete the ships (Tuchscherer, 1997).

Economic difficulties and limited wood supplies contributed to the transition from *markabs* to *qaribs* over the second half of the 1700s. The successful cultivation of coffee by French and Dutch farmers and merchants in Caribbean colonies generated an increasing supply of less expensive coffee for Egypt's usual Mediterranean customers that, over time, affected all coffee prices. At the same time, increased taxation by the Ottoman Empire decreased already limited profits on coffee and other goods that had traditionally returned gains of more than 100% (McGowan, 1994). By the end of the eighteenth century, the most common type of ship at Suez was built in India (Raymond, 1974, p. 109), and teak was the dominant wood in the diminished Red Sea merchant and imperial fleet. The Sadana Island ship and its crew represent the culmination of a trade system's development at a time when outsourcing of its most vital mechanism—the ship and its crew—had begun.

THE SADANA ISLAND SHIPWRECK

In 1994, a local diver reported a shipwreck north of Safaga to the Institute of Nautical Archaeology–Egypt. Archaeologists who visited it as part of a Red Sea maritime archaeological survey (Haldane, 1996a) found evidence for looting subsequently confirmed by photographs and accounts of some 10,000 porcelain objects recovered by sport divers in the early 1990s. The site spread over nearly 800 m² along the base of a reef, incorporating much of a vessel nearly 50 m long. The ship probably broke free of anchors set slightly north of the fringing reef linking Sadana Island to the shore, and hit the reef before settling parallel to



Fig. 2. Chinese export porcelain designed for the Islamic market and earthenware beakers (*qulal*) were the most visible cargo elements remaining on the Sadana Island ship. Clay pipe bowls (S10, S7 and S6 from left to right) likely were personal possessions of the ship's crew (Photograph Netia Piercy).

it at about 30 m/100 feet depth. Over time, the ship fell onto its starboard side. Its cargo (Fig. 2) of Chinese export porcelain, coconuts, and earthenware *qulal* (Braun, 2005), incense, and coffee from the Hadramaut testified to a northbound journey.

Excavation seasons in 1995, 1996 and 1998 took place in cooperation with the underwater archaeology division of Egypt's Supreme Council of Antiquities, an international team of volunteers and students, and the Institute of Nautical Archaeology (Fig. 3). In addition to a general site survey and removal of artifacts attractive to casual site visitors, the archaeological strategy focused on evaluating parts of the stern, the galley, the hold, and the main deck of the ship as these areas traditionally provide most information about the individuals aboard and the vessel's last voyage. Two-meter-wide trenches along the keel line (about 26 m deep and 20 m long) and at the level of the main deck (about 35 m deep and 30 m long) intersected with three other trenches laid out perpendicularly to provide cross sections of the vessel through its midships area, a heavily reinforced storage zone, and at the stern. In addition, archaeologists briefly examined the forward quarter where the mate and most crew members typically are billeted. Although more than 3,000 artifacts were recovered, the ship itself was mostly exposed from the outset, suggesting that much of its cargo may have been organic. Archaeobotanical studies of plant remains suggest that coffee made up a substantial portion of the missing



Fig. 3. Emad Khalil, an archaeologist at the University of Alexandria, and C. Ward recorded artifacts sport divers had stashed in a large storage jar during the first excavation season in 1995. *Qulal* cemented together by naturally occurring calcium carbonate deposits are visible in the foreground along with a large earthenware basin and some copper galley ware (Photograph E. Greene).

tonnage, and that the Sadana Island ship's other organic cargoes of coconuts, aromatic resin, and black-lipped pearl oyster shells also originated in the southern reaches of the Red Sea and western Indian Ocean.

Evaluation of ship construction and ship timbers defines the Sadana Island ship as an example of a locally constructed and operated vessel. Its officers, passengers and crew, identified as Arabic speakers by inscriptions on artifacts, probably described it as a *markab masari*, or nailed ship. A lack of cannon or cannon shot on the ship suggests that its voyages were confined to the northern

Red Sea, within the boundaries of the Ottoman Empire, with no need to defend itself from the pirates or European merchant ships that had few scruples about appropriating goods from other vessels in the western Indian Ocean and southern Red Sea (Brouwer, 1991, 1992; Risso, 2001).

Mended and unique pieces of Chinese export porcelain found in the stern, earthenware water vessels and tablewares, copper kitchen utensils and cooking pots, glass liquor bottles, a wide variety of spices from Indian Ocean lands, foods from the Mediterranean, and more personal items such as pipes, ornaments, and lamps provide physical evidence for life aboard an indigenous Red Sea trading vessel (Ward, 2000, 2001). Analysis of artifacts that context, evidence of use or repair, and rarity caused to be classed as personal possessions rather than cargo suggests that, like the ship, the crew was non-European. About 50 finds likely linked to individuals include an inlaid ivory pommel, a stone mortar, a carved bone or ivory game piece, large and small wooden lids, a pair of inlaid copper bracelets, a cut glass flask, the smoking-related assemblage, and a knotted leather bag. The limited number of finds, their strong Islamic cultural parallels and even Arabic inscriptions point to a Muslim crew, a finding reinforced by historical descriptions of ships operating in the area at this time (Niebuhr, 1994; Raymond, 1974). Inscriptions on copper finds offer the most precise evidence for dating the site. Three pieces bear Arabic names and dates, but only two of the dates are legible. An Arabic inscription of 1169 [AH]/1755/6 AD on a copper basin and 1178 [AH]/1764 AD on a copper pan places the ship's final voyage in a time of increased foreign activity in the northern Red Sea during a period of economic transition within Egypt.

The eighteenth-century ships of the Red Sea attest to the vital international trade linking India and China with European traders and Ottoman officials in the markets of Egypt and demonstrate the importance of the sea route north of Jiddah for elite-focused goods. Of particular importance in the ongoing research about the Sadana Island ship is the fact that it is likely a local, Islamic-owned and -operated vessel operating within a protected environment, and carrying a cargo focused primarily on the elite Islamic market. Primary evidence supporting these conclusions is drawn from the porcelain (e.g. Raby, 1986) and from the largest category of personal items aboard the ship, those related to smoking.

CONVIVIALITY: COFFEE AND TOBACCO PIPES

Smoking with a tobacco pipe and drinking coffee were the common pleasures of the Ottoman Empire (Baram, 1999). Coffee is native to the southern Red Sea, and the practice of roasting and grinding coffee seeds spread northward quickly with the advent of Ottoman control of the region. Coffee shops offered a controversial and innovative locus for socializing, periodically banned because of coffee's stimulating effects on the body, until the stimulant was so widespread

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that governmental focus shifted to taxation rather than control (Hattox, 1985). In addition to providing a place for gathering other than in homes or at the mosque, cafes provided entertainment in the form of storytellers and supplied patrons with charcoal and accessories for tobacco smoking.

The popular historian Lord Kinross (1977, p. 329) famously regarded tobacco pipes as so widespread in the Middle East that they were nearly the “national emblem” of the Ottoman Empire. Archaeologists have noted that clay pipes are among the most plentiful artifacts studied from the era that the Ottoman Empire ruled over the Middle East (e.g., Baram, 2000; Simpson, 2002). While archaeologists recover most tobacco pipes from terrestrial sites, underwater sites provide precise social and economic contexts for these artifacts within a system dedicated to long distance interaction. In contrast, disposal sites, often related to loci of consumption such as taverns or cafes, are the most commonly excavated terrestrial source of pipes, whose condition frequently is poor. In the Red Sea, archaeologists working on Ottoman-period shipwrecks find that pipes represent a disproportionately large fraction of personal or utilitarian artifacts with significant numbers of pipes and other artifacts related to smoking in use at sinking surviving (Raban, 1971; Ward, 2000).

Higgins (1997, p. 129) provides a model for examining tobacco pipes from European shipwrecks, explaining,

There are a number of reasons why pipes have attracted the attention of archaeologists. Firstly, they were both mass produced and extremely fragile, as a result they are very common on post-medieval sites. Secondly, pipes were strongly influenced by the dictates of fashion and so, given their short life expectancy, they can provide an accurate date for the contexts in which they are found. Thirdly, pipes often bear maker's marks and were made in different styles and qualities. These characteristics can be used to explore both the social status of the owner and the markets from which he or she obtained goods.

Higgins (1995) recognizes that while the sample of clay tobacco pipes from shipwrecks is too limited to test theories, pipe studies contribute to broader discussions. Tobacco pipes may be evaluated under rubrics of personal possessions versus cargo, regular supplies versus tobacco pipes picked up at ports of call, and archival sources versus archaeological evidence. As is the case with all archaeological finds, identification of assemblage members, analysis of artifact context, and connecting new finds to established studies of these objects makes it possible to use pipes to discuss dating, stylistic typologies, and trade in clay tobacco pipes from extant assemblages.

The majority of archaeological studies of clay tobacco pipes, like Higgins' model, focus on kaolin pipes, the type of ceramic tobacco pipe manufactured in Northwestern Europe and its colonies. The kaolin pipe is a white, single-piece instrument, varying in its length, borehole, and motifs. Kaolin pipes are more fragile than the heavier clay bowls of the Ottoman Empire and its neighbors. Archaeological scholarship on kaolin pipes makes clear that the artifacts are useful

as chronological markers and indicators of economic exchanges in addition to offering insights into symbolic concerns. For example, tobacco pipes made of a tan clay, with motifs of stars, ships, and animals, recovered from eighteenth-century sites in the Chesapeake region of Maryland and Virginia have been interpreted in terms of social relationships among Europeans and enslaved Africans (Deetz, 1996, pp. 245–250). That analysis is grounded in the richness of the archaeological record for kaolin pipes, precision in stylistic chronologies, knowledge of motifs and their meanings, and the historical context for the peoples of the region. That level of analysis is not yet possible for tobacco pipes of the Middle East. The potential to address similar concerns about social relationships and historical change for the Ottoman Empire will exist when more assemblages are excavated, analyzed and published.

The Ottoman tobacco pipe, the chibouk, has two or three pieces (bowl, stem or shank, and sometimes a mouthpiece); archaeologically, the ceramic bowl tends to be the only element commonly found on terrestrial sites. The bowl is fascinatingly variable, in terms of colors, shapes, and motifs. Published collections of Ottoman tobacco pipes include finds from Greece (Robinson, 1983, 1985), Istanbul (Hayes, 1980, 1992), Palestine (Baram, 2000; Simpson, 2000, 2002; Wightman, 1989), Egypt (French, 2001), and Cyprus (Baram, 1999). Archaeologists recognize the challenge for these artifacts: there is a need for much more data concerning the production, distribution, and consumption of tobacco pipes. Even more significant is the need for greater chronological precision, to be able to group the variation in tobacco pipes and address anthropological concerns. While few finds of Ottoman tobacco pipes come from shipwrecks, as will be made clear those finds are some of the most important for understanding chronology, variation, and trade routes tobacco pipe smokers—and therefore tobacco pipe styles—may have followed. Finds from these shipwrecks may also contribute to a more nuanced understanding of the lives of sailors aboard the ship and of the world they inhabited.

VARIATION IN CLAY TOBACCO PIPES AND CHRONOLOGICAL CHALLENGES

In identifying archaeological finds of Ottoman tobacco pipes, descriptions include the readily visible variables of color, shape, size, and motifs. A number of publications attempt to use these variables to date individual finds in the eastern Mediterranean (e.g., French, 2001; Robinson, 1983, 1985; Simpson, 2000, 2002), and Baram (2000) offers a broad chronological outline for Ottoman tobacco pipes, splitting four centuries of Ottoman rule over the region into five periods. In the seventeenth century, only a few types of pipes may be identified, and these are light in color with elongated shanks. During the eighteenth century, a great diversity of shapes and colors appears with a plethora of motifs and designs decorating these types. Standardization in tobacco pipes begins during the early to mid-nineteenth

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century with a handful of shapes. In the mid- to late-nineteenth century, tobacco pipes tend to be polished red brown, larger than previous examples, and the majority of pipes exhibit maker's marks. By the late nineteenth to early-twentieth century, plain lily shapes predominate; they are the final types produced in the Ottoman Empire. The end of Ottoman tobacco pipe production correlates to the collapse of the empire at the start of the twentieth century.

While historical archaeologists working on kaolin pipes have developed precise measurements that transform the artifactual finds of tobacco pipes into chronological tools, archaeological work in the former realm of the Ottoman Empire has made only promising starts on chronological typologies for clay pipes. Part of the challenge is that multiple methods are employed for creating chronological associations or typologies. Robinson (1983, 1985) used contemporary images as a means to help classify several hundred Ottoman tobacco pipes from Greece. Hayes (1980, 1992) worked with a large assemblage from Istanbul and linked pipes to ceramics in disposal contexts. Baram (1999, 2000) posited a chronological typology for Ottoman tobacco pipes from Palestine based on the work of Robinson and Hayes, with several sealed loci providing support for the categories. Shipwrecks offer the rare opportunity to locate a chronological benchmark for a diverse assemblage of tobacco pipes.

Several Ottoman-period sites in the Red Sea, including three ships in Egyptian waters, three ships documented by recreational divers off the coast of Saudi Arabia, and what seems to be a coffeehouse dump in the harbor at Quseir, Egypt, also incorporate pipes (Haldane, 1996b). Especially when buried in a white sand matrix as is common in the Red Sea, pipes stand out and are relatively easy to find. Dark-colored, dense, of unusual form, and decorated with burnishing or relief design, pipes are reported by both archaeologists and casual visitors to underwater sites.

In 1968, Avner Raban (1971) excavated a shipwreck near Sharm el-Sheik at the southern tip of Sinai in an anchorage now known as the military harbor because minesweepers and other international peacekeeping vessels anchor there. Design motifs on several dozen pieces of Chinese export porcelain date the wreck and the other artifacts to the second quarter of the eighteenth century. It sank at the dock after a fire; in addition to fragments of porcelain, nearly a thousand *qulal*, or thin-walled earthenware flasks, remained aboard. Raban reports twenty Ottoman tobacco pipes were found in the wreck, and when the site was visited in a 1994 Institute of Nautical Archaeology survey, several others were recorded but left on the site due to permit restrictions. Photographs of four tobacco pipes are included in Raban's report, and others are available in archival research materials (Raban, pers. comm.), but no focused study was published before the Sharm el Sheikh artifacts recently were returned to Egypt from Israel. More important to examining pipe chronology is the Sadana Island shipwreck where the diversity of eighteenth-century pipe styles noted in Baram's (2000) chronological typology is exemplified by the assemblage.

THE SADANA ISLAND SMOKING ASSEMBLAGE

Among artifacts now stored at the Maritime Museum of Egypt in Alexandria are 24 related to smoking, including 21 pipe bowls (Fig. 4), two charcoal holders for water pipes (Fig. 5), and a metal tobacco box (Fig. 6). As noted above, archaeologists examining Ottoman pipe bowls adopt several strategies for typology- and chronology-building. Because the Sadana Island assemblage is so small, an opportunity to investigate stylistic questions in detail exists. Most scholars of Ottoman pipes rely on the external shape of pipe bowls; comparable information about details or internal structure, perhaps because the condition of the finds, is not always available. French (2001) has published 95 fairly complete pipes from rubbish, corridor, and courtyard contexts of a madrasa (religious school) in Cairo, noting that the pipes likely date between the seventeenth and nineteenth centuries. He established a typology of 11 Types and 24 ‘other’ pipes within a twelfth Type, but notes that the typology is “fairly arbitrary and selection of other criteria might have produced a different result” (French, 2001, p. 214). Others take different approaches. Robinson (1985) segregated round, disk-based, and lily-shaped bowls from urban Greek contexts, and Hayes (1980, 1992) identified upwards of 25 types from Saraçhane in Istanbul.

After arranging the Sadana Island pipe bowls into three different typological distributions based on similar external features, it became clear that there were essentially two types of pipe bowls when functional attributes are considered. Even if external shape was similar, when internal characteristics were considered each pipe was easily classified as having a cylindrical bowl and chimney or rim like S1 (see Fig. 4a) or as having a narrower base and flaring rim like S21 (see Fig. 4b). Variation in external design, proportion, and shape is relatively insignificant when pipe profiles are overlaid and internal spaces compared. After the major distinction between vertical-sided chimneys and flaring chimneys, pipes with similar decoration and styles were associated with one another. Ward chose not to create a series of Types because despite the small number of pipes (21), there is both significant diversity of style and significant overlap. For example, four separate “pairs” of pipe bowls may be identified in this small assemblage, two of which are virtually identical in design and size and likely came from the same mold, and two of which are more ‘fraternal’ than identical, but clearly produced by the same workshop.

Shipboard Contexts

On the Sadana Island ship, pipes are associated with two zones on site rather than occurring throughout the ship. They were not packed together in large numbers or mixed with cargo items. Two pipes (S3, S20) were found in looter debris ashore; pipe S1 had been placed with other artifacts, including *hagar*

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fragment S23, into a large storage jar (*zilla*) by previous visitors to the site. Other than these four examples, the smoking assemblage artifacts were found in secure contexts that reflect dispersal due to disintegration of ship components. Three pipes (S17, S18, S20), a red-slipped *hagar* or charcoal holder for a water pipe (S22), and a metal tobacco box (S24), likely belonged to high-ranking passengers

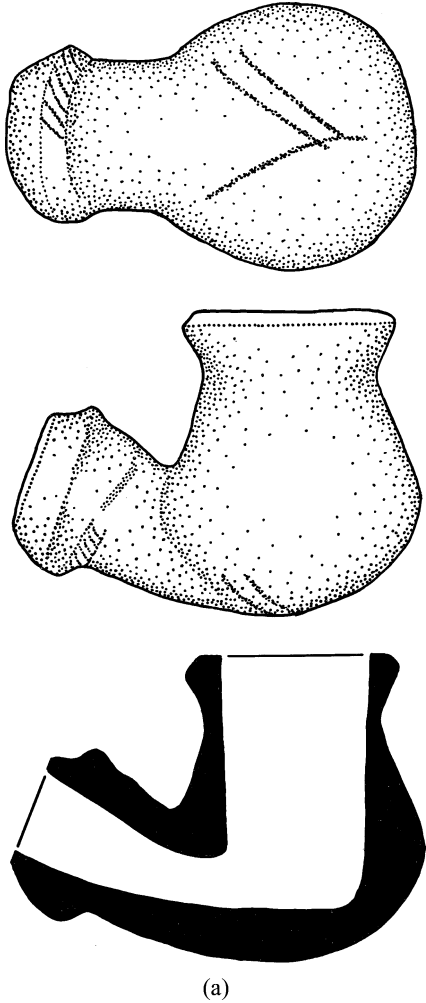


Fig. 4. Tobacco pipe bowls a) S1 (MH 4.6 cm) and b) S21 (MH 5.1 cm) illustrate cylindrical and flared chimney types respectively. The surface of S1 is plain; S21 has a dark brown, burnished slip (Drawings Lara Piercy).

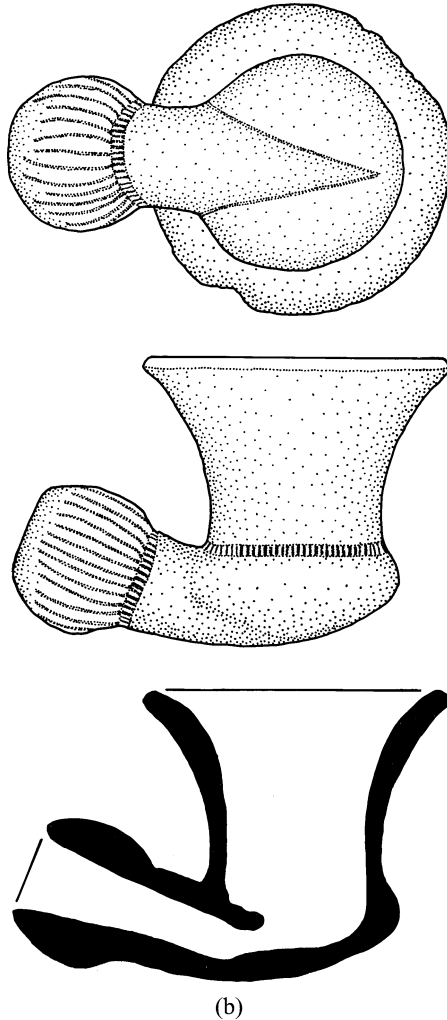


Fig. 4. Continued.

or ship officers housed in main deck cabins in the stern. A small spill of artifacts from this zone included unique porcelain objects (one mended), inscribed copper serving wares and copper braziers, and a copper gimbal for a glass lamp bowl that Ward also classifies as personal possessions. Most pipes (15) have carbon stains indicating past use, and 13 were found in artifact spills from the ship's galley. The galley, located just aft of midships near the waterline, was identified on the basis of bricks and charcoal finds, significant numbers of earthenware food preparation

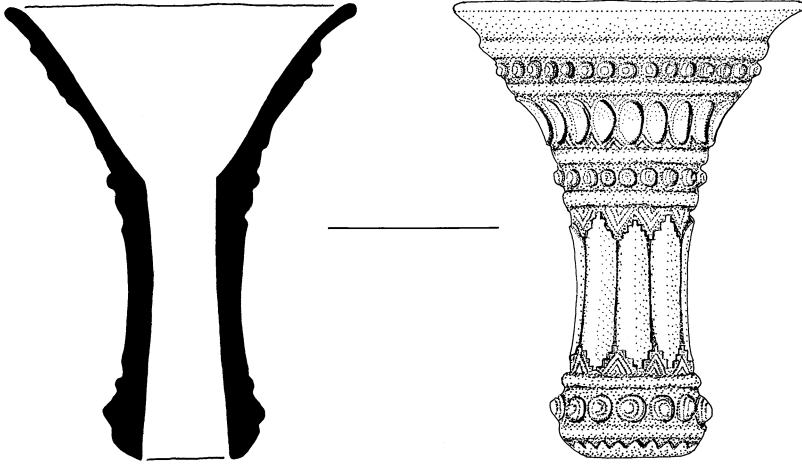


Fig. 5. *Hagar* (charcoal holder for a water pipe) S22 (MH 9.5 cm) from the Sadana Island shipwreck has a dark red burnished slip (Drawing Netia Piercy).

or serving artifacts (Sharma, 2003), and food and food storage containers, mostly ceramic.

In tea and coffee shops today as in sixteenth century, shop owners commonly offer a number of smoking-related services. In addition to serving beverages, they also stock water pipes with various tobacco blends. In many areas, these neighborhood shops also maintain and store mouthpieces and pipes for individual patrons. The close association of most Sadana pipes with galley artifacts suggests that a similar practice was followed on the ship, with pipes stored in the galley for those times that the crew could partake in what Niebuhr (1994, pp. 126–127) called a fondness for tobacco: “This fondness has rendered them very nice, with respect to the form and materials of their pipes. Those used by the common people, have the bole of burnt clay, with a reed for a stalk.” Keeping pipes in the galley also created, intentionally or not, the ability to monitor fire sources and adherence to any rules about when pipe smoking was permitted aboard. Whether the pipes belonged to crewmen, officers, or guests of the ship is impossible to tell. The presence of a concentration of smoking-related artifacts in the stern with solitary examples of water pipe components implies social segregation at multiple levels.

In the stern concentration, the pipes found in good contexts there are slipped or burnished and have flared chimneys. Tobacco box S24, made of a yellow metal alloy that shares physical characteristics with brass, is elaborately decorated with standard floral motifs and pseudo-Arabic calligraphic designs within the common Ottoman eight-pointed star on the lid. This small hinged box, whose contents included a stiff piece of heavy paper and tobacco leaves, also holds

a mystery. Its dimensions are $7.3 \times 4.6 \times 1.6$ cm ($2 - 1/2 \times 1 - 3/4 \times 5/8$ in), a rather intriguing correlation to modern Imperial measurements first standardized in 1824. Perhaps the box was copied from European examples; other 18th-century European tobacco and snuff boxes also have regular Imperial dimensions.

An elaborate charcoal holder, S22 (see Fig. 6), was made of very fine deep red clay and finely burnished over a bright red slip. Some elements of its decoration are mirrored in pipe C56 from the Agora that Robinson (1985, pl. 52) considers to be probably early nineteenth century, but the Sadana *hagar* is otherwise unique to our knowledge. It and the other artifacts from this zone, such as a repaired porcelain dish, a tiny cup resembling modern sake cups, and a lamp holder, indicate a higher economic investment in material goods than is visible elsewhere on the ship. Food service and food preparation artifacts in the stern include copper braziers, large trays, serving dishes and ewers of types not found in the galley spills, so it is unlikely that individuals in the stern and those keeping pipes in the galley were at the same status level.

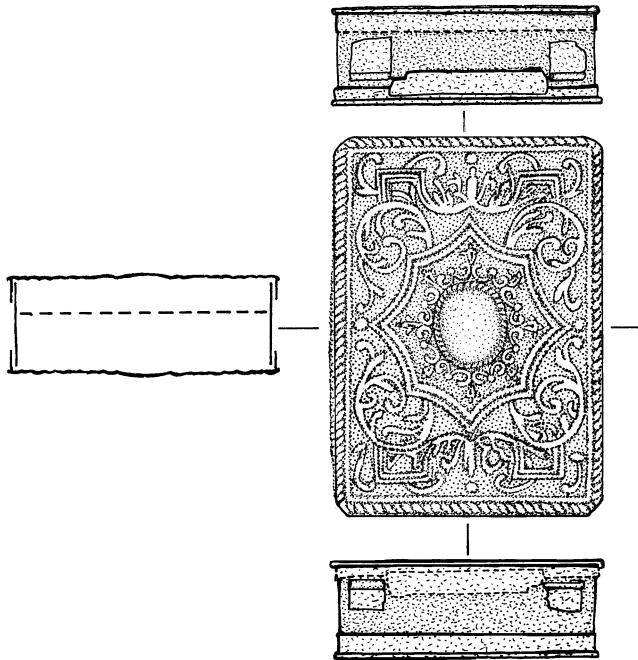


Fig. 6. Brass tobacco box S24 (ML 6.4 cm) from the Sadana Island shipwreck held a thin pane of glass, heavy paper, and shreds of tobacco when discovered (Drawing Netia Piercy).

Analysis

Status and hierarchy are amply reflected in the closed environment of a ship, not only in day-to-day behavior and alliances, but also in the objects used every day by the ship's crew, officers, and guests. The provision of better, more varied food and personal space in preferred areas such as the stern for officers was common across all seas and times, though we know most about European practice (e.g., Macdonald, 2004; Rodger, 1996; Russell-Wood, 1983). Even on large, undecked, seagoing dhows in the Arabian Gulf today, the captain and higher officers sleep in the stern and the sailors wherever they can find room (Agius, 2005, p. 142). The presence of more elaborately decorated smoking tools in the stern and their association with more prestigious items than found elsewhere on the ship is amply demonstrated for the Sadana ship, even in this small assemblage of twenty-four objects. The size of the assemblage is significant in and of itself as a reminder of different patterns of consumption in different economic spheres. On the later seventeenth-century Swedish war ship *Kronan*, a single officer's chest in the stern had twenty identical pipes stowed in the lowest layers and a single example near the top and easy to hand, and 115 other pipes and pipe fragments of both English and Dutch manufacture were recorded on the site through 1998 (Åkerhagen, 2003).

Significant differences in shape exist between pipes in the shipwreck assemblage and pipes from tavern or coffee shop finds in Cairo, Palestine, and beyond. Despite the internal links between different styles, few parallels for specific Sadana Island examples exist. Overall, the Sadana Island pipes tend to be taller and longer than most other published examples (exaggerated in S10, S11, S12, S19, S 20, and S21). In addition, two examples (S7, S8) exhibit an unusually flat angle between shank and bowl not noted in other assemblages of comparable date. A few pipes from the Agora in Athens (Robinson, 1985) share motifs with S3 and S24, a scalloped shank end on a Belmont example resembles S21, but the Sadana pipes do not reflect decorative styles seen in Tunis or Malta (Wood, 1999), Greece, Istanbul or Palestine except in the most general manner.

The closest parallels for individual examples in the Sadana Island assemblage are found in Cairo (French, 2001) and Sharm el-Sheikh (Raban, 1971, pers. comm.), but they are relatively weak. Chronological distance (30–40 years) between Sharm el-Sheikh and Sadana Island shipwrecks may explain the loose connection between the two Red Sea assemblages, but it is likely other factors are operating with respect to the Cairo finds. In addition to the difficulty in precisely dating individual finds in the Cairo group, the lack of overlap may be a result of different cultural preferences exhibited by capitol city urban residents associated with a madrasa and Red Sea industrial workers aboard a ship operating in an environment subject to high winds and exposure to many different cultural patterns.

For example, the tall, sack-like forms S10–S12 and S19–S21 probably offer more protection from Red Sea winds than shapes with shorter chimneys. Although the numbers are small, it is perhaps of interest that all pipes from the stern are sack-like with flaring chimneys. Are these the latest Red Sea fashions acquired at Jiddah or Suez? It is certain that sack-like forms reflect a stylistic preference for large bowls which in themselves tell us individuals could afford sufficient tobacco to fill them. Whether that ability reflects the pipe owners' employment on ships carrying some of the most expensive imported goods of the mid- to late eighteenth century or generally improved financial conditions is unknown.

What can be determined is that the smoking-related artifact assemblage from the Sadana Island ship seems to reflect style trends that would become popular in the eastern Mediterranean decades later. Alternatively, the assemblage points to severe problems with chronological studies due to consistent patterns of desire over spans of time as long as a century. For example, Robinson (1985) dates a number of pipes with traits visible in the Sadana assemblage to the early nineteenth century. Pipe bowls S4 and S5 resemble the gadrooned bowl with carinated shank end of a pipe held by the 1822 Albanian (Robinson, 1985, pl. 40), but also are reflected by pipes aboard the ca. 1720s Sharm el-Sheikh shipwreck and French's pipe 6.1 from Cairo. S14 also recalls similar examples from the Sharm el-Sheikh wreck (69–754/5) and Cairo (French, 2001, ill. 3.2). The pipe smoked by the 1825 Thessalian (Robinson, 1985, pl. 42) resembles S21 in its bulging shank and flaring rim on a disk base. Pipe S21 is a particularly noticeable example of nineteenth-century styles and has a good parallel on one of the Saudi shipwrecks (J. de Bry, pers. comm.). Hayes (1992, p. 392) dates Saraçhane X group pipes that have similar beaded designs to S3 and Robinson's C22 to the early nineteenth century as well. Pipe S16 shares features with French's pipe 12.13 (2001) and Simpson (2002) pipe 42 from Belmont. No eighteenth-century parallels could be located for the tall sack-like shapes described above, the short and stubby lily-like flared pipes S17 and S18, or flat, almost L-shaped angles of shanks on S7 and S8. These scarce and incomplete similarities suggest that the regional nature of pipe making may be strongly exhibited in the Sadana assemblage. It also seems likely that the Red Sea served as a passage for new design types to reach the Mediterranean.

RED SEA SHIP PERSONNEL

In the early modern period, European sailors are described as living and working in conditions not far from slavery (Creighton, 1990, p. 542; Pearson, 2005, p. 187; Rediker, 1987), subject to absolute authoritarianism and severe physical punishment for even minor transgressions as Richard Henry Dana Jr. described in *Two Years Before the Mast*, published in 1841. Life on European and American ships was “inextricably linked with the consumption of alcohol” (Finamore, 2006,

p. 70; Pope, 1989), a much less common characteristic of ships crewed by Muslim sailors in the Indian Ocean (Qaisar, 1987). On the other hand, Niebuhr (1994, p. 221), who thought it unusual that the captain of his ship requested a quarter bottle of brandy be given the pilot each day, describes difficulties caused by the pilot of his 1762 ship being drunk while rounding the cape at Yambo, Saudi Arabia.

On European ships, wages were uncertain, kidnapping and forced enrollment not uncommon, and food frequently was inedible (Macdonald, 2004; Rodger, 1996; Witt, 2001). Russell-Wood (1983) graphically describes the situation of seamen serving aboard the Indiamen of Portugal within the dominant social framework of nobility and money trumping laws designed to ensure experience and expertise. Shared adversity, responsibility, and experiences in an isolated environment reinforced collectivism and anti-authoritarianism in establishing a subculture of seafaring men on the fringe of western society (Rediker, 1987, p. 146). Ships' captains and officers, masters and pilots, and ordinary sailors typically did not cooperate and actively maintained boundaries that were physical as well as social, sometimes resulting in tragic consequences when shipwrecks occurred (Boxer, 1979, pp. 133–135). Extensive record keeping related to ship operations and supplies, travel diaries by sailors, passengers and officers, and even court cases and a few archaeological excavations give us information about these men that is lacking for the Red Sea and Indian Ocean world where much less primary data is available.

Of those few accounts of events related to mariners, European travelers call them unskillful and describe cowardly and inappropriate behavior of Red Sea Muslim crews during shipwrecks or times of difficulty leading to shipwreck (Niebuhr, 1994, p. 218) in language that precisely mirrors European descriptions of cowardly and inappropriate behavior by Portuguese east Indiamen crews in similar situations (Russell-Wood, 1983, p. 47). Niebuhr's brief comments about his voyage provide a frame of reference in reconstructing typical journeys aboard these giant ships, but he refers to the crew first as Greeks and later as Turks (Niebuhr, 1994, pp. 214, 221) suggesting he was not particularly interested in the sailors. He does note that three scribes were aboard. From archival sources in Cairo and Suez, Raymond (1974, p. 113) identified patterns that show Red Sea ship masters and pilots were frequently drawn from an extended family and dependents such as ex-slaves (Raymond, 1974, p. 113). As is expected, these patterns reinforce aspects of communal life and retain knowledge within the family in ways that seem to be similar to practices by Indian Ocean mariners today (Agius, 2005, p. 129).

Shipboard life enforces community whether on a European (Creighton, 1990) or Red Sea vessel (Niebuhr, 1994, p. 127). On modern dhows, the captain is responsible not only for the vessel and its contents, but also for the behavior of its crew in his capacity as guardian (Agius, 2005, p. 132). Ewald (2000, p. 76) notes that a nineteenth-century British shipmaster supervising Muslim sailors described them as sober, hardworking, and well behaved. Seeking community with fellow believers for meals as well as prayer and the avoidance of alcohol were common

traits of observant Muslims, still the case on many Indian Ocean ships today (Agius, 2005, p. 141). Mariners instead share coffee and a common water-pipe, “passed around for all to smoke” (Agius, 2005, p. 141) once the heat of the day became too intense for remaining in the sun. We interpret the concentration of smoking-related artifacts in the galley of the Sadana Island ship as a reflection of communal aspects of life aboard a ship owned and operated by Arabic speakers who almost certainly were also Muslim. The pipes were not kept separately, but in a common location for communal pleasures.

CONCLUSIONS

The Sadana Island shipwreck assemblage provides a benchmark for examining not only traded goods in a particular ship sailing on the Red Sea at one point in time, but also an opportunity to learn a little about the lives of people who lived and worked aboard the ship. Risso’s (1989) examination of eighteenth-century patterns of Muslim identity with respect to trade in the Red Sea and Indian Ocean suggests that explicit approval of commerce as a reputable activity in the Qur’an helped build networks between individuals and processes at governmental levels to support and reinforce Muslim traders. The impact of Islam on early modern shipboard life and trading processes is difficult to gauge because so few historical sources or archaeological excavations have treated the topic. With this analysis of the smoking-related artifacts on the Sadana ship, we contribute to understanding the manufacturing, trade, and consumption of clay tobacco pipes in the Middle East.

It is appropriate to consider the Sadana Island assemblage of smoking artifacts as representing the Red Sea interaction sphere, with influence from Cairo, but dominated by local preferences. Sadana Island pipes tend to be taller than those in use at the same time in the eastern Mediterranean, and some with flaring bowls and rims presage a style usually dated about 50 years later in those regions. It may be that one day finds from excavations focused on the Ottoman levels of al-Tur, Suez, Quseir, or Mokha will add to our ability to better define the levels of interaction. At present, the limited number of published finds weakens our position as it is based, in part, on lack of evidence.

The Red Sea shipwrecks are significant for insights into the distribution of clay tobacco pipe styles. While large assemblages provide opportunities to recognize patterns in material culture, smaller groups permit us to establish variation for the category of artifacts. As Higgins (1997, p. 132) points out for the 1664 Dutch *Kennemerland* wreck off the Shetlands (Muckelroy, 1976), the different tobacco artifacts found together in the ship’s cargo illustrate variation, a trait also visible in the personal smoking artifacts of the Sadana ship’s crew. In this small assemblage of mid-eighteenth century Ottoman tobacco pipes, the diversity raises concerns about distribution of particular forms. Contacts and interconnections

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existed throughout the Ottoman Empire, the Mediterranean, and the Red Sea as studies of pipes on Malta and Tunis (Wood, 1999) indicate. Baram (2000) argued for a three-tier production typology, identifying empire-wide distribution of pipes made by specialized guilds, in Sofia, Istanbul, and Assyut; regional centers, such as in Jerusalem; and local networks centered on local potters who fashioned tobacco pipes. But we know little about transfer mechanisms for any of these distribution modes.

The fixed date for the shipwreck is a major contribution for clay tobacco pipes studies of the Ottoman Empire. There are still questions to ask of the assemblage. How close are manufacturing dates to the shipwreck of 1764 or slightly later? Could some pipes be heirlooms? While that question is left open, we have an impressive view on the common pleasure of the Ottoman Empire from one moment in history. The variation among the twenty-one tobacco pipes supports Baram's (2000) assertion that the eighteenth century witnessed a great diversity in shapes, sizes, and motifs for Ottoman tobacco pipes. The limited similarities to other Ottoman assemblages suggest that regional variation was pronounced in the eighteenth century; by the nineteenth century that variation became condensed, at least in the heart of the Ottoman Empire. The Sadana Island assemblage permits archaeologists working outside western Europe and its colonies to move toward greater precision in studying an artifact class used for decades to explore the materiality of social status and changing social identities. Our consideration of the meaning of the assemblage distribution aboard the ship provides some basis for considering how life on a Muslim ship may have differed from that experienced by mariners aboard an East India merchant ship.

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