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Life on Board Portuguese Ships in the 16th–18th Centuries: Theorizing Households through History and Archaeology

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Abstract: Recognizing and defining behaviors is among the most challenging objectives of writing narratives about the past, especially when direct testimony and the evidence of agents' actions are long lost. Typically, archaeologists look at material remains to reconstruct daily activities, while historians read and interpret documents that articulate how agents interacted with their surroundings. Following an interdisciplinary approach combining archaeology and history, the purpose of this paper is to reconstruct how different types of agents co-existed on board Portuguese ships in the Early Modern Age, and how those relations can be interpreted as a household. These ships sailed across different oceans with different purposes and destinations, carrying people, animals, and things, all of which had a level of agency. All these agents led to the development of specific relations and ways of being, characterizing the particular dynamics and associations during voyages.

Keywords: shipwrecks; household archaeology; shipboard life

Citation: Casimiro, T.M.; Borges, M.O. Life on Board Portuguese Ships in the 16th–18th Centuries: Theorizing Households through History and Archaeology. *Heritage* **2023**, *6*, 2020–2037. https://doi.org/10.3390/heritage6020109

Academic Editor: Francesco Soldovieri

Received: 25 December 2022
Revised: 3 February 2023
Accepted: 12 February 2023
Published: 15 February 2023

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1. Introduction

The period from the 15th to the 18th century was one of the busiest in terms of global navigation for Portuguese ships. Archaeological and historical evidence is typically used to articulate parts of these endeavors, often involving tales of magnificent discoveries or economic success, or describing the technical aspects of the vessels. But what about the people, animals, and even things sailing on board these ships? Not only the captains or the nobles—whose names and families we encounter in records—but also those who are rarely named, their things, and the animals on board: all the biological, cultural, material, and social lives on board. This discussion "with no names" therefore became a maritime archaeological tool used to challenge the grand narratives of kings and nobility, in order to write the history of "ordinary people" [1] (p. 46). How did they relate to each other and the confined environment of the ship? How did they endure their days inside a small space which could, in some rare cases, not stop on land for over a year until reaching their destination?

This paper is based on two different yet complementary sources of information—historical documents and archaeology—and aims to debate how everyday life on board can be analyzed, not only based on historical accounts and archaeological evidence (the former being more frequent than the latter, we must admit), but also considering how these debates can be framed using the theoretical concept of household archaeology.

Several dozen known Portuguese shipwrecks are scattered across the world, some of which have been subject to more archaeological investigation than others. Most of the time, archaeologists have tended to be concerned only with the technical aspects of these ships, thus, we know a lot about wood and shipbuilding techniques, and sometimes even the cargo, but less about the life and activities on board. As for historical documents, their information is more abundant, although not always useful for studying all aspects of life on board. Cargo inventories and port records can tell us what ships carried, rare passenger lists

can indicate the demographic composition, and sometimes we are lucky to find instances of someone who wrote about his (unfortunately never her) personal experience on board.

This paper is about Portuguese ships. We could have chosen any other nationality, but our background as researchers based in Portugal has made us more knowledgeable about the historical and archaeological evidence produced and excavated in this country. For the purpose of this paper, a Portuguese ship is a vessel that sailed under that designation, independently from where it was constructed. Sara Rich recently posed a similar question, asking, what is an Iberian ship? Is it related to the place where it was built? Is it the nationality of the people who command it? Is it its port of origin? Is it the origin of its building materials? This author suggests the use of an object-oriented nautical archaeology and concludes that maybe ships are autonomous, and we do not gain anything by giving them a specific nationality [2]. However, even if we sympathize with the idea that attributing a static identity to a ship may bias its interpretation, in this paper, we used only information retrieved from Portuguese archives and excavations from ships said to be Portuguese or that had Portuguese people on board. We feel that not specifying that this was about life on board Portuguese ships could generalize the behaviors specific to the ships that had a close relation to this country. This does not mean that the paper will not include information provided by ships from other nationalities, especially Spanish, but it will at least consider the ships that passed through Portuguese ports before they sank, and those which transported either Portuguese people or goods.

From a simple barrel that kept water to symbols of religious faith, the available archaeological information was obtained from several Portuguese wrecks around the world which sailed different routes. Although many other wrecks exist that can be considered Portuguese, we have decided to use evidence only from those whose origin and affiliation we are sure of. These include the Esmeralda (1503), a wreck off the coast of Oman [3]; the Bom Jesus (1533), a wreck off the coast of Namibia [4,5]; the Spanish Armada wrecks (1588), some of them originating from Lisbon [6]; the San Giacomo di Galicia, wrecked in Ribadeo Bay (1597) [7]; the Nossa Senhora dos Mártires (1606), wrecked in the River Tagus [8–10]; the Nossa Senhora do Rosário (1619), wrecked in the Azores [11]; the Sacramento (1668) [12], wrecked off the coast of Bahia in Brazil; and the Santo António de Tanná (1696) [13,14], wrecked in modern Kenya in front of Fort Jesus. There are many more Portuguese wrecks around the world (some which have been investigated archaeologically) whose names we do not know, such as the Nogmeni wreck in Kenya [15] or the Seychelles wreck [16], among others. Some of these ships were on their outbound journey, while others were returning home from the Indian and Atlantic Oceans.

Some scholars have already written about life on board Iberian ships, and in particular, there is plenty of Spanish [17] and Portuguese [18–20] scholarship describing life on board. This research is very useful, and makes use of theoretical approaches to historical narratives, but except for some work in Northern Europe [21], it seldom engages with archaeological evidence and theory, which can inform different and innovative narratives. We decided to address this lacuna by combining the knowledge of the two different areas.

The subject of life on board has also been approached by scholars of other nationalities, with the use of archaeological and historical records, and when well-preserved vessels are found, the daily lives aboard are easier to reconstruct. This is the case with the English scholarship on the Mary Rose [22] or Swedish scholarship on the Vasa [23], and other Nordic wrecks [1].

We are not interested specifically in examining the navigation, military capability or commercial cargo of ships, although these can provide very interesting results, especially because people lived inside these vessels and interacted with all the activities and the things related to these activities. Instead, we are interested in the relations that people had with their immediate environment, provisions, food, and the other living beings onboard. Similarly, it is not our intention to describe the routes that these ships sailed, though the time they took to reach their destination/s significantly influenced these aforementioned relations on board, and necessarily impacted the theoretical reading that we want to develop

in this paper, where a ship can be seen as a mobile and liminal household. Different destinations entailed varied journey times in the early 16th century: reaching northern African settlements could take just a few weeks, crossing the Atlantic two or three months, and reaching India could take more than a year, particularly when stopping along the way. During this time, different agents on board, both human and non-human, engaged in relations and created bonds that would, most of the time, replicate the behaviors of their domestic way of life. As we will see, for example, they cooked in the same way, ate in the same way, and drank from the same cups. Although they had to adapt to the narrow space, some behaviors were transported with them during the period they lived on board. The time a journey lasted depended on many factors—for instance, a typical (inbound or outbound) journey to India never took less than five to seven months and could take longer, especially when the ships were forced to make stops. In describing the departure of a ship to India in 1590, Pero Roiz Soares mentions that it took eighteen months to reach its destination, mostly owing to navigational problems, and by the time it arrived, most of the people on board had perished [24]. On the other hand, contrasting circumstances were also possible, although less frequent. The São Pantaleão left the Tagus River on the 17 April 1592 for India and reached Cochin on the 26 October of the same year; it departed for Portugal on the 17th January 1593 and reached the Azores Islands in August of the same year. From the Azores to Lisbon, guided by a defensive armada, it was caught in a storm and had to sail north, anchoring near Vigo. Although the journey to and from India was made in remarkable time, it only returned to Lisbon in February 1594, almost two years after its initial departure [25] (p. 49); [26] (pp. 116, 132, 206–207).

A lot of consideration was given to what kind of theoretical approach should be pursued in this paper. Maritime archaeology generally has not pursued theoretically informed debates, although some recent approaches show an increasing interest in theory-oriented topics [1,27]. Considering that the purpose of this paper is studying life on board—the way people endured every day, what they cooked and ate, how they slept, prayed, and spent their time—we have decided to consider the ship within the theoretical frame of household archaeology. We are aware that this is a bold attempt, especially since the concept of a household, although not confined to a physical building, focuses on the importance and characterizing dynamics of the relations generated by people, artifacts, architecture, and animals. However, it is never considered that a household can also be a movable site. The definition of a household is a complex one, as different types of activities are shared in a conventional, built environment in which people actually dwell. If we consider any "household" as the most common social component of subsistence, and the smallest and most abundant activity group, then a household can be composed of three elements: (1) social: the demographic unit, including the number and relationships of the members; (2) material: the dwelling, activity areas, and its possessions; and (3) behavioral: "the activities it performs" [28] (p. 618). In these terms a ship can, in fact, be interpreted as a household.

A household is much more than a demarcated environment or a single family (indeed, it can be composed of several families), often encompassing one or more houses or places where people have lived, and it is so much more than a domestic place. It is mostly characterized by the relationships that exist between all human and non-human agents in a particular space and environment [29] (p. 47), and the "sites of conflict and struggle, emphasizing class, ethnicity, race or gender" [30] (p. 99), this position being born from a Marxist reaction and the development of social archaeology [31]. Therefore, even if a Marxist approach is not always clearly defended by the authors, we would argue that this is one way in which a ship and the relations within it can be characterized. Although we do not believe that ships are solely households—they also functioned as warehouses, military compounds, and commercial venues, among many other things—the relations which occurred inside them nevertheless have a lot in common with those of terrestrial households. If we consider the social relations within the ships as similar, in principle, to household social relations, we are on track to answering some of the questions that are commonly considered in archaeological research, relating to economic organization, social complexity, power relations,

identities, ideologies, and the study of conflict [32] (p. 272). Maybe, more than a household, a ship can be considered a group or conglomerate of households, where people originating from different social, cultural, and domestic environments were confined to a small space, and needed to learn how to share it and manage their relations in a continuous effort to maintain order and even survive [30] (p. 299). However, “the human mind always has a kind of spatial consciousness” [1] (p. 57), and people would learn how to deal with the spatial scarcity. This is the way in which we will note the many domestic behaviors, usually associated with household relations, inside a ship. Thus, while a ship could never be considered a traditional household, the various types of relations which exist within households were arguably also present on board ships. Accordingly, for several months at a time, different labor and domestic activities took place on ships in order “to meet the productive, distributive, and reproductive needs of its members”, by many of, if not all, the people on board [28] (p. 618).

2. The People

To begin with, life on board Early Modern Portuguese ships, especially those sailing to India and Brazil, was crowded, as it was on ships from other places. We cannot make statements about the exact numbers of people who sailed on these ships, as this, of course, varied according to the size of a particular ship and its destination. What we can say is that these people were either part of the crew or were simply passengers, and that the majority were men. The numbers, although their accuracy should be treated with caution, seem to have varied from 200 to 600 or more, which would have generated many different types of relations. In addition, if one ship in a convoy was wrecked, the survivors had to be distributed among the remainder [20,33].

The number and types of crew members on each ship varied significantly (e.g., the captain, administrators, sailors, technical support, physicians, and military personnel, among others). While in the early 16th century the crew was around 100 people, a century later, due mostly to the increase in ship size, it grew to around 200. Generally speaking, the average number was around 120 to 150 people, with the former figure typical for a 600-ton ship [34] (pp. 142–143); [19] (pp. 1004–1005). The crew members who were always on board included the captain, master, pilot, boatswain, second pilot, guardian, priest, clerk, overseer, windlass man, carpenters, caulker, alcaide, sailors, pajens, cabin boys, a constable, bombardier, steward, cooper, apothecary, barber, and often a physician (some of these occupations were exclusive to Portuguese ships and difficult to translate into English, or to find equivalents in other contemporary navies). These people were responsible for the ship in terms of its sailing, warfare, and maintenance. The latter was a particular constant, and during long voyages the ships needed continuous technical and structural upkeep, owing to the damage from storms, reefs, or even shipworms, a type of marine bivalve mollusk inhabiting the Atlantic and Indian Oceans which affected the ship’s hulls a great deal. When Vasco da Gama’s armada returned to Portugal in 1503, the ships were in very bad condition, owing to teredo worms; despite the people on board being tasked with removing them, there were no materials for caulking the hull, and it had to be made with straw while the armada was stationed in Mozambique [35] (p. 209).

These different activities and occupations arguably left different traces in the archaeological records. The captain was possibly the only person on the majority of ships who could have ceramic wares at the table, and this was the interpretation given for a large number of Portuguese tin-glazed ware plates with the coat of arms of the Silva family from the wreck of the Galeão Sacramento (1668) (Figure 1), denoting the captain’s name, Francisco Silva [12]. Other people had specific occupations which were accompanied by an appropriate material culture; thus, on a war vessel, military personnel had access to weapons and gunpowder, and carpenters to tools, etc. Although we cannot always recognize such artifacts and attributes of specific individuals or groups, certain identities related to these onboard functions/roles were present.

Figure 1. Plate with the Silva Family coat of arms found in the Sacramento wreck (photo by B. Bandeira).

If the crew members had specific jobs and activities, the same cannot be said about the passengers. In contrast, they were merely traveling, but nevertheless had an important impact on everyday life on board and were a fundamental part of the relations that existed. Passengers would pay to have a specific amount of space where they could keep their things and lay their beds. While some traveled alone, others were with their family, and even servants and slaves. The presence of women, although not in great numbers, was commonplace, and was not always something that men on board viewed favorably. Nobles, captains, or other high-ranking individuals could take their wives; female orphans sponsored by the king and destined to be wed in India traveled under the protection of high-ranking officials, and unsurprisingly, some women traveled illegally.

On board, women also had a respectively different status, although some of them tried to change this. There are some references to their occupation as sellers, washers, the wives of soldiers, captains, or governors, orphans, adventurers, prostitutes, or even criminals. All of these women were fundamental to the holistic maritime endeavor and in the Portuguese colonization of Asia, Africa, and even South America [36] (pp. 193–195, 205–256); [37] (pp. 200–214). However, their presence on board was always perceived somewhat negatively, since it was believed that, in relation to an almost exclusively male crew, it could generate significant problems and even cause shipwrecks. Unmarried women not traveling under anyone's protection aroused the highest suspicion. Criticisms originated mostly from the religious men on board, and even after the ships sailed from Lisbon, there were frequent searches on board trying to find possible stowaways. According to the Church, when these women were not part of accepted family structures, they would be liable to consorting with married men and destroying families, especially after arriving at their destinations [38] (pp. 206–208).

The records of the several ships which sailed in the Indian armada in 1562 reported that several women and slaves were caught on board as stowaways. The leading ship was the São Martinho, upon which the men were compelled to tell the captain and the priest where the women were hidden; those who did not do so would be severely punished [39] (Vol. V, p. 544). This episode also revealed the presence of slaves, and one woman dressed as a man. The latter claimed that she was married to one of the men on board, who confirmed her assertion. In her defense, she claimed that she was dressed as a man because

she had no permit from the Queen to travel to India. Later, it was discovered that her testimony was false and that she was, in fact, unmarried. This led to her being imprisoned in a room especially built for her arrest, together with another woman the captain and the priest suspected to be unmarried. They traveled together for several days, but had to be separated because they had started to fight each other, most likely due to sharing a very small space, which was described as something with a door and an opening to the sea through which one could fit a regular barrel ("não tinham mais [do que uma] porta que quanto lhe cabia um barril de regra, e uma fresta [com vista] para o mar") [39] (Vol. V, p. 544).

It is difficult to determine how these women felt towards the power that men and other women had over them. Boarding a ship must have been a tremendous decision, easier as a wife or when under someone's protection, and difficult or even irrational when alone. However, the idea that somewhere on the other side of the ocean was a land, either Brazil or India, where fortune could be made, was sufficient motivation for these women to illegally board ships to these destinations. Although our knowledge about these women on board is scarce, they played fundamental roles if we consider the ship as a household. They perhaps did not perform the traditional domestic chores that some of them performed on land, but they were the guarantee that a domestic system of values was perpetuated on board, as well as in their new homes.

Detailed information about the slaves aboard ships is somewhat rare, though we have knowledge of the existence of hundreds of enslaved persons. They could have been traveling with their owners, as cargo acquired on the African coast, or as forced workers for the most difficult tasks on board. For example, on the journey to India, most slaves traveled on the inbound leg and worked the water pumps to prevent the hull from flooding, or carried out other heavy tasks [20]; [33] (pp. 194–195); [40] (pp. 21–36). However, this is not a so well-developed subject in the study of the lives on board ships.

The provenance of the slaves was quite diverse, and we know they originated from Mozambique Island, São Lourenço Island, Angola, Cape Verde, India, China, and Japan, among other places. Although most of the slaves traveling on board had owners, some had been acquired during the journey and were sold upon arrival at different destinations. Many of these slaves were sold in the Azores (where the ships coming from India typically stopped) or in Lisbon, although some may also have been sold at Cascais or Sintra. Portugal, Seville, Valencia, Cadiz, and Galicia in Spain, and even Brazil, had slave markets where slaves on board could be sold, especially since the ships typically stopped at these destinations. Unsold slaves continued to serve on board and remained a part of the navigation system. In some cases, they were not sold, but offered to important people as gifts [39] (pp. 24–36).

Sometimes, the death of crew members motivated the acquisition of slaves in places such as Mozambique, Angola, or Cape Verde. From the early years of Portuguese navigation, slaves were considered fundamental assets on board, owing to a lack of men to constitute a crew and the fact that many of them died during journeys. The Crown tried to limit the number of slaves working on board, owing to commercial, economic, and even abuse issues; however, the enforcement of the rules was not very successful. In 1587, when the Relíquias was wrecked off the Goa coast, everyone survived except for the slaves, all of whom drowned because they were chained to prevent escape [40] (p. 295).

In 1712, the king's officials in Casa da Índia recognized that, if not for the elevated number of slaves on board ships, most vessels would never have reached Portugal, although this never impacted the way they were treated or their legal status [33] (pp. 194–195); [41] (p. 215); [42] (p. 144).

There are some references to children on board ships; however, it is difficult to conclude at what age someone would be considered a child at that time. One of the most important references describes a very small child (perhaps aged four or five) found dead and covered with lice [43] (p. 302). The individuals we would consider to be a child nowadays, at just over seven years old, were common on board. Cabin boys were usually between 8 and

14 years old, and the crew could have as many as 70. In addition, the sons and daughters of important passengers would travel on the ships, as well as male and female orphans who were being taken to India. Young children without guardians were victims to all kinds of abuse, including sexual. With no one to look after them, the long months at sea made them the most vulnerable targets. The problem became such that in 1620, the Crown was warned that many of the boys who left Lisbon on ships to India were sexually abused by soldiers, and that the king should charge the viceroy with investigating and punishing the perpetrators. These children were not only sexually abused, but were also forced to serve different men in all kinds of hard labor, and their service among the men on board created numerous problematic situations [18]; [44] (51-VI-54).

While the written evidence about agents such as women, slaves, and children permits us to reconstruct some narratives to a certain extent, archaeological evidence is more complicated to access. Archaeology has a tremendous difficulty in identifying some aspects of the past, such as the different genders or ethnic backgrounds on board ships, especially when minorities comprised a small percentage of the population onboard. Female objects are normally rare in shipwrecks, and except for some jewelry found in the excavation of the Bom Jesus (1533) [4] and the São Bento wreck off the coast of South Africa [45], it is difficult to connect any other material evidence to women specifically. The same can be said about slaves. While the cargo destined to be used in their acquisition, such as beads and brass manillas, has been found in Portuguese wrecks (such as at the Cape Verdian wreck Ponta do Leme Velho [46]), these cannot be connected specifically to their activities on board. As for children, artifacts identified as toys are seldom found in wrecks. The fragments of two ceramic water whistles shaped like horses—regularly identified as toys—were found on board the Bom Jesus wreck (Figure 2) [47].

Figure 2. Fragment of a whistle found in the Bom Jesus (1533) (photo by M. Aleluia).

The capacity of a ship was generally reduced, owing to the presence of goods intended to be sold at their final destination and the provisions necessary to feed people. The people themselves were therefore confined to small spaces, at least in the first months, since the boxes and casks were dismantled as the ship became emptier at each stop and the space would increase. Even nobles and their servants and families had to share the space with lower-class people, something that happened infrequently on land. This did not mean that inequality based on social and wealth differentiation was not present on board; quite the contrary, in fact, and unequal power relations were as real among the passengers as the formal hierarchies on board, something that can be observed in any household.

3. Food and Drink

The high number of people on board made access to food and water one of the major concerns. The ships stopped on their way to India, and although we know they called at places such as Mozambique, everything had to be carefully rationed to avoid starvation. Despite these efforts, starvation was indeed frequent [25] (pp. 8, 12–14); [48] (pp. 282–283); [49] (p. 150). The concern with provisions always started at the departure point. The food needed for the journey was only provided for the crew; thus, every passenger had to guarantee that they had enough of their own food and water until they reached their destination. This did not happen most of the time, and starvation was one consequence of the economic disparity among passengers, as will be discussed more below.

There are some surviving lists of the goods the ships in the armadas took on board, and water was one resource with significant priority. Much of it was stored in barrels, but there are also references to loca de agua (water pottery) and the use of Chinese pots known as martaban [3,16]. These are among the most frequent finds in wrecks, revealing the importance of water storage and rationing (Figure 3).

Figure 3. Water cup found on the Esmeralda (1503) (photo by T. Casimiro).

Water needed to be stored in enough quantity to last for six or seven months; however, this was never the case, either because the voyage lasted longer than projected, or because the amount of water stored upon departure was not sufficient to begin with. Accordingly, there are several written records of complaints referring to this, and the consumption of urine is referenced several times, although usually in association with infirmity [38] (p. 604). Captains were among those most frequently responsible for the water shortages, since they used the space meant for water for their own commodities and merchandise to sell in India and on the east African coast. We can add to this self-interested behavior the fact that many captains would even appropriate food and water from passengers along the way. This would lead to passenger starvation and all types of infirmity and disease, even resulting in death [50] (pp. 449–450).

Lopo de Azevedo, who sailed aboard the Santiago to India, wrote a letter to King João III in December 1527, in which he documented at length the consequences of insufficient water cargo. Upon leaving Cochin, de Azevedo states that the cause of death of so many people on the Santiago was related to the absence of water. He describes the reason as a corrupt scheme between the people in Guinean and Indian warehouses and the ship masters: namely, that the guards and the people responsible for storing the water on the ships would sell the space for wine barrels instead, with the captain's consent, resulting in the water shortage. There is a further document directly criticizing the captains of the São Roque and Flor de la Mar, and in particular Cristovão de Mendonça, the captain of the Santiago. According to the latter's defense of his position, the high rate of mortality on

board his ship was not related to the lack of water, but to the lack of mezinhas (remedies to cure the sick), which were insufficient [51] (p. 564). A lower number of supplies than expected (owing to errors in calculating and obtaining the amounts needed, or theft at the port of origin), or the spoiling of the provisions faster than expected (since sometimes the food came on board already in bad condition), were the major issues and sources of complaints. When lacking food, people would boil leather and shoe soles, eat sawdust, paper, and even, in one case, nautical charts [20].

On some exceptional occasions, water could be used as a reward. This was the case in 1567 on the Reis Magos, regarding a record of more than 40 young males (although no age or role on board is mentioned) learning their prayers and the Christian tales. The ones who knew how to answer the priest's questions on the tenets of faith, recite all the Ten Commandments, the Pater Noster, Ave Maria, Credo, and Salve Regina, could drink a cup of water, which would probably hang on deck close to a water barrel since it was specifically placed for the elected recipient to drink from [38] (p. 364). Water cups have been found in every known Portuguese shipwreck, even ships that passed via Portugal, and were the most common vessels for consuming water between the 15th and the 19th centuries [52,53]. No Portuguese ship prior to the 15th century has ever been excavated, and thus it is not possible to say what kind of vessels were used to consume water, but wooden vessels would have been the most logical items considering their widespread use on land. Knowledge about these objects permits us to say, with a fair amount of certainty, that in the circumstance described above, in the event of knowing all the prayers, one would drink approximately 160 mL of water, a half quartilho, which was a general measure used in Portugal at the time.

Potable water could not be expended on other activities, and thus washing one's body was only possible with seawater, except for officers or high-ranking people such as viceroys, captains, missionaries, other religious men, and nobles [54] (pp. 255–256).

Wine was supposedly kept inside barrels, but documents also mention dedicated wine jars, a type of vessel that was found onboard the San Giacomo di Galicia (1597) wreck [7]. Regarding food, hardtack was unsurprisingly on every menu, since it could be stored for months. Fish and meat were transported either dried or salted in barrels. To remove the salt, the food was tied to a rope and submerged over the side of the ship, and was sometimes eaten by sharks [55]. There is also a mention of live animals being transported on board, especially chickens, goats, pigs, and even horses, and fresh fish could be caught when the weather allowed. In 1600, the São Simão even carried a live elephant on board, although we have no idea for what purpose. Supporting the animal must have been an arduous task, and during one of the storms it became particularly terrified and made much noise [56] (p. 362).

Fruit was dried, and turned into marmalade or kept in vinegar, which meant that people would eat something similar to pickles for long periods. Honey, cheese, butter, and maybe olive oil, were additional foodstuffs. Fresh food in particular decayed quite fast, and except for dried fruit, onions, and garlic, it was very hard for the crew and passengers to obtain vitamins. The poor condition of the food and the shortages of water are mentioned frequently in descriptions of the daily life on board, and several complaints are voiced concerning provisions. Archaeological evidence of food on board ships is frequent, although this study is yet to be fully developed. Animal bones have been found on almost every shipwreck [57], and fruit stones/pips, olives, and some cereals have also been recorded [12], although we are still missing archaeobotanical studies. Fruit and vegetables traveled inside ceramic vessels such as the so-called olive jars, which transported more than olives [12]. During the first explorations of the São Pedro and the Esmeralda, wrecked off the coast of Oman in 1503, a document narrating the episode mentions pots full of cereals and rice kept onboard. These vessels were identified on board [3].

The space was limited and the intention to acquire exotic commodities resulted in most of it being filled with other goods intended to be sold in the East. These were sometimes enrolled in the cargo records, or were found archaeologically. This is the case for the poorly

studied wrecks found off the Namibian coast, identified as the possible Bom Jesus (1533), and off the coat of Bahia, the galleon the Sacramento (1668) [4,12]. On board the former, not only were a large amount of gold coins destined to buy goods found, but also crates of guns, swords, and copper ingots to be sold in India. The Brazilian market typically demanded ceramics and weapons, which comprised the most frequent finds on board the presumed Sacramento. On return voyages, the documentation often states that every little corner of a ship was packed with goods to be sold in Europe; food and water were not prioritized, especially when the ships could make stops to refill, but as we have noted, such journeys were not straightforward, and any delay could cause severe problems for food and water supplies.

Hunger often led to serious desperation, as mentions of anthropophagic behavior can be found in the chronicles. For example, in 1554, the survivors of the São Bento wreck, wrecked off the east coast of Africa, were already on land when they were forced to eat people from the area where they wrecked to survive [58] (p. 120). It must have been a traumatic episode, since in 1635, many decades later, the inhabitants of that same region demonstrated a terrible fear of being eaten by the survivors of the Nossa Senhora de Belém wreck [55] (p. 579–580). This insecurity and the fear of being eaten was widespread, and was also manifested by Portuguese survivors, especially when the wrecks occurred on the eastern shores of Africa or in Brazil [35] (pp. 220–221; [38] (p. 37), which demonstrated that these sailors may have considered some African populations—from where some enslaved people originated from—almost as less human. Pyrard de Laval, a French crewman of the Nossa Senhora de Jesus, in describing the journey back from India in 1610, also wrote of his fear of being eaten by the natives in the case of a shipwreck [34] (p. 214). Eating other human beings to survive must have been the last option, and we do not believe that this was taken without a terrible feeling of guilt, although, since we do not have any written information except manifestations of fear from both Europeans and Africans, we can only state that any community would first attack people outside of their group before thinking of consuming the human flesh of their own kin.

Food was frequently eaten raw. Although this was supposed to happen only when a storm or bad water did not allow for fires to be lit, the few stoves on board were the only source of fire, and sometimes the long lines at mealtimes led people to give up on cooking. The use of fire on ships was a very serious issue, and there were people specifically responsible for its management. Stoves were used in turn and each person, or their servants or slaves, cooked their own food. The 'stove' itself was nothing more than a wooden box full of sand where a fire would be made, located below deck until the late 16th century and on the upper deck after the 17th century [54]; [59] (p. 134). Therefore, during high seas, which could last for days, food could not be cooked. The majority of cooking vessels were made either from cast iron or a copper alloy to mitigate vessel breakage. Several such examples were found on the Nossa Senhora dos Mártires and the Bom Jesus (Figure 4) [4,8].

Figure 4. Cooking pot found on the Nossa Senhora dos Mártires (1606) Ø approx. 30 cm (Courtesy F. Castro).

Nevertheless, in some cases, ceramic cooking pots were still used, with the particular examples found showing soot marks indicating that they were used to cook food, most likely not by the crew but by the passengers. A metal cooking pot was an expensive item, while ceramic ones cost about five reais each [60]. Food was consumed either from pewter plates and bowls, wooden vessels, or ceramic recipients (Figure 5). While wooden objects (louca de pau) were made locally, and were reliable, cheaper objects, pewter, copper, and brass objects were mostly imported from Northern Europe, and were rather expensive, but preferable because of their sturdiness. There is no evidence that meals were made in groups or separately.

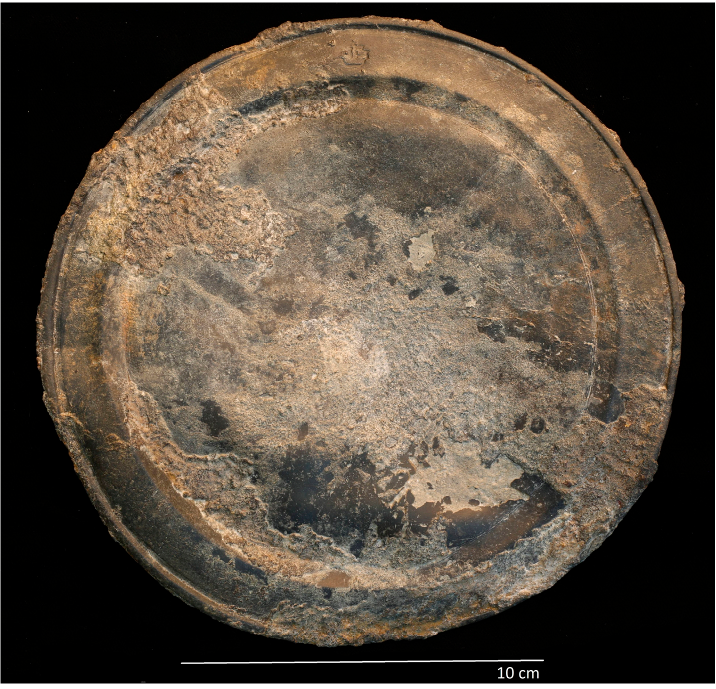

Figure 5. Pewter plate found on the Esmeralda (1503) (photo by D. Mearns).

Spoons were also manufactured from metal and wood, and the different types are revealing of the socio-economic status of their owners (Figure 6). This social distinction is also manifested through other objects such as knives, which were differently valued according to the material their handles were made of, such as gold, bone, ivory, copper, and wood [3].

Figure 6. Copper alloy spoons found on the Esmeralda (1503) (photo by T. Casimiro).

As noted above, while this did not apply to the crew, each passenger had to secure the means for his/her own survival during travel. This means that the containers and vessels for storing, cooking, and eating from had different origins, which explains the diversity of the things found and recovered during archaeological excavations, and justifies the mixture of ceramic, pewter, and wine vessels. When a large number of objects conform to the same typology, they most likely belonged to the cargo and not the crew or passengers [61,62].

4. Disease and Plague

The scarcity of food, the amount of garbage, and the shortage of potable water created ideal conditions for the incubation of diseases, and during a journey, more than half the people on board commonly showed signs of illness, ultimately leading to a high mortality rate. A large proportion of health problems were not contagious, although they affected a large percentage of the on board population, such as scurvy. On the Indian route, people commonly showed signs of gum decay by the time the ships reached the Guinea area. The medical treatments were what we would consider today to be rough and utilitarian—pertinent descriptions mention that scurvy was treated either by using hot pokers to burn the rotten gum flesh, or literally cutting out the gums from the mouth [35] (pp. 777–778); [50] (p. 52). Syphilis was treated with mercury injections, and indeed syringes are a frequent find in the archaeological records of several ships [4] (Figure 7). Bleeding was the most common general treatment for ailments, and although documents attest to this practice, it is very difficult to connect specific artifacts to this activity. The knives used to cut or the bowls to collect the blood probably also had other functions, and were not used exclusively for medical treatment.

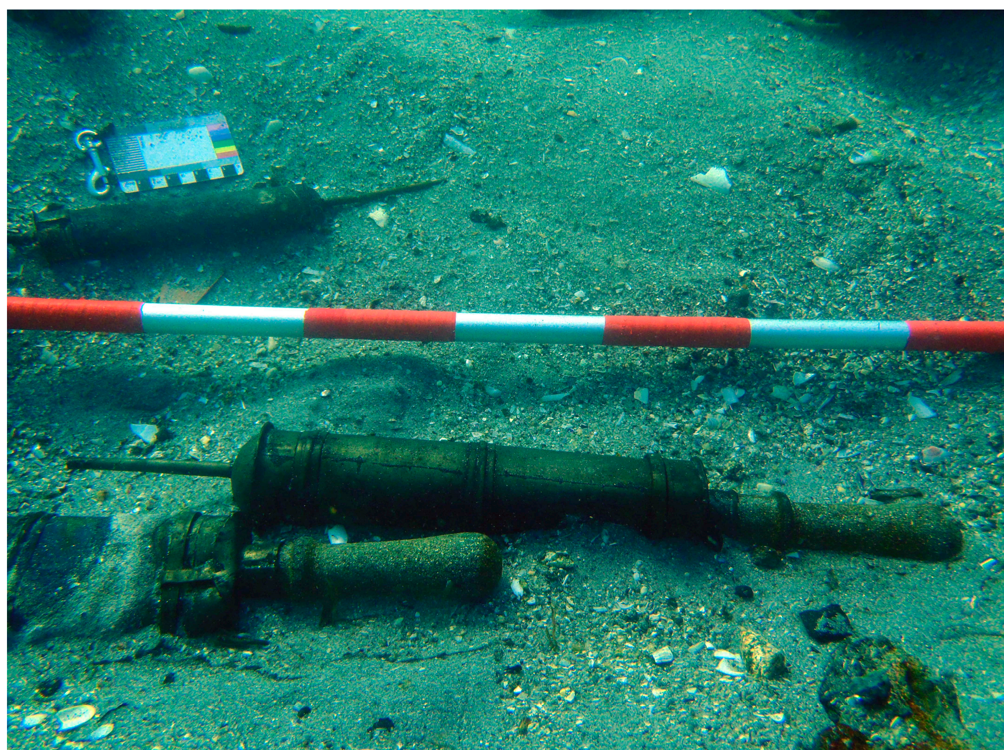

Figure 7. Syringes found on the Finisterre wrecks (photo by Miguel San Claudio).

Some contagious diseases had an increased risk of spreading through the large number of animals that shared the space with people, such as rats, fleas, lice, and thousands of cockroaches, which wandered freely through the nooks and crannies of ships. Animal infestation was on every ship. The aforementioned Pyrard de Laval has given a very interesting description of the plague on board the Nossa Senhora de Jesus, and mentions a certain animal with the appearance of a large beetle that dwelt in large quantities on the ships and tormented everyone, and that when he killed them with his hand, they emitted a foul odor. De Laval speaks of the ship being fully infested, noting that the beetles destroyed every box, cask, and even the wooden vessels, spoiling the water and wine. The beetles also ate and destroyed the hardtack [34]. It is not surprising, therefore, that the remains of these insects have been found archaeologically. As for lice, we cited a record above which mentions a dead child found on the deck of one ship that was covered with them. The hundreds of fine combs found at every shipwreck site reveal that the activity of controlling such infestations would have occupied a large portion of the day (Figure 8).

Figure 8. Cockroach remains and rat bones found on the Angra D shipwreck (photo by A. Monteiro).

Even the most basic physiological necessities could spark disease outbreaks. Imposed moral propriety, especially on the passengers, if not so much the crew, meant that these

actions could not occur in open spaces, and people had to hide below deck, most of them not even using chamber pots. The use of such spaces as 'toilets' could last for over a year in certain cases, and the smell can only be imagined, especially when the weather was hot and humid [50] (p. 441); [63] (pp. 13, 16, 24, 68, 77). A few objects recognized as chamber pots were found on board some ships, and nobles would have had servants that could empty and wash them with seawater, although we cannot be completely certain if these pots were used for that purpose [15,16]. They are mentioned in a document from 1552, when the priest António de Herédia attended to the sick and stated that they used these pots for some of their needs [64] (p. 414). An additional record from three years later, concerning the Santa Marta, notes the priest saying that he collected the pots of the sick [38] (p. 398).

5. Passing the Time

The hardships of life at sea such as those outlined so far made religion one of the few comforts for people, praying that everything would resolve itself during those long months, but also working as a way to control life on board; this also happened on ships from other countries [65] (p. 145). The days passed slowly, and time was usually marked by the number of prayer services. Men of the church were always on board and would have been responsible for maintaining these practices. Incredibly enough, religious processions also took place on board, particularly during traditional feast days, as described by the captain of the São Boaventura in 1554. Priests and other singers would sing in imposing voices, and all walked on the main deck in a specific order, with the viceroy at the rear. On the forecastle deck, an altar was set up, before which everyone would get on their knees, asking God for mercy and commemorating the Virgin Mary. From there, they would go to the quarterdeck, singing or saying prayers to the accompaniment of trumpets and flutes, resembling a Corpus Christi procession [38] (p. 109). The materiality of religion was very straightforward and idiosyncratic: either small crucifixes, usually made of brass, or rosaries. In very particular cases, there are references to relics and boxes transporting the body parts of saints, although these have not been recovered in any archaeological work.

Music was also a part of people's daily life on ships. Although musical instruments are seldom found and could only be identified in the Bom Jesus wreck, texts frequently indicate that singing and the playing of instruments were daily activities. Other activities are only known from the texts, such as theater, especially in instances where theater companies themselves traveled on board ships [66].

Time passed slowly. People played music, prayed, or engaged in any other activities that made time pass and life easier. Smoking was a common activity, especially in the 18th century, with many pipes being found on Portuguese wrecks, but this was not enough to entertain for long months [12]. Another frequent entertainment activity was what sailors called bullfights, but involving sharks. Every time a shark was captured it was much more than a food resource—the animal was also used as entertainment. Once fished, their eyes were removed, and the blind, suffering animal would jump onto the deck for the sailors to pretend they were fighting it, made more dangerous by the fact that sharks have razor-sharp teeth [55] (p. 151–152). Sometimes, they were fished and tied to empty barrels before being thrown again into the water, unable to submerge and dying in slow agony, something considered as revenge for when they "stole" the food tied to the ship [55,67].

6. Conclusions

The narratives above are just a small portion of what constituted the activities and daily life practices that the people on board Portuguese ships in the Early Modern Age engaged in when sailing across the globe. When examining them centuries later, we cannot help but imagine how difficult their lives must have been during those long months on board. Every journey was difficult, although traveling to and from India was the ultimate challenge, given the long months during which hundreds of people had to share a small space in the middle of the sea. Writing about the past is writing about relations, and when

combining historical and archaeological information, those relations reveal information that could not be provided by one source alone.

Life on ships was difficult, to say the least. The crowding, starvation, thirst, and illness made fighting amongst people commonplace, and sources detailing quarrels are frequent, not unlike a typical household. The activities that were developed on board reveal a continuity of social and cultural relations. People lived and died on board ships and shared their lives with others. The ship was a place of struggle, owing to the asymmetrical power relations between different classes, genders, ethnicities, and identities. Nevertheless, in working and living for several months at a time, people sought to develop productive, commercial, and social activities and relations. This is why we consider the ship to have similar dynamics to a household, since it carried not only one, but many different families with a common objective—reaching their particular destination. They all worked towards that purpose, and despite the disparities in and even abuses of power, we could consider it cooperative to some degree, in which people worked together towards this main objective.

A household can be seen as a "context in which a humanized reconstruction of the past may be nurtured, through the study of intra-settlement relations". Such an investigation involves a type of historical and archaeological recording that permits the analysis of every agent microscale in a space broad enough to include the architectural and other features of the built environment [31] (p. 6295). While traditionally we consider a household a static place where relations occur, seeing a ship as a movable household will permit us to observe the small- and large-scale relations that are usually neglected, since the ship is not usually considered a place where familiar relations occur, even though, in some cases, these people could share effective and dependent bonds for several months in a row.

These household relations and behaviors also accompanied people to the new territories where they would settle, and thus, households showed a degree of mobility in their travel and reinstatement in other places. Seeing a ship and its different ontological relations as a household does not negate all the other things a ship is—a military fortress, an embassy, and a commercial vessel—but rather it helps to study relations from the perspective of daily life dynamics, in which some people had more power than others. Captains had power over everyone among the crew, men had power over women, free men had power over slaves, and older people had power over the young. As a result of these dynamics, a ship was also a relational space where different power relations characterized everyday life through their ongoing emergence and subversion. But what do we gain from reanalyzing the information about ships and the people traveling on them in this way? What changes when we see a ship as a household? By reframing our research questions and methods in light of this theoretical framework, we can see the relations on a ship with a different and new perspective, where the commercial and military activities are not necessarily the focal point, but rather the ways in which people interacted with the space, things, and other people in it. These practices involving daily life dynamics, and even survival, are fundamental to understanding how people lived and dwelt in these confined spaces for extended periods of time. Subjects such as inequality, labor, and gender, among others, are observed at the microscale, where each individual has a specific narrative to tell, but also on a macroscale, where all individuals are part of one household or a group of households coexisting in the same space, which, in the case of a ship, although limited in size, had numerous relations.

Author Contributions: Conceptualization, T.M.C. and M.O.B.; methodology, T.M.C. and M.O.B.; validation, T.M.C. and M.O.B.; formal analysis, T.M.C. and M.O.B.; investigation, T.M.C. and M.O.B.; resources, T.M.C. and M.O.B.; data curation, T.M.C. and M.O.B.; writing—original draft preparation, T.M.C. and M.O.B.; writing—review and editing, T.M.C. and M.O.B.; supervision, T.M.C. and M.O.B.; project administration, T.M.C. and M.O.B.; All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Acknowledgments: The authors would like to thank Alexandre Monteiro, Miguel Aleluia, Filipe Castro, Beatriz Bandeira, Miguel San Claudio Santa Cruz, and David Mearns for the permission to use their photos. Tânia Casimiro is funded by FCT by the project [DL57/2016/CP1453/CT0084].

Conflicts of Interest: The authors declare no conflict of interest.

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