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From Golden Rock to Historic Gem: a historical archaeological analysis of the maritime cultural landscape of St. Eustatius, Dutch Caribbean
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Research Methodology

The maritime cultural landscape of St. Eustatius contains many different elements and can be studied from various perspectives. Therefore, several research methods are employed in this study. First, underwater archaeological research, which comprises geophysical and SCUBA diving surveys, forms the backbone for the investigation of the transport and communication component. The data collected during these surveys includes the nature and distribution of cultural remains such as shipwrecks and artifacts on the sea floor, and information on the natural environment and bottom composition. These lines of evidence are crucial to understanding the size and extent of the historical anchorage area and the activities that were carried out here. Second, the results of previously conducted terrestrial archaeological excavations and surveys are used in the study of other components, such as the civic, commercial, and cognitive components. This data comprises excavation results of warehouses along the waterfront, slave quarters on plantations, analyses of plantation landscapes, and material culture studies. Since terrestrial excavations and surveys have been conducted by many different archaeologists from various organizations over the last three decades, the reader is referred to the cited excavation reports to learn about the research methodologies used in these studies. Last, a detailed analysis of the documentary record has provided a wealth of information concerning all aspects of St. Eustatius' history. Documentary information will be used throughout the entire dissertation. It includes newspapers, governmental documents, trade and shipping records, maps and artwork, photographs, traveler's accounts, ship logs, and probate inventories. These documents were found at various institutions across the world, including archives, libraries, and personal collections. They shed light on a variety of topics, ranging from large narratives such as the island's role in regional and global shipping networks to more individual observations such as the personal possessions of the elite merchant/planter class. While all of these research methods combined provide an ideal combination for studying the maritime cultural landscape, each method has its benefits and downsides. These need to be addressed to enable correct interpretation of results generated through their use.

3.1 Underwater archaeological research

3.1.1 Geophysical survey methods

As the relatively shallow submarine bank surrounding St. Eustatius covers over 30 km², investigating this large area with a SCUBA diving survey alone would take a long period of time and the costs involved would make a survey of this magnitude prohibitive. Therefore, it was decided to investigate a large area of the sea floor using geophysical techniques first. A significant advantage of geophysical surveying is the ability to collect large amounts of information quickly, often at some distance from a target. This allows search patterns to be much more widely spaced and undertaken at greater speeds than could ever be achieved by divers. Furthermore, restricted underwater visibility and strong currents are less of a problem for geophysical survey instruments and, in many instances, they can be deployed in sea conditions worse than those in which divers can safely operate. These techniques, however, do not substitute underwater diving research but are complementary to it. They are tools that can enhance the effectiveness of diver investigation and extend the range of environments in which underwater surveys can be undertaken. In addition, the results obtained from geophysical surveys provide a good overview on which the locations for more detailed surveys can be determined. Based on the results from the geophysical survey, certain targets were selected that were subjected to a SCUBA diving survey. The most commonly used geophysical methods for marine archaeological survey are acoustic systems. Two such systems, multibeam sonar and side scan sonar, were used in this investigation to study the underwater landscape and locate submerged archaeological remains.

An essential component of all investigations of submerged archaeological sites is the production of a detailed bathymetric (depth) chart using a multibeam echosounder. This device is used to acquire water depth information in a survey area, to determine least water depths over items such as wrecks, obstructions, and dangers to navigation, and to detect objects in general. Multibeam echosounders, like other sonar systems, emit sound waves in the shape of a fan from directly beneath a ship's hull. These systems measure and record the time it takes for the acoustic signal to travel from the transmitter to the sea floor and back to the receiver. In this way, multibeam sonars produce a "swath" of soundings (*i.e.* depths) for broad coverage of a survey area.⁹ The coverage area on the sea floor depends on the depth of the water, and is typically two to four times the water depth. The result of a multibeam sonar survey is usually an underwater topographic map that can be used to study a submerged landscape. In 2006, the Dutch Royal Navy carried out a multibeam sonar survey of Statia's leeward side in order to update its bathymetric charts. The raw data generated during this survey, consisting of 35,142,633 points with XYZ values, was used by the Dutch Institute for Sea Research (NIOZ) to create an underwater topographic map or digital elevation model, presented in Appendix I. This map, covering a total area of 33 km², formed the foundation of the research strategy. It displays the sea floor on the island's leeward side up to 100 meters deep. Specific features, or targets, on the map were selected for further investigation, based on their location, appearance, and elevation. These will be discussed in Chapter 4.

9 <https://www.nauticalcharts.noaa.gov/hsd/multibeam.html>.

While a side scan sonar uses an acoustic pulse and swath similar to that of a multibeam echosounder, the results are markedly different. Instead of measuring water depth, a side scan sonar emits acoustic signals to the side of the survey track which propagate out across the sea floor.¹⁰ As the acoustic beam travels outward from the instrument, the seabed and other obstructions reflect some of the incident sound energy back in the direction of the side scan sonar. The travel time of the acoustic pulses from the instrument are recorded together with the amplitude of the returned signal. This way, it is possible to visualize the composition of the sea floor and detect elevated features based on the intensity of the sound scattered back to the instrument. Material properties of the area being surveyed determine the strength of the echo from the sea floor. For example, gravel, rocks, and metals are better reflectors than fine-grained sediments and will therefore be recorded as darker elements in the image. As the acoustic signals travel at an angle from the instrument towed behind the survey vessel to both sides, elevated features produce acoustic shadows, which are arguably the most useful phenomenon for archaeology in side scan imagery. Acoustic shadows can provide more information on a feature than the intensity of reflected signals. At the right angle, they can produce a three-dimensional image of submerged features such as shipwrecks. The drawback of a side scan sonar is that it does not emit sound waves directly underneath the instrument, resulting in a dark band that corresponds to the water column along the survey track. The higher the instrument's elevation from the sea floor, the wider this dark band will be. By surveying overlapping transects, however, this problem can be overcome.

The resolution of the multibeam map is such that it provides only a general view of specific targets. In order to obtain more details and to detect small targets, a side scan sonar survey was conducted at various locations. The side scan sonar system used during this survey was a Starfish 452E, which at low survey speeds provides images of the sea floor to a depth of approximately 50 meters. The instrument was towed behind a boat on a 20-meter-long cable, which connected it to a laptop and GPS receiver on board. Data was collected as a waterfall image, which was later stitched using SonarTRX mosaicking software. The side scan survey resulted in very detailed images of several sites, eliminating the need for expensive and time-consuming mapping of sites while SCUBA diving. Furthermore, the side scan sonar survey facilitated a quick assessment of the composition of the sea floor, which is an important factor in determining the size of the historic anchorage as described in chapter 4.

3.1.2 SCUBA diving survey

Based on the results of the geophysical surveys, a SCUBA diving survey was conducted to assess all targets identified on the multibeam and side scan imagery. In addition, several areas expected to house archaeological remains based on historical data and fisherman's accounts were surveyed as well. A total of 97 dives were made between April 2014 and August 2015. While most dives were conducted by one buddy team, additional divers were added on some dives so as to maximize the area that could be visually surveyed. While surveying transects, divers were spaced between 10 and 20 meters apart, but always within sight of each other for safety reasons as well as to ensure

¹⁰ <https://www.nauticalcharts.noaa.gov/hsd/SSS.html>.

all areas of the sea floor between divers were visually surveyed. Depending on visibility, the width of a survey transect ranged between 40 and 60 meters. The length and direction of dives depended on various conditions, including depth, current, and obstacles such as anchored oil tankers. Most dives ranged between 45 and 80 minutes, with an average of approximately 60 minutes per dive. Dives were restricted to the recreational dive limit of 40 meters, beyond which short no-decompression limits make surveying impractical. To enable longer surveys on shallower dives, EANx32 and EANx40 gas mixtures were used to a maximum PO₂ of 1.5 ata.

When archaeological remains were encountered, a Surface Marker Buoy (SMB) was inflated to the surface, enabling the captain of the research vessel to take the GPS coordinates of the SMB. Findings were then described, photographed, and drawn. Sites that contained multiple anchors at close proximity to each other were drawn completely by hand by setting up a tape measure serving as a baseline between two control points. By measuring the distances from certain points on the baseline to other points on the site using another tape measure at a right angle to the baseline, the other points were plotted relative to the baseline. This way it was possible to draw up a network of survey points joined by distance measurements. On land, the measurements were used to draw the site plans to scale on graph paper, which were subsequently digitized.

3.2 The documentary record

The documentary record is a valuable tool for archaeologists, as it often contains information that cannot be gleaned from archaeological data. However, the documentary record for a particular time period, area, community, or topic is hardly ever complete. Many documents have not been preserved or are unknown to the general public (such as documents in private collections). Historical documents, however valuable they can be, should be used with caution, as they are often notoriously unreliable, incomplete, and biased. This paragraph will explore the pros and cons of the documentary record, and will assess the value it has for and in combination with archaeological research. The many different types of historical documents that are used in the study of Stata's maritime cultural landscape will all be discussed here.

3.2.1 Maps, charts, and artwork

Some of the most useful and frequently used types of documents are maps, charts, and artwork. A picture says more than a thousand words, and this is certainly true for many historical graphic depictions. Maps can contain a wealth of information on settlement patterns, the extent of settlements, a settlement's development, the locations of certain buildings, the names of buildings and their owners, the locations of roads and paths, the locations of anchorages, the use of the landscape, geographical features, etc. Over twenty historic maps of St. Eustatius are known to exist, dating from 1741 to 1915. While several of these are reproduced in Renkema's *Kaarten van de Nederlandse Antillen: Curaçao, Aruba, Bonaire, Saba, Sint Eustatius en Sint Maarten tot 1900* (2016), extensive research into digitized archives and collections by the author over the past eight years has located many more. The study of these forms the foundation for the study of many aspects of Stata's maritime cultural landscape, such as the

cognitive component. Given the importance of the maritime world to St. Eustatius, it is interesting to note that most maps of the island provide limited nautical information such as the location of anchorages, water depths, and navigational hazards. Nearly all maps, however, provide information about plantations. This suggests that most maps of the island were not made specifically for sailors.

Artwork such as drawings, engravings, and paintings can provide similar information as maps, but often also depict the shapes of buildings, people, clothes, artifacts, interiors, markets, activities, street views, etc. These sources can be an enormous help in reconstructing the past. Due to Statia's importance in the eighteenth-century Atlantic World trade network, the island became the subject of much artwork through time. Many of these depict the island from the sea, as might be expected given the large numbers of visiting sailors who called at Statia each year. Drawings and sketches of a variety of Statian scenes, however, are found in archives and private collections all over the world.

One should take into account a number of factors when using these types of documents. Maps might not be completely accurate or can emphasize certain elements while neglecting others, depending on the purpose of the map, the intended audience, and the bias and skill/accuracy of the cartographer or compiler. Maps can vary greatly in their accuracy. This is clearly visible in the cartographic record for St. Eustatius; the most geographically accurate historic map dates to 1915, while those of the eighteenth and early nineteenth centuries are often drawn to incorrect proportions. It is also evident that some maps of St. Eustatius are reproductions of older maps and may therefore not be an accurate depiction of the situation at the time the map was reproduced. Artwork might also be heavily biased depending on the artist, and is often not completely accurate. A large number of images were, for example, made by people who never visited the places they depicted. This is the case with several well-known engravings of historic St. Eustatius, such as the image on the cover of this work by Bendorp. It is therefore of paramount importance that the researcher using an image is acquainted with its origins. To complicate matters even further, images can be idealized and can be made from a political point of view, and buildings are often stylized versions of their actual appearance while some structures that are depicted may have never existed at all.

3.2.2 Photographs

Early photographs form another category of 'documents' that can be helpful in reconstructing the past. The first photo ever taken dates to 1826, but it was not until the last quarter of the nineteenth century that photography became widespread. Photographs can be relevant to a later period of study, but can sometimes also be used to extrapolate a situation further back in time, particularly when things are depicted that are not prone to changing quickly such as certain rituals or celebrations. A photograph never lies, but it should be kept in mind that photographic scenes are often set up and might not depict the daily activities of people, the clothes they normally wore, etc. Moreover, photographs do not necessarily depict an entire scene, but sometimes just a small part of an environment or a specific event. This can substantially influence the ideas they are conveying. Many late nineteenth- and early twentieth-century photographs depicting St. Eustatius are in existence, mostly found in private collections and in archives of various Dutch institutes. They depict a multitude of scenes and environments. As Statia's

economic, social, and cultural development was very slow around this time, many photographs give the viewer a sense of how life must have been up to several decades before they were taken.

3.2.3 *Wills, deeds, and probate inventories*

The category of historical documents that provides one of the most detailed insights into past peoples' lives are wills, deeds, and probate inventories. A probate inventory is a list of all the property of a person. It was made for people that had just passed away or were heavily in debt. A probate inventory ensured that all property to be inherited or to be distributed amongst creditors was accounted for. This type of document contains a lot of information about a person's life. It can show if a person was rich, had a large house, what lifestyle he/she had, what hobbies he/she had, what religion and profession he/she practiced, if he/she owned enslaved laborers, cattle, and land, how he/she valued his/her possessions, etc. Furthermore, it also shows the (estimated) value of all possessions listed. Probate inventories that will be discussed in this study include those of two of the wealthiest Statian merchants, Johannes de Graaff and Herman Gossling. Both are held at the National Archives in The Hague and provide a detailed look at these men's possessions and the things they valued in life. For example, the 84-page inventory of De Graaff includes a list of all the books he owned, while both men's inventories contain a list of all enslaved people in their possession, including their names, sex, and frequently also their profession. These types of documentary data cannot be gleaned from the archaeological record and are therefore extremely useful in reconstructing the lives of those whose inventories are left behind. Compared with evidence from archaeological excavations, a probate inventory may be used to measure the completeness of the archaeological record.

Different to a probate inventory, a will is a legal document that determines who gets a person's property when he/she dies, while a deed is a legal document that deals with a legal transfer, usually of property. Wills and deeds contain information about family relations, differences in the lives and needs of men and women, the organization of households and communities, and who or what the person who composed the will or deed valued.

These documents, despite appearing relatively straightforward in their composition and use, should be used with some caution. Probate inventories, wills, and deeds can be biased towards wealthy old men. As such, these documents usually give information about upper class males, and can often not be extrapolated when studying topics related to women, young people, or individuals belonging to lower classes of society. Another complicating factor in the reliability of these documents are the people who composed them. These appraisers had considerable bearing on the final form of these documents, and the identity of the appraisers and the means employed to compile the inventories could have influenced their composition. For example, an inventory usually omitted clothing or items that had no market value such as fruits and vegetables. Sometimes not every individual item was listed, but lumped together and described as a group of objects, such as Gossling's 'fifteen paintings.'

The Dutch National Archives in The Hague contains many wills, deeds, and probate inventories for St. Eustatius. This collection is heavily biased in that it represents almost exclusively Statia's middle and upper class citizens. It does not, however, only

depict men: just over one third of all documents are related to women. Some of these describe the enormous wealth that Statian elites possessed, which is used to reconstruct the power component. By carefully analyzing and comparing these documents, it is possible to discover trends, similarities, and differences between members of the Statian elite.

3.2.4 Traveler's accounts and ship logs

Of particular interest to the study of the maritime cultural landscape are traveler's accounts and ship logs. These can provide very detailed views on a situation in a particular place at a specific time. Being outsiders, travelers can have a more objective look on another society and can notice certain things that others might not even think about and experience as normal. These accounts can, however, be heavily biased depending on the author's ideas, values, customs, and political views. As a result, they might not always describe the situation as it actually was. Many people from all over the Atlantic World visited St. Eustatius during its apogee, including merchants, sailors, captains, soldiers, pirates and privateers, enslaved Africans, clergymen, and travelers. Their accounts describing the island and its community are preserved in the documentary record. Of particular interest is the diachronic perspective that can be gleaned from all these accounts combined, as they span from the mid-seventeenth to the early twentieth century. As most visitors commented on similar topics, the study and comparison of these accounts among each other and with other types of data enables one to circumvent the pitfalls outlined above and gather a wealth of information about all aspects of Statian society. Lacunae, errors, and bias in accounts can often be discerned based on other sources of archival data.

Ship logs contain very detailed accounts of day-to-day activities on and around a ship, but also on the place where they were anchored. A ship log is usually composed by one or a few persons, and can therefore be biased. Most ship logs, however, contain very descriptive information in a structured way. Based on several studies ranging from climate to vocabulary, Wheeler argues that eighteenth-century ship's logbooks are a reliable source of information (Wheeler 2004:23). Anchoring depth, weather conditions, activities on the ship, trading activities, repairs, misbehavior, deaths and disease, and activities on other ships are some of the types of information held in these documents. Ship logs from Dutch warships and Dutch slavers contained in the National Archives in The Hague and the Zeeland Archives will be used to reconstruct daily life on board ships on Statia's road, safety on the road, and the location and size of the historic anchorage. Most of these date to the second half of the eighteenth century, the time at which the island's economy flourished.

3.2.5 Newspapers

Historic newspapers are a unique type of documentary source, containing information on a multitude of subjects. They were outlets for commentary and opinion on political, economic, and social issues. Furthermore, they often contained advertisements which can be helpful in dating artifacts, especially ceramics. Newspapers can provide the archaeologist with a glimpse into the worlds of trade and exchange, ideas, values, customs, political views, events, and local and international affairs. The people who voiced their opinions in newspapers were usually, however, middle- and upper class males

(Beaudry 1993:189). Newspapers should thus not be viewed as representative of the lives of an entire community. In some places, such as the Caribbean plantation islands, they are mostly only relevant to a small segment of society. When enslaved people appear in newspapers, it is often in sales- or runaway advertisements. Another thing that should be kept in mind when studying colonial newspapers is the fact that most were published in urban centers. Although they are a tremendous help in studying urban societies, one should be careful in extrapolating the information from newspapers onto rural communities. In this study, newspapers will, among other things, be used in the study of shipwrecks. After every major hurricane, newspapers in Europe and North America published accounts on these disasters. These accounts are usually very brief and to the point, and came from sources on the islands directly or through word of mouth.

3.2.6 Public records

The final group of historical documents used in the present study includes public records such as census data, church records, tax records, criminal records, laws, etc. These contain information on large groups of people in a community. They can list the names of inhabitants, where they came from, their age, when they were born and died, when they married, their occupations, how involved they were in the community, how much tax they paid, how well they behaved, etc. They can also give insights into the bigger picture, such as demographic information of a community, dominant religions, and the ratio of locals to immigrants. A problem with these documents is that they only contain information on people who were actually legally living in a particular place – who were known to the authorities. Furthermore, they hardly ever provide information about the relative powerless part of society such as the poor and the enslaved, and are often not complete for the full period of occupation of a settlement or island. For example, population numbers on Caribbean islands are usually known for a select number of years. Researchers frequently extrapolate these to estimate population numbers for the years for which there is no information presented in census records. This can be a misleading exercise, and should be corroborated by other evidence such as urban development and the volume of imports/exports. Even population numbers in historical records can be estimates, which makes estimating population numbers for years for which there is no census information available even more unreliable.

The exact same situation applies to St. Eustatius. Population numbers found in records in the Dutch National Archives are available for only a select number of years. For many years, particularly during the first decades of settlement, there exists no data. A large number of laws and proclamations spanning the entire colonial period do survive. These deal with everyday topics such as the price of certain types of food, the conduct of enslaved laborers, taxes, curfews, and roaming cattle. They will be used to elucidate everyday life on St. Eustatius and address topics that have mostly been neglected by previous researchers. Information contained in laws and proclamations often complements traveler's accounts. By combining these two sources, a reliable and highly detailed reconstruction of daily life can be made.