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1 The Middle Passage of the Atlantic slave trade has attracted substantial scholarly attention because of its significance as a foundational experience for the descendants of Africans in the Americas. The Middle Passage’s systems of racialized incarceration, transport, punishment, segregation, physical and psychological violence, dehumanization, and commodification involved individual and collective agencies with clear parallels to the plantations on which many of those who survived the Middle Passage would work and die. The legacy of that African Holocaust, also referred to as the Maafa, persists in the oppressive social relations of African Americans and Afro-Latinos in the present, as well as resistance to them (Marimba 1980). Studying the Middle Passage with new approaches emerging in the digital humanities helps the societies of the Americas to recognize more clearly the agencies and structures that enabled and resisted its horrors in order to confront, counter, and redirect their derivatives in the present (Johnson 2018).

2 Despite the significance of the Middle Passage and its inherently geographical characteristics as a transoceanic route, the potential of a cartographic approach to its study remains largely undeveloped. The overwhelming preponderance of Middle Passage scholarship has taken a narrative approach (Christopher 2006; Taylor 2006; Rediker 2007; Smallwood 2007; Walvin 2011; Mustakeem 2016). Rooted in an Atlantic
Studies framework, that literature has done much to fill in what for too long remained a blank oceanic space (Bailyn 2005; Lambert, Martins, & Ogborn 2006; Sluyter 2008; Hasty & Peters 2012). Yet the success of such narratives has minimized other approaches, such as cartography. Perhaps the congenital relationship between colonialism, the slave trade, and the discipline of geography’s mapping tools as they emerged together during early modern times (1500-1800) has dissuaded many from believing that cartography can contribute critical understanding of the Middle Passage (Sluyter 2002, 2010). Nonetheless, application of the spatial digital humanities to other aspects of the history of slavery certainly suggests that, potentially, a critical cartographic approach might also make significant contributions to the study of the Middle Passage (Sluyter 2012; Brown 2015; Newman 2018; Lovejoy 2019).

To illustrate the potential of such a critical cartographic approach to Middle Passage Studies, the maps debuted in this article chart the death of enslaved Africans and their disposal overboard on twenty-five voyages by Dutch vessels sailing from the Gold Coast of West Africa to the South American colony of Suriname in the second half of the 18th century. The maps’ purpose is not so much analysis of the spatial-temporal patterns of death on the Middle Passage, a topic already well understood through decades of scholarship and better advanced through statistical approaches (Miller 1981; Eltis 1984; Cohn 1985; Postma 2003; Hogerzeil & Richardson 2007; Eltis & Richardson 2010). Rather, the maps’ purpose is twofold. First, they comprise spatial visualizations of the archival data that resulted from the “entanglement of profit with dismembered black limbs,” in Jessica Marie Johnson’s (2018: 70) terms, intended to evoke the bloody horror of the crime scene. Second, following the theme of this special issue, the maps illustrate how to implement the collaborative ethos at the heart of the digital humanities by employing GIS (Geographic Information System) software that is free and open-source, open-access sharing of the spatial database online, and licensing that allows readers to create derivative maps and other types of visualizations. Those digital humanities best practices recognize “the legitimacy of descendants’ claim to data on their ancestors mined from slave ship registers” (Johnson 2018: 64).

Middle Passage Studies and Death

Emma Christopher (2006), Eric Taylor (2006), Marcus Rediker (2007), Stephanie Smallwood (2007), James Walvin (2011), Sowande’ Mustakeem (2016), and other scholars have over the past decade produced a small but significant corpus of monographs dedicated to understanding life and death aboard the thousands of ships that transported in excess of ten million enslaved Africans across the Atlantic in an abhorrent commerce that lasted more than three centuries (fig. 1). To decipher the complexities of social relations on the Middle Passage, these scholars have drawn on the archives of the slave merchants, historic maps and illustrations, and the accounts of officers and a few crew members and enslaved Africans, such as the well-known 18th-century accounts of Captain John Newton, the sailor James Field Stanfield, and the African Olaudah Equiano, also known as Gustavus Vassa. Those seminal monographs have revealed many details of the shipboard relations among the enslaved, officers, crew, and material culture as well as those with the ocean, its sharks, and other nonhuman actors in a system that placed the Middle Passage at the epicenter of the human commodification necessary to the emergence of global capitalism. Most
recently, Mustakeem has revealed, as never before, the corporeal Middle Passage and how the genders and ages of the enslaved modulated violence and death on the Middle Passage.

Fig. 1. Overview of the Atlantic slave trade, 1501-1866, showing general flows and major ports.

Monographs by scholars such as Mustakeem (2016) complement a long-standing literature that enumerates the slave trade. Early efforts by Phillip Curtin (1969) and others have most recently culminated in Voyages: The Trans-Atlantic Slave Trade Database (hereafter, TSTD), a massive undertaking that contains records of more than 35,000 voyages and continues to undergo updates, development of functionality, and expansion of scope. The statistics revealed through that long-standing effort remain critical for evoking and understanding the monstrous scale of the slave trade. They also reveal some aspects of death on the Middle Passage, the most general conclusion being that 1.8 million, more than 14 percent, of the 12.5 million who embarked in Africa never disembarked in the Americas (Eltis & Richardson 2010: 2). The greatest concentrations of mortality occurred soon after leaving Africa and shortly before arriving in the Americas, within the first and last week of the voyage (Postma 1990: 247–253). Two factors explain that pattern: first, the enslaved who contracted diseases while held for extended periods in stockades and dungeons ashore died shortly after coming aboard; second, those who came aboard healthy contracted diseases from the first to die but stayed alive until illness had advanced from prodromal to acute at the same time that stores of fresh food and potable water were becoming exhausted late in the Middle Passage, further weakening the sick.

But the emergent subfield of Middle Passage Studies achieves a different type of understanding from that of the longer-standing, statistical effort to quantify the Atlantic slave trade. Not only does the new literature address the details of how so
many died on the Middle Passage, but it takes an Atlantic Studies approach, thereby turning what has long been a blank oceanic space into one with structures, agencies, and research questions that differ from those of continental and national historiographies (Bailyn 2005; Lambert, Martins, & Ogborn 2006; Sluyter 2008, 2010, 2012, 2015; Hasty & Peters 2012). From that perspective, the Middle Passage becomes transformed from the unproblematic crossing of an oceanic barrier, with little of intellectual interest happening between the African and American littorals, into a transformative human experience central to the commodification of millions of human beings (Christopher 2006; Taylor 2006; Rediker 2007; Smallwood 2007; Walvin 2011; Mustakeem 2016). Death on the Middle Passage did not merely equal the difference between the number of embarkations and disembarkations, did not simply winnow the sick and rebellious from the enslaved; it also profoundly affected the living, those who survived to reach the Americas. The ghosts of those who died while crossing the Atlantic and were disposed of overboard remained with those who survived to labor on plantations, normalizing a system of control rooted in violence and dehumanization, transforming free individuals with names into traumatized, numbered captives and, ultimately, into enslaved commodities.

Middle Passage Studies has revealed much about how the enslaved died of inadequate and innutritious diets, wounds from fights with the crew or each other, execution for rebellion, and outright murder (Christopher 2006; Taylor 2006; Rediker 2007; Smallwood 2007; Walvin 2011; Mustakeem 2016). In resistance, some committed suicide by cutting their own necks, strangling themselves, refusing to eat, or jumping overboard to drown or be ripped apart by sharks. But the majority of deaths were due to communicable diseases contracted while confined in stockades ashore and below decks aboard, the most common by far being the amoebic dysentery that infected intestines to cause diarrhea, cramps, headaches, fever, ulcerations, hemorrhaging, dehydration, and death. Less common diseases, albeit equally as painful and deadly, included scurvy, smallpox, and tuberculosis. Moreover, such studies have made that horror feel present in various ways, in an attempt to recognize how it affected the survivors and their descendants. For example, Smallwood (2007: 135–47, fig. 5.1) reproduces a facsimile of a page from the “Account of mortality of slaves aboard the ship James,” as written by the vessel’s captain in 1676 while sailing from the Gold Coast to Barbados. She then details and discusses each of the entries for the many men, women, boys, and girls who died, as in the case of a largely anonymous “woman, bought by my selfe & being very fond of her Child Carrying her up & downe Wore her [self] to nothing by which meanes [she] fell into a feavour & dyed” (Smallwood 2007: 145).

Potential for a Cartographic Approach

A telling clue suggests how a cartographic approach could begin to complement those narratives of death: not one of the books in the small corpus of Middle Passage Studies contains much in the way of meaningful maps. Only a few contain any type of analytical maps of the Middle Passage, such as Taylor’s (2006: 65) representation of the numbers of revolts by the enslaved that took place off various segments of the African coast. Most of the maps, in contrast, simply depict historic place names along the coastlines of Africa and the Americas, locating the ports of embarkation and disembarkation but...
leaving the intervening Atlantic a blank, empty space (Christopher 2006: ii; Smallwood 2007: vii–x; Rediker 2007: 48–49). Or, nearly as frequently, the maps are simply illustrations, reproductions of historic maps, such as the much copied 18th-century “New map of that part of Africa called Guinea” (Christopher 2006: 126; Rediker 2007: unnumbered plate; Mustakeem 2016: 17). The greatest compilation of maps regarding the Atlantic slave trade in general, namely the Atlas of the Transatlantic Slave Trade that derived from the TSTD as it existed in 2008 (Eltis & Richardson 2010: xxiv–xxvi), relegates oceanic space to a blank backdrop on which to overlay arrows that represent the idealized flows of various components of the slave trade, similar to figure 1 in this article. Of the 189 maps in the Atlas of the Transatlantic Slave Trade, in fact, only two chart any oceanic information at all: Map 4, “Winds and Ocean Currents of the Atlantic Basin”; and Map 5, “Voyage of the Laurence Frigate, 1730–1731,” which represents the actual route of that vessel from Europe to Africa to the Americas and back (Eltis & Richardson 2010: 8–9).

9 Users of the TSTD can produce their own online maps for a single voyage, a set of voyages, or the entire database. The main use of the TSTD involves the production of tabular summaries of selected voyages or categories of voyages, such as by port of departure or date range. Nonetheless, two types of cartographic output are also possible, although neither produces maps of the Middle Passage. The first type of cartographic output displays the ports as circles, with areas roughly proportional to the number of enslaved Africans embarked and disembarked, connected by a line that displays the same idealized route for all voyages between any given pair of ports. The second type of cartographic output animates the voyages, sending streams of dots of equal diameter speeding across the Atlantic, following the same idealized routes between pairs of ports as the maps in the Atlas of the Transatlantic Slave Trade. Neither type of online map charts the actual positions or routes of vessels sailing the Middle Passage. Nor do they provide any indications of deaths other than as the difference between embarkation and disembarkation tallies, and certainly not the locations of deaths while sailing the Middle Passage.

10 A cartographic approach can fill that gap in our understanding and evoke the horror of the Middle Passage with maps that visualize the transformative processes that took place aboard vessels. The sampling of maps that follows illustrates, but certainly does not exhaust, the potential of such a cartographic approach to contribute to Middle Passage Studies.

Logbooks and Death

11 The following maps all derive from the logbooks of vessels belonging to the Middelburgsche Commercie Compagnie (hereafter, MCC), one of the major Dutch companies involved in the Atlantic slave trade (Hogerzeil & Richardson 2007; Eltis & Richardson 2010: 41; Lurvink 2019). The MCC was based in the Dutch province of Zeeland and operated out of the ports of Middelburg and Vlissingen at the mouth of the River Scheldt. The Zeeuws Archief in Middelburg preserves the logbooks and makes high resolution page images of them available online.

12 Other scholars have previously used the same logbooks—but never for the same purpose. The TSTD drew on them, for example, together with the many other primary sources used to assemble its comprehensive enumeration of the slave trade (Eltis &
Richardson 2010: xxiv–xxvi). The Climatological Database for the World’s Oceans (CLIWOC), a project funded by the European Union and carried out by a consortium of universities and institutes between 2000 and 2007, used them as well as other primary sources from English, French, and Spanish archives to reconstruct weather observations made by the captains on 1,674 voyages during the 18th and 19th century throughout the world’s oceans (Können & Koek 2005). Because each weather observation entry also records the date, latitude, and longitude, some historical scholars have used the CLIWOC open-access database to map voyages, as did, for example, the present author in the Atlantic Commodity Networks project carried out while a Digital Innovation Fellow of the American Council of Learned Societies (Sluyter 2012: 189–205). The CLIWOC database contains some serious errors and gaps, however, so other scholars have recorded their data directly from the archival documents themselves, as in the case of the use of one of the MCC logbooks to map the voyage of a single vessel on its entire triangular journey from the Netherlands, to Africa, to Suriname, and back.

The vast majority of logbooks, even considering only those of slave ships, do not contain information about deaths or much else beyond observations and calculations related to navigation, weather observations, and remarks about encounters with other vessels. Instead, captains typically kept information about deaths in separate ledgers such as the “Account of mortality of slaves aboard the ship James,” compiled by that vessel’s captain in 1676 (Smallwood 2007: 135–47, fig. 5.1). In contrast, forty-two of the MCC logbooks record the deaths of enslaved Africans by day and noontime position (latitude and longitude), often together with marginal drawings of skulls next to the entries about navigation, weather, and currents (fig. 2). None of the entries specify the age at death or its cause. Captains assessed sexual maturity on the basis of physical appearance, designating those older than their mid-teens as vrouwslaaf (woman slave) or manslaaf (man slave) and those younger as jongenslaaf (boy slave) or meisjeslaaf (girl slave) (Negrón 2020: 25–7). Twenty-five of the MCC logbooks with data on deaths pertain to voyages by thirteen vessels between the Gold Coast of West Africa and the Dutch colony of Suriname in northern South America between 1752 and 1790.
To ensure comparability, the following maps are based on those twenty-five voyages alone, as summarized in the table (tabl. 1). The sixteen frigates and nine snows ranged from 484 to 192 tons, had crews of between thirty and thirty-nine, and crossed the Atlantic in as little as fifty days and as long as ninety-five.\(^7\) The largest number of enslaved Africans any of those twenty-five voyages departed with, at least according to the eighteen logbooks that recorded the number of embarkations, was 330, the smallest number 203, the average 256, and the total 4,608. Deaths per voyage among the enslaved ranged from 2-79, with 1-44 for men, 0-26 for women, 0-7 for boys, 0-2 for girls, and 0-2 for those of unspecified maturity and gender. The total deaths for all twenty-five voyages numbered 463 and averaged 18.52 per voyage. In addition, the logbooks record ten births, ranging from 0-3 and averaging 0.4 per voyage. For those eighteen voyages with a record of the number of embarkations, mortality ranged from 1.53 percent to 28.62 percent and averaged 7.4 percent.
Table 1. Twenty-five slaving voyages by thirteen vessels of the MCC, 1752–1790.

<table>
<thead>
<tr>
<th>Voyage No.</th>
<th>Vessel Name</th>
<th>MCC No.</th>
<th>Year</th>
<th>Vessel type</th>
<th>Slaves embarked</th>
<th>Slaves surviving</th>
<th>Survivors to complete the Middle Passage</th>
<th>Death of women</th>
<th>Death of men</th>
<th>Death of children</th>
<th>Mortality</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Der Guten Voorspoed</td>
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<td>1756</td>
<td>52</td>
<td>264</td>
<td>14</td>
<td>21</td>
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<td>2</td>
<td>Fragile</td>
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<td>1744</td>
<td>43</td>
<td>303</td>
<td>27</td>
<td>20</td>
<td>7</td>
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<td>Der Hermelin</td>
<td>429</td>
<td>1758</td>
<td>64</td>
<td>257</td>
<td>43</td>
<td>24</td>
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<td>Der Heeren</td>
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<td>1759-1760</td>
<td>75</td>
<td>220</td>
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<td>1762</td>
<td>67</td>
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Note that the logbooks for seven voyages did not record the number of slaves who began the Middle Passage and that the mortality rate for those voyages could therefore not be calculated.

Source: MCC document numbers given in the table.

Those characteristics roughly accord with the general patterns evident in the TSTD and the long-standing scholarship on death on the Middle Passage, including Dutch voyages (Miller 1981; Eltis 1984; Cohn 1985; Postma 2003; Hogerzeil & Richardson 2007; Eltis & Richardson 2010: 22, 30, 162, 175, 179, 204). The Dutch slave trade started in 1596, began to decline in the 1780s, and ended in 1829. Over that period, a total of 554,000 enslaved Africans embarked, most of them at a series of commercial fortresses, so-called slave castles, along the Gold Coast. The vessels carried 100-500 enslaved Africans and usually sailed the Middle Passage in 50-80 days. An estimated 475,000 of them, about 85 percent, disembarked in Dutch colonies in the Americas. Some 249,000 embarked for Suriname alone, two-thirds of them men and one-third women, 80 percent of them teenagers and adults and 20 percent children. Paramaribo, at the mouth of the Suriname River, became the eighth largest disembarkation port in the Americas, receiving more enslaved Africans than Charleston, South Carolina, which was the largest North American port. The voyages to Suriname and the Caribbean, according to the TSTD, had an average mortality rate substantially higher than the 7.4 percent for the twenty-five voyages mapped for this article, about 12 percent for the period 1701-1775 and 20 percent thereafter. In addition, the proportion of children, 11 percent, was relatively low on the twenty-five voyages relative to the overall slave trade to Suriname, although the 64 percent men versus 36 percent women accords better with the general statistics.

The same twenty-five voyages appear in the TSTD, of course, facilitating a more specific comparison. Because the TSTD draws on a broader range of primary sources than this project, such as the captains’ *negotieboeken* that detailed purchases and sales of enslaved Africans, some of the voyages have slightly different numbers of embarkations, disembarkations and, therefore, mortality rates in the TSTD than in table 1. In sum, however, the differences are minimal: an average per voyage of 249 embarked, 20 dead, and 8 percent mortality according to the TSTD; versus an average per voyage of 256 embarked, 18.52 dead, and 7.4 percent mortality according to the logbooks. A much larger difference occurs in the total number of enslaved Africans embarked: 6,237 on the twenty-five voyages according to the *negotieboeken* used by the TSTD, and only 4,608 from the eighteen logbooks that contain that information. Nonetheless, when the
average of 256 embarked per voyage according to the eighteen logbooks is multiplied by 25, the total of 6,400 falls within 2.6 percent of the 6,237 embarked according to the TSTD.

Besides the distressing subject matter and the sometimes challenging paleography of the logbooks, the main methodological issue involved normalizing longitudes to the Greenwich Meridian and calculating positions while vessels were within sight of land, when captains typically did not record latitudes and longitudes because they navigated on the basis of coastal landmarks rather than with sextant and chronometer. The Dutch vessels used a variety of prime meridians, including Tenerife in the Canary Islands and Boa Vista in the Cape Verde, as made explicit in the logbooks. Calculating longitude with reference to the Greenwich Meridian thus becomes a simple sum accomplished with a spreadsheet formula, as does converting the minutes and seconds used in the logbooks into the decimal degrees used in the maps. Calculating vessel positions while coasting relied on the quite consistent routes followed from the Gold Coast to Suriname, which typically involved the same well-known coastal landmarks: Elmina, Cape Coast (Kaap Cors), and other slave castles along the Gold Coast when departing; the mouth of the Marowijn River, Braamspunt, and other landmarks along the coast of Suriname when arriving. Between them, the Guinea Current forced vessels southward and eastward before they encountered the Trade Winds that would propel them along the equator to intersect the coast of South America, the first sight of land often being the Constable Islands off the coast of French Guiana (fig. 3). Calculation of the latitude and longitude of vessel positions while coasting within sight of Africa and South America, therefore, required reverse projection of the distances and bearings to landmarks such as points or the mouths of rivers, as recorded in the logbooks.

Fig. 3. The daily positions and routes of the twenty-five voyages, from the Gold Coast to Suriname, 1752–1790.

Using those methods, I entered the data from the logbooks into a tabular, CSV (Comma Separated Values) file named 25MPvoyages.csv. Each of the 1,647 rows of that spatial database, meaning a database containing features with locations, represents the noontime position of a vessel on each of the twenty-five voyages. The columns, or fields, record the names of the vessels, the date of each position, the latitude and
longitude at noon on that date, the number of enslaved men, women, and children who died that day, and the archival citation.

**Digital Humanities, Cartography, and Best Practices**

19 In general, this project commits to the digital humanities best practices of open-access sharing and reuse through software that is free and open-source, copyleft licensed, and includes detailed metadata. Best practices conform to the FAIR data principles to make projects Findable, Accessible, Interoperable, and Reusable. All elements of this project such as data and software are findable through links to this article, which itself is findable through the OpenData publishing platform’s cataloging system, has online permanence through the article DOI (Digital Object Identifier), and is licensed Creative Commons BY-NC-ND 4.0 (Attribution, Non-Commercial, No-Derivatives 4.0). More specifically regarding cartography projects, ensuring accessibility, interoperability, and reusability requires adherence to software standards developed by the OSGeo (Open Source Geospatial), OGC (Open Geospatial Consortium), and FOSS4G (Free and Open Source Software for Geoinformatics) organizations.

20 Following those best practices, the spatial database (25MPvoyages.csv) is openly accessible in a GitHub repository. The repository contains a readme file that includes metadata, an explanation of the project, and a DOI link to this article. The repository is licensed with a GNU General Public License v3.0. This sort of copyleft licensing, which privileges the rights of the community to the data over the rights of the creator, encourages diverse actors to reuse the database to create derivative works, whether maps or other types of visualizations such as charts. The only limitation on the GNU General Public License v3.0 is that derivative works credit the source and license their own products under the same terms.

21 QGIS 3.40, the GIS software used to map the spatial database, is interoperable with other geospatial software that adheres to OSGeo and OGC standards. This interoperability ensures projects created in QGIS will open and be fully functional in other software that adheres to the same standards. QGIS is freely available to install on Windows, MacOS, and Linux operating systems. Moreover, QGIS is open source, meaning its computer code remains public rather than proprietary and can be reused to create derivative software and modified to achieve new types of functionality.

**A Cartography of Death**

22 I initially used QGIS to map the 1,647 noontime locations for the twenty-five voyages in the spatial database as points. Each point on the map relates to the data in the fields for that location on that date, such as the number of enslaved men, women, and children who died there and then. I next used QGIS to transform that point layer into line and polygon layers. In line layers, linear segments connect a series of points, such as those related to a single voyage, as in figure 3. In polygon layers, an additional line segment connects the final point of a line to the initial point in that line in order to create an enclosed shape. The GIS can further transform such point, line, and polygon layers into raster layers, such as terrain and heatmap layers, which consist of pixels of different colors and values, similar to a digital photograph. The GIS can symbolize all those types
of layers by applying colors, shapes, and other elements such as text labels based on the data in the fields in the spatial database. The five maps that follow share some of the results of those cartographic efforts (fig. 4, maps A-E).

Fig. 4. Maps A-E represent 463 deaths (and 10 births) on the Middle Passage in five different ways.

Map A uses point symbols to convey the number of deaths aboard each vessel while at a particular position in the Atlantic. The area of each circle is proportional to the number who died and were disposed of overboard at that location on a given day. The map visually confirms the general pattern of death on the Middle Passage, with an initial wave of mortality occurring soon after leaving Africa among those who had contracted diseases while held in close confinement ashore and a second wave of mortality occurring late in the voyage among those infected below decks shortly after coming aboard. The map also charts ten births, all of the babies necessarily conceived many months before embarkation, quite possibly before the mother had been captured and enslaved. The black land masses promote an Atlantic focus, deemphasizing the usual continental or national historiography in favor of a focus on the oceanic space and the Middle Passage itself. The colors—blood-red for the ocean, black for death symbols, and white for birth symbols—evoke, at least for me, the horror of the Middle Passage.

Map B again uses point symbols proportional to the number of deaths but overlays pie charts to represent the proportion of women, girls, boys, and men who died at each location. Representation of the gender and age dimensions of death on the Middle Passage could also involve a single point symbol for each death, with four distinct colors or shapes for each gender and age group. Or, alternatively, four separate maps similar to Map A could each display the deaths of just women, girls, boys, and men. Again, as in Map A, the black land masses promote an Atlantic perspective, but this
time complemented by a cerulean blue ocean and a yellow-brown color ramp for the sectors of the pie charts.

Map C applies a spectrum of colors to polygons that represent the density of deaths from “cool” blues for low density to “hot” reds for high density. More clearly than the previous two maps, this conversion of the point data to contours emphasizes the two areas of greatest mortality: early in the Middle Passage, while following the Guinea Current south in search of the Southeast Trades; and during the final approach to Suriname. The red pool of death directly off the coast of Suriname testifies to the concentrated, bloody horror experienced by all who approached the end of the Middle Passage, a corporeal message that “black lives do not matter.” Nonetheless, despite carrying that message with them, enough of the survivors who disembarked at Paramaribo to be sold to labor on sugar, cotton, coffee, and cocoa plantations would resist, liberate themselves, and establish Maroon communities in the backcountry (Stipriaan 1993; Kom 2009). The satellite mosaic base map, a stark change from Maps A and B, emphasizes that relationship of the transformative experiences of the Middle Passage to subsequent lives inland from the port of Paramaribo. The horror of the Middle Passage could break the will of the enslaved and accustom them to the brutality of labor on plantations along the coast and riverbanks, but it could also instill the will to resist and escape to freedom in the interior.

Map D represents the density of deaths as a so-called heatmap symbolization of the polygonal areas in Map C. As in Map C, the areas of dense mortality stand out in the Gulf of Guinea and approaches to Suriname. But Map D provides a more stylized, less clinically precise visualization than Map C. Together with the stark base map, black except for the thin white lines of the littorals and pair of principal toponyms, the heatmap sprays an aura of death across the Middle Passage. It evokes a poisonous cloud of horror that envelops the equatorial Atlantic with the odor of inhumanity.

Map E drapes a similar heatmap over a terrain model in order to experiment with the addition of a third, elevational dimension to the cartographic visualization of death on the Middle Passage. The elevations of the terrain model derive from interpolation among the values for total deaths at each location in the database, converting the point layer into a raster layer. The use of hill shading to create sunlit and shadowed slopes visually adds a third, elevational dimension to the density of death on the Middle Passage. Draping the heatmap from Map D over the terrain model enhances the visual recognition that the Middle Passage comprised a funnel of death. The month of the funnel aligns with the African coast, its axis with the equator, and its stem disgorges in Suriname.

* 

If I have produced repulsive maps, I have succeeded. It hurt me deeply to create them, perhaps not least because my ancestors captained and crewed Dutch vessels. The maps should evoke the horror of the Middle Passage in a new way, a critical cartographic contribution to Middle Passage Studies. As such they should be more than analytical; they should visualize the suffering of millions of enslaved Africans in order to encourage society to take responsibility for addressing the legacies of the Middle Passage that persist into the present. As Johnson (2018: 71) enjoins digital humanists of the slave trade, “black digital practice challenges slavery scholars and digital
humanists to feel this pain and infuse their work with a methodology and praxis that centers the descendants of the enslaved, grapples with the uncomfortable, messy, and unquantifiable, and in doing so, refuses disposability.”

While the five examples of maps only begin to explore ways to visualize death on the Middle Passage cartographically, the open-access spatial database available on GitHub allows diverse actors to produce other types of representations. To begin, readers can view an online, dynamic map that has the same underlying database. That webmap allows users to zoom, pan, select points, and access the underlying data. Readers who have even a modest facility with GIS can download the spatial database and use QGIS or any other GIS such as Google Maps, to transform the raw data into their own cartographic representations in any number of conceivable ways, including time-animated maps. This contribution therefore introduces not only a critical cartographic approach to scholarship on the Middle Passage, but it also reflects best practices in the black digital humanities.

No one has previously produced such maps, so they should also demonstrate the rich possibilities of further critical cartographic approaches to the study of the Middle Passage. Most immediately, similar maps could include many more than twenty-five voyages. Most captains did not record deaths directly in their logbooks and thereby did not directly associate particular deaths with a specific day, latitude, and longitude. Yet the separate “account of mortality” more typically used to record deaths on a given voyage could straightforwardly be matched by date to that voyage’s logbook of daily positions. Doing so would involve an immense effort, to be sure, but a critical cartographic approach of this kind could complement the many existing narrative accounts of the horrors of the Middle Passage with strikingly evocative visualizations.

BIBLIOGRAPHY

List of Abbreviations

CLIWOC The Climatological Database for the World’s Oceans
MCC Middelburgsche Commercie Compagnie
TSTD Trans-Atlantic Slave Trade Database

List of Sources

MCC Middelburgsche Commercie Compagnie, Accession 20, Zeeuws Archief, Middelburg, the Netherlands
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NOTES

5. A. Sluyter, *Atlantic Commodity Networks* (https://sites.google.com/site/atlanticnetworksproject, last accessed October 2020). Another project, *Remembering the Middle Passage* (https://sites.duke.edu/middlepassage, last accessed October 2020), more recently used the CLIWOC database to map deaths of enslaved Africans on the Middle Passage. That project, led by Charlotte S. Sussman of Duke University’s Department of English, was carried out after submission of this manuscript but brought to the author’s attention by a reviewer as another illustration of how to apply a cartographic, digital humanities approach to Middle Passage Studies.

7. Sailing vessels are named not for their tonnage or length but for their number of masts and sail plan. A frigate (fregat in Dutch) is a true ship because it has three square rigged masts, while a snow (snauw) is not a ship at all because it has only two masts, with a sail plan similar to a brig.


ABSTRACTS

Cartographic representations of the Middle Passage are nearly nonexistent but have great potential to increase understanding of the Atlantic slave trade as a complement to dominant, narrative approaches. Perhaps the congenital relationship between colonialism, the slave trade, and the mapping tools of the discipline of geography has dissuaded many from believing that cartography can contribute to critical understanding of the Middle Passage. Nonetheless, to illustrate the potential, the maps debuted in this article chart the death of enslaved Africans and their disposal overboard on twenty-five voyages by Dutch vessels sailing from the Gold Coast of West Africa to the South American colony of Suriname in the second half of the 18th century. Such cartographic representations complement narrative ones in the multidisciplinary effort to transform the Atlantic from a blank oceanic space into one with structures, agencies, and research questions that differ from those of continental and national historiographies, placing the Middle Passage at the epicenter of the human commodification necessary for the emergence of global capitalism in early modern times. The purpose of the maps is not so much analysis of the spatial-temporal patterns of death on the Middle Passage, a topic already well understood through decades of scholarship and better advanced through statistical approaches. Rather, the maps have a twofold purpose. First, they comprise spatial visualizations of archival data to evoke the horror of one aspect of the abhorrent commerce in human beings during the Atlantic slave trade, to conjure up the bloody horror of the crime scene that resulted from the entanglement of capital and black bodies. Second, following the theme of this special issue, the maps illustrate how to implement the collaborative ethos at the heart of the digital humanities by employing GIS (Geographic Information System) software that is free and open-source, open-access sharing of the online spatial database, and licensing that allows readers to create derivative maps and other types of visualization. Those best practices recognize that the descendants of the enslaved have a fundamental right to the raw data that scholars extract from the documents of the slave trade, a key tenet of the black digital humanities.
Il existe très peu de représentations cartographiques du Middle Passage ; celles qui nous sont parvenues permettent cependant d’élargir notre compréhension de la traite transatlantique des esclaves, et ajoutent une dimension complémentaire aux explications narratives prédominantes. Les relations intrinsèques entre le colonialisme, la traite des esclaves et les outils cartographiques de la géographie ont pu donner l’impression que la cartographie n’apporterait aucune contribution à la compréhension critique du Middle Passage. Cet article a justement pour objet d’illustrer le potentiel de la représentation cartographique en publiant pour la première fois des cartes qui retracent la mort d’Africains mis en esclavage et leur élimination par-dessus bord, au cours de vingt-cinq voyages de vaisseaux hollandais entre la Côte-d’Or en Afrique occidentale et la colonie sud-américaine du Suriname durant la deuxième moitié du XVIIIe siècle.

De telles cartographies, complémentaires des récits narratifs, participent des efforts pluridisciplinaires destinés à transformer la représentation de l’Atlantique, d’un espace océanique uniforme en un espace caractérisé par des structures, des agentivités et riche de sujets de recherche autres que ceux des diverses historiographies continentales et nationales. Le Middle Passage se trouve ici à l’épicentre de la marchandisation humaine essentielle à l’essor du capitalisme mondial au début de l’époque moderne. La raison d’être de ces cartes n’est pas tant l’analyse du schéma-type de la mort à travers le temps et l’espace dans le Middle Passage, car ce phénomène, étudié depuis des décennies, serait mieux éclairé par les méthodes statistiques. Ces cartes ont plutôt un double objectif. D’une part, ce sont des visualisations spatiales des données d’archives qui permettent d’évoquer l’un des aspects de l’abominable commerce d’êtres humains pratiqué durant la traite transatlantique des esclaves : à travers elles, c’est une scène de crime ensanglantée qui transparaît, résultant du lien complexe entre le capital et les corps noirs. D’autre part, dans le contexte du présent dossier thématique, ces cartes témoignent de l’esprit de collaboration qui est au cœur des humanités numériques, à travers l’usage du logiciel GIS (Geographic Information System – gratuit et open source), le partage d’une base de données spatiales en ligne et en libre accès, et l’autorisation des lecteurs à créer leurs propres cartes dérivées, ou encore d’autres types de visualisation. Ces bonnes pratiques prennent en compte le droit d’accès fondamental des descendants des esclavisés aux données brutes que les chercheurs extrayaient des documents de la traite des esclaves, un droit qui est un principe de base des humanités numériques noires.

Existen muy pocas representaciones cartográficas del Middle Passage. Las que tenemos permiten sin embargo ampliar nuestra comprensión de la trata transatlántica de esclavos y ofrecen una dimensión complementaria a las explicaciones narrativas predominantes. Quizás las relaciones intrínsecas entre colonialismo, trata de esclavos y herramientas cartográficas de la geografía han dado la impresión de que la cartografía no podía contribuir a la comprensión crítica del Middle Passage. Este artículo se propone precisamente ilustrar el potencial de la representación cartográfica publicando por primera vez mapas centrados en la muerte de africanos esclavizados que fueron arrojados al mar, durante veinticinco viajes de navíos holandeses entre la Costa de Oro en África occidental y la colonia sudamericana de Surinam en la segunda mitad del siglo XVIII. Tales cartografías, complementarias de los relatos, contribuyen a los esfuerzos pluridisciplinarios destinados a trasformar la representación del Atlántico, de un espacio oceánico uniforme a un espacio caracterizado por ricas estructuras, agencias y sujetos de investigación que no son los que aparecen en diversas historiografías continentales y nacionales. Así, el Middle Passage se encuentra en el epicentro de la mercantilización humana que fue crucial para el apogeo del capitalismo mundial a principios de la época moderna. La razón de ser de estos mapas no es tanto el análisis del esquema-tipo de la muerte a través del tiempo y el espacio del Middle Passage, ya que este fenómeno, estudiado desde hace décadas, se podría analizar mejor usando métodos estadísticos. Estas cartas tienen más bien un doble objetivo. Por un lado, se trata de visualizaciones espaciales de datos de archivos que permiten evocar uno de los aspectos del
abominable comercio de seres humanos practicado durante la trata transatlántica de esclavos: a través de estos mapas, lo que sobresale es una escena del crimen ensangrentado, resultado del vínculo complejo entre el capital y los cuerpos negros. Por otro lado, en el contexto de este dossier temático, estos mapas dan cuenta del espíritu de colaboración que es central en las humanidades digitales, a través del uso del programa GIS (Geographic Information System – gratuito y open source), la posibilidad de compartir una base de datos espaciales en línea y en libre acceso, y la autorización para que los lectores creen sus propias cartas derivadas, u otros tipos de visualización. Estas buenas prácticas toman en cuenta el derecho de acceso fundamental de los descendientes de personas esclavizadas, un derecho que es un principio de base de las humanidades digitales negras.

Existem muito poucas representações cartográficas do Middle Passage. As poucas representações que chegaram até nós permitem, no entanto, alargar o nosso entendimento do trato transatlântico de escravos, acrescentando uma dimensão complementar às explicações narrativas dominantes. As relações intrínsecas entre o colonialismo, o trato de escravos e os instrumentos cartográficos da geografia deixaram a impressão que a cartografia não poderia contribuir para a compreensão crítica do Middle Passage. Este artigo tem precisamente por objeto a ilustração do potencial da representação cartográfica, ao publicar pela primeira vez mapas que rastreiam a morte de Africanos escravizados, lançados ao mar, durante as vinte e cinco viagens de navios holandeses entre a Costa do Ouro na África Ocidental e a colônia sul-americana de Suriname na segunda metade do século XVIII. Estas cartografias, completando as narrações, participam dos esforços pluridisciplinares destinados a transformar a representação do Atlântico, de um espaço oceânico uniforme para um espaço caracterizado por estruturas, atuações e questões de investigação distintas das propostas pelas diversas historiografias continentais e nacionais. O Middle Passage encontra-se aqui no epicentro da mercantilização humana essencial para a expansão do capitalismo mundial no princípio da época moderna. A razão de ser desses mapas não é tanto a análise do padrão da morte através do tempo e do espaço no Middle Passage, porque este fenômeno, estudado há muitos anos, seria melhor esclarecido por métodos estatísticos. Estes mapas têm antes um objetivo duplo. Por um lado, trata-se de visualizações espaciais dos dados de arquivos, que permitem evocar um dos aspectos do terrível comércio de seres humanos praticado durante o trato transatlântico de escravos: através desses mapas, é uma cena de crime sangrenta que transparece, resultando da relação complexa entre o capital e os corpos negros. Por outro lado, no quadro deste dossiê temático, estes mapas testemunham o espírito de colaboração que está no cerne das humanidades digitais, através da utilização do software GIS (Geographic Information System – grátis e open source), a partilha de uma base de dados espaciais em linha e em acesso livre, e a possibilidade para os leitores de criar os seus próprios mapas derivados, ou ainda outros tipos de visualização. Estas boas práticas levam em conta o direito fundamental de acesso dos descendentes dos escravizados aos dados primários que os investigadores extraem dos documentos do trato de escravos, um direito que é um princípio básico das humanidades digitais negras.
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**Keywords:** black digital humanities, critical cartography, Gold Coast, Middelburgsche Commercie Compagnie, Middle Passage, open-source Geographic Information System, Suriname, 18th century

**Palavras-chave:** humanidades digitais negras, cartografia crítica, Costa do Ouro, Middelburgsche Commercie Compagnie, Middle Passage, Geographic Information System open source, Suriname, século XVIII

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