THE BALTIC AND THE BIRTH OF A MODERN ENGLISH MARITIME COMMUNITY: THE MUSCOVY COMPANY AND NAUTICAL CARTOGRAPHY, 1553-1665

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Abstract:

English merchants and navigators began developing their skills in the late sixteenth century to reach Baltic shores and in the process birthed a distinct English nautical charting tradition which continued to service and reflect English interests for over a century. Specifically, the efforts of the Muscovy Company and the emergence of a distinct master-apprentice relationship of chart makers within the Drapers' Company instigated the emergence of a modern maritime community in England replete with the financial structures, ships, and skills necessary to encompass the globe. As a result of various setbacks in the late-sixteenth century, English merchants and mariners shifted from coastal trading ventures to direct long-distance overseas commerce. This transformation was initiated through the efforts of the Muscovy Company and its accompanying introduction of marine charts for navigating distant shores. The introduction and expansion of direct long-distance overseas trade and modern navigational techniques then spurred the creation of a domestic charting industry to service these English navigational needs, the Thames School of English marine charting. Born out of a close association with English commerce to the Baltic, members of the Thames School continued to produce nautical charts of the globe that reflected ever-expanding English interests until the early-eighteenth century. This paper argues that trade to and from the Baltic acted as a proving ground, the venue, within which both the origins of English long-distant overseas trade and nautical cartography emerged—two fundamentally necessary components for the Empire which followed.

Rezumat:

Comercianții și navigatorii englezi au început să-și dezvolte abilitățile de a ajunge pe țărmurile baltice la sfârșitul secolului al XVI-lea și astfel a luat naștere o tradiție engleză distinctă de cartografie maritimă, care a continuat să deservească și să reflecte interesele engleze timp de peste un secol. Concret, eforturile Companiei Moscova și apariția unei relații distincte maestru-ucenic în rândul cartografilor din cadrul Companiei Postăvarilor au generat apariția unei comunități maritime moderne în Anglia ce abunda în structuri financiare, nave și abilități necesare pentru a cuprinde globul pământesc. Ca urmare a diferitelor obstacole întâmpinate la sfârșitul secolului al XVI-lea, negustorii și marinarii englezi și-au deplasat interesul de la negustoria de coastă către comerțul maritim extern pe distanțe lungi. Această transformare a fost inițiată prin eforturile Companiei Moscova și a fost însoțită de elaborarea unor hărți maritime destinate navigației către țărmuri îndepărtate. Introducerea și extinderea comerțului extern direct pe distanțe lungi și a tehnicilor moderne de navigație au stimulat ulterior crearea unei industrii naționale cartografice pentru a deservi aceste nevoi engleze de navigație, Școala Tamisa de cartografie maritimă engleză. Născută dintr-o asociere strânsă cu comerțul englez la Marea Baltică, membrii Școlii Tamisa au continuat să producă hărți nautice ale globului ce reflectau interesele permanente engleze de expansiune până la începutul secolului al XVIII-lea. Această lucrare susține că schimburile comerciale către și dinspre Marea Baltică au acționat ca un teren de încercare, în care își au sorgintea atât comerțul extern de lungă distanță cât și cartografia nautică, două componente fundamentale necesare ale imperiului care a urmat.

Keywords: Muscovy Company, Charts, England, nautical cartography

Long before England's maritime community began using charts, English mariners had visited the shores of nearby Europe and the Baltic. The age-old techniques for coastal navigation had allowed the interchange of Northern European and English ships for hundreds of years, though the Germanic Hanseatic League dominated all of the exchanges until the late sixteenth century. Sailing to places like Lübeck, Danzig and Riga involved following the North Sea coast past Amsterdam, Bremen and Hamburg, sailing through the Skagerrak and the Kattegat, paying the Danish tolls, and then skirting Baltic shores until anchored in port. By the mid-sixteenth century, however, English mariners under the direction of the newly

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formed Muscovy Company ignited a profound commercial shift in English overseas trade. The staple trades connecting England with Northern Europe were necessities and ultimately as important as American sugar, African gold, or Asian nutmeg. An integral component to understanding England's nascent overseas interests, which has not been incorporated into the larger narrative of English history, is the analogous developments in English marine cartography. English navigators began developing their skills in the late sixteenth century to reach Northern shores and birthed a distinct English nautical charting tradition which continued to service and reflect English interests across the globe well into the eighteenth-century.¹ The Baltic provided a proving ground, the venue, within which both the origins of English long-distant overseas trade and nautical cartography emerged, necessary components of England's modern maritime community.

Hanseatic League and the Northeast-passage

At the dawn of the sixteenth century the English were overwhelmingly a coastal trading nation. In fact, the Hanseatic League paved the way for the English and the Dutch trades to the Baltic. Emerging out of the Baltic, a group of loosely associated northern Germanic towns had formed a powerful trading organization called the Hanseatic League by end of the thirteenth century. The Hanse were the preeminent traders throughout the Baltic and all along the North Sea by the fourteenth century. Granted a monopoly with the Treaty of Utrecht (1475), the Hanse continued to dominate England's trade to the Baltic until the late sixteenth century from its trading post in London known as the Steelyard. Despite being threatened in 1518, 1520, and from 1539-1542 with repercussions for ignoring reciprocal trading privileges, the Hanse's continued naval strength and ability to supply superior naval stores prevented Henry VIII from issuing any sanctions. However, by 1551 alongside the effects of currency debasement and the sagging London-Antwerp trading axis, the Hanse's position in English trade became precarious. The long-running feud between England's Merchant Adventurers (the primary English overseas concern until the latter-sixteenth century) and the Hanseatic

¹ A chart is a maritime map, that details coastal profiles, hazards, soundings, and any manner of information that a mariner might need to traverse the waters of the globe.

League was reinvigorated when it was found that the League was shipping un-dyed cloths to Hamburg and thereby disastrously weakening the English woolen industry's trade to Antwerp. The resulting dispute temporarily stripped the League of its monopoly for the first time.² Though restored the following year, the Hanseatic League's position would increasingly become marginalized as English merchants progressively expanded their own trading horizons after 1553.

The Northern trades had historically been important to the English. Yet, continental politics and religion in the mid-sixteenth century impeded the trade of Antwerp, England's principal outlet for unprocessed woolen cloth exports and Northern Europe's major entrepôt. First, and most importantly, the thirty-year-long decline of Antwerp, which came to a head in 1585, left England's cloth trade to languish. (The unrest in the Spanish Netherlands began in the 1550s, but the Dutch revolted in earnest in 1568. Spanish troops plundered Antwerp in 1576 and by 1585 the city had fallen to the Spanish who then closed the river Scheldt to shipping). Secondly, the nature of the woolen market started to shift from the "old draperies" to the "new draperies," a market shift that found England unprepared near the end of the sixteenth century.³ Furthermore, by the 1550s England's growing textile trade had become overwhelmingly centralized in London. Yet the difficulties in the cloth market, felt most acutely in London, did help to inspire an expansionist attitude amongst English merchants, as they sought any means to expand their diminishing returns from across the channel. It should also be noted that English Protestant merchants no longer felt bound to the territorial proclamations of the papacy and the Catholic

² Loades, David, *England's Maritime Empire: Seapower, Commerce, and Policy, 1490-1690* (Longman-Pearson-Education Ltd: Harlow, 2000), 28-30, 38, 59-61, 101.

³ Ralph Davis, "England and the Mediterranean, 1570-1670," ed. F.J. Fisher, *Essays in the Economic and Social History of Tudor and Stuart England*, (Cambridge University Press, Cambridge, 1961). 118-121. Kerseys' or 'shortcloths' were the traditional heavy woolen cloth, the 'old daperies,' of

England while 'broadcloths' were the 'new daperies' of the English textile industry (1600's); both

woolen products were integral to the expansion of English trade. W.E. Minchinton, *The Growth of English Overseas Trade in the Seventeenth and Eighteenth Centuries*, (Methuen & Co LTD, Bungay, 1969), 6. In addition, the English woolen industry was threatened by a serious currency devaluation in 1550/1 which helped create a boom and bust cycle as the market became saturated by increasingly cheap English woolens by 1551 (David Loades, *England's Maritime Empire*, p. 59-61). For a brief time in the first half of the sixteenth century, however, a greater demand for English woolen textiles did create a short-lived boom.

powers—making it all the more feasible for English merchants to begin funding extensive incursions into Spanish and Portuguese trading zones as well as searching for new opportunities. They had a real need and desire to find new markets in lieu of Antwerp. Accordingly, after such acute setbacks the English maritime community developed the skills, ships, and financial structures that laid the foundations of the emerging maritime empire of England and Britain.

As noted, the Antwerp crisis prompted real concern for English merchants and attempts to establish new direct trading ventures with distant ports seemed necessary. These attempts were spurred by the arrival of Sebastian Cabot in 1547.⁴ While English exploratory voyages in the opening stages of the era of European ‘discovery’ were sparse, Cabot helped spark the idea of a Northeast-passage to the Indies. As a result, one of the most notable exceptions to England’s limitedly successful exploratory ventures occurred, the discovery of a northern route to Russia via the White Sea during the mid-sixteenth century. The Archangel route, as it later came to be known, helped create England’s first joint stock company, the Muscovy Company in 1553, and stimulated England’s nascent nautical cartography through the efforts of William Borough. This second northern trade route also assured English access to various Northern commodities, albeit more hazardously than sailing into the Baltic. In the North, England initially sought Baltic manufactured goods, like linen, but by the end of the century England depended upon northern naval stores and iron to feed her burgeoning expansion. Though English interests in the Northern trades were never as glamorous as the contemporaneous Atlantic and Asian voyages of the period, Baltic trades were essential to the developmental stages of the modern English maritime community.

The Muscovy Company and William Borough

Discovered in the course of an attempt to find a Northeast Passage to the Indies, the White Sea route to Russia prompted the establishment of the Muscovy Company and marks a major epoch in English maritime

⁴ Loades, 54-9. Edward VI’s Privy Council paid Cabot to leave his position as *pilot-major* of Spain’s *Casa de la Contratacion* in 1547. Interestingly, despite Mary’s marriage to Phillip II of Spain, Cabot remained in England until his death in 1557, encouraging the expansion of English overseas trade.

expansion. The Muscovy Company was the first joint-stock company in history and thus is important in regards to the story of capitalist development. Also, the Muscovy Company used larger ships to transport their goods, helping to expand the size and tonnage of the English fleet in general. Lastly, and arguably most importantly, the voyages to the Northeast, and the subsequent creation of the Muscovy Company, provided the impetus for England's first overseas cartographer, William Borough. Although the Russian trade never became an overly lucrative or vast trading concern, Russian cordage (hemp rope) was quickly recognized as being of superior quality. The cordage trade thereafter served as an exchange for English goods and an effective training ground for England's developing maritime community.⁵ At the close of the sixteenth century the English navy, for example, was buying £10,000 of Russian cordage a year.⁶ Chartered by the crown in England, the Muscovy Company was a monopoly. Its trading rights to Russia were also privileged by the Russian court, though after Ivan IV's death in 1584, the company declined as Dutch competition began to increasingly marginalize England's Russian trades.⁷ Nonetheless, the Muscovy Company continued throughout the next century to undertake profitable trade to Russia.

William Borough gained his experience in conjunction with his services for the earliest voyages of the Muscovy Company. Sailing at the age of sixteen with his older brother Stephen on Richard Chancellor's 1553 voyage searching for the 'Northeast Passage,' William Borough eventually became the Chief Pilot for the Muscovy Company and in 1585 Master of Trinity House. However, Borough's significance rests largely on the fact that he was the preeminent Tudor nautical cartographer and forefather of English overseas chart making. Prior to Borough, few oceanic charts, if any, were produced by Englishmen; what charts that do survive depict England's coasts and harbors.⁸ Ten charts by Borough have survived, many of them directly relating to northern voyages—an obvious manifestation of his association with the Muscovy Company. For example, by June 1, 1576,

⁵ Beeswax and hides were the mainstays of Russian exports along with flax. England exported heavy woolens and various other manufactured goods.

⁶ Andrews, 76-7.

⁷ Willan, T.S. *The early history of the Russia Company* (University of Manchester Press: Manchester, 1956). 180-88, 212-4, 271-3.

⁸ Robinson, 29-31.

he prepared a chart of the North Atlantic for Martin Frobisher's search for the Northwest Passage, and he devised the instructions and charts for Charles Jackman's and Arthur Pett's Arctic voyage looking for a Northeast-passage in 1580, wherein he produced a chart of the Baltic.⁹ Moreover, Borough was a leading figure in sixteenth-century navigation literature; he represents a locus for understanding the broadening of English interests in the latter sixteenth century. Such close maritime affiliations mark Borough, specifically, along with other mariners of his time, as the originators of the modern English maritime community. His activities foreshadow the birth of an English maritime community complete with an emerging charting tradition.

Borough's chart of the Baltic circa 1580 is emblematic of the birth of English expansionism. Among the oldest of English overseas charts, Borough's chart represents the birth of the new northern trade and the use of charts at sea. His chart was clearly produced for voyages of the Muscovy Company as it details the route from the North Sea into the Baltic Sea for the port of Narva, near present-day St. Petersburg, Russia. Narva was controlled by the Russians from 1558 until 1581 and offered the Muscovy Company a second, and more accessible, trading port in the Baltic. The other Muscovy port was in the White Sea at Saint Nicholas, which does not appear on this chart. Archangel replaced the port of St. Nicholas at the turn of the sixteenth century and became a thriving port by the close of the next century.¹⁰ As a navigational document, Borough's chart is a graphic aid that helped mariners to visualize their voyage. As a forerunner to modern charting traditions, Borough's chart, like all portolan charts, supplemented the use of sailing directions, or rutters.

⁹ Robinson, 29-31; Smith, 65; Waters, 145-6, 150-2, 528-32. A detailed description of Borough's chart for Frobisher's voyage was written by Waters (528).

¹⁰ Anderson, M.S., *Britain's Discovery of Russia, 1553-1815* (MacMillan & Co., 1958), pg 5.

Image 1: Chart of the N.W. Atlantic and Baltic

Borough, William, 'Chart of the N.W. Atlantic, 1576.' Reprinted in Waters, *The Art of Navigation in England in Elizabethan and Stuart Times*.

The chart at first glance appears unfinished. The eastern coast of England protrudes from the southwestern extremes of the chart while the western coasts of Europe are ignored until the northern fringes of the province of Jutland in Denmark. Adorned with eight elaborate compass roses, three half-roses, and even a quarter-rose, the coasts are plotted amid an extensive series of rhumb-lines (lines radiating from the center in the direction of compass points). Three scales not only help to ascertain distance but also parallel the course of the Baltic trading voyages. The chart only marks the coasts that a mariner could see along a voyage to and from London and Narva. Once into the English Channel, the chart reveals a sailing route from the North Sea through the Skagerrak and the Kattegat, passing the Danish tolls along the Swedish coast and then sailing towards

the islands of Bornholm, Gotland, and Saaremaa into the Gulf of Finland, where the port town of Narva is duly noted.

Throughout the chart, coastlines act as a point of reference for the mariner. Note how Bornholm acts as a pivot point for any voyage. Interestingly, it is one of only a few complete locales, another being the Isle of Saaremaa. In fact, no matter which side, or angle, that one might reach Bornholm, its relative position helps to direct the mariner towards Narva or the Tolls by way of northern coastal views. Sailing in or out of the Baltic, the English sailor used the northern coast of Sweden and Bornholm as visual cues. Upon reaching Bornholm for Narva, the navigator sailed a northeast-by-east course, towards Gotland. Arriving at Gotland, the ship coasted along the eastern shoreline until veering east at Gotland's most northerly point, towards Saaremaa. Like Bornholm, all of the coastlines of Saaremaa are fully marked, ensuring that the navigator avoided the more hazardous eastern shorelines. From Saaremaa, the voyage takes an easy easterly coastal route to Narva. Indeed, each coast that Borough plots helps to refine the mariner's relative position graphically. Of course, the chart was a supplement, augmenting the age-old art of navigating by depth-soundings, currents, and dead reckoning; nevertheless, it faithfully projected the Baltic sailing route to Narva.

Borough's chart is important to the history of northern navigation as well, since it is one of the first charts to accurately document Narva in the Gulf of Finland.¹¹ Borough is important as a precursor of the use and proliferation of cartography among English sailors, but he does not represent the establishment of a truly modern maritime community replete with a strong cartographic component. He is, however, among the originators of the milieu from which the modern English maritime community would be born, i.e., a refined commercial community that had the merchants, markets, mariners, map-makers, and the know-how to undertake expansion.

Of the under-appreciated factors that enabled England's successful overseas expansion, one is the increasing competency of English mariners in nautical cartography. The neglect of the insights of cartographic historians, and indeed of the map-sources themselves, has led to a gap in

¹¹ Raurala, Nils-Erik, 'Three Knots: or, There are only two kinds of people: those who buy and those who sell,' *Routes of the Sea* (John Nurminen, 1988), pg 113-4.

our understanding of the process of English overseas expansion. Yet maps offer unrivalled opportunities both for assessing the nature of English understanding of the outside world, and for gauging the degree of expertise that her mariners had attained. Since maps and charts are graphic representations of reality, they can be considered an embodiment of English merchant, mariner, and even ministerial interests in commerce and empire.¹²

There were a handful of English cartographers during the sixteenth century, but one of the most important navigational leaps forward occurred when Dutch nautical cartography and print traditions merged with the publication of Lucas Janszoon Waghenae's *Spiegel der Zeevaerdt* in 1584.

¹² This study's interpretation of charts is modeled on the work of Brian Harley, Dennis Cosgrove, and David Buisseret. Some of Harley's most significant articles have been reprinted and introduced in, *The New Nature of Maps: Essays in the History of Cartography* (John Hopkins Press, 2001). In this work, Harley effectively outlined how maps are part of the lexicon of source materials that can more fully conceptualize and enlighten our understanding of the peoples of the past. Brian Harley, the foremost scholar on the symbolism of maps, noted that the "cartographer has never been an independent artist, craftsmen, or technician," thus the cartographer's work reflects any manner of 'power relations,' be they imposed by a "patron, a state bureaucracy, or the market (63)." In effect, "the power of the map, an act of control over the image of the world, is like the power of print in general (49)" since maps not only provide the physical shape of the shared ideas of communities, but they are also the 'willed' reflections of the imagined communities by societal elites. Accordingly, as a manifestation of spatial and conceptual relationships of the community, maps are then mirrors of the perceived reality of any given period; thus, they can be deconstructed like any other text within their historical framework- in this case as signifiers of English commercial and imperial designs from 1590 to 1720. Responding to Harley's call to demonstrate how maps could be related "to the social implications of their varied form and subject matter," Cosgrove in 1992 published "Mapping New Worlds: Culture and Cartography in Sixteenth-Century Venice." In effect, by placing cartography "in the culture of the sixteenth century [Venetian] Republic," Cosgrove revealed how it was a reflection of Venetian interests (65-89). Harley's work outlined the use of deconstruction for cartographic inquiry, and Cosgrove's article brilliantly chronicles how the "[e]nvironment, economy, and historical experience" of sixteenth-century Venetian cartography was "a form of representational discourse" for and about Venetians. David Buisseret's *The Mapmakers' Quest: Depicting New Worlds in Renaissance Europe* (Oxford University Press, 2003), in turn, has persuasively argued that cartography was part of the political, cultural and economic milieu of early modern Europe. Specifically, he "show[s] how people in early modern Europe came to use maps in the everyday course of their business. By the beginning of the seventeenth century, they were in habitual use by soldiers, sailors, farmers, archaeologists, and administrators. (177)" All three of these scholars provide a theoretical model for arguing the importance of meshing nautical cartography with commerce and empire in early modern England, yet no one to-date has written such a study.

The *Spiegel der Zeevaerdt* is the first printed volume of sailing directions with accompanying sea-charts in history, and consequently is important because it helped to reduce copyists' errors. Translated at the behest of Queen Elizabeth's government in 1588 as the *Mariners Mirrour* by Anthony Ashley, the *Spiegel der Zeevaerdt* also speedily helped to spread graphicacy to English mariners.¹³ In effect, the publication of the *Mariners Mirrour* introduced England's coastal and foreign pilots to charts, wherein they were able to *see* the advantages of charts over rutters.¹⁴ In fact, for centuries waggoners replaced the word rutters in English and became synonymous for graphically informed sailing directions. Interestingly, Waghenauer's work is particularly relevant for the voyages to the Baltic as the *Spiegel der Zeevaerdt* included directions for offshore navigation along Sweden's east coast and showed routes to the River Narva. In addition, it highlighted the need for local pilots' to navigate inshore while also noting that an extensive array of beacons had been erected between the 1570s and 1580s to mark important approaches.¹⁵ The success of the *Mariners Mirrour* helped spur an English market for charts, a market that would long be dominated by the Dutch, but eventually met by English cartographers living in London along the River Thames.

The Northern and nearby Trades

Historically, the Baltic provided an important venue for English goods but the seventeenth century would prove to dramatically alter the nature of England's mercantile interests in the North. English interests shifted focus from cloth to iron and naval stores, subsequently restructuring the nature of English trade to the North. In fact, David Ormrod has forcefully argued that

¹³ Graphicacy is the ability to understand and use graphic aids.

¹⁴ Delano-Smith, Catherine & Kain, Roger, J.P., *English Maps: A history*, (University of Toronto Press, 1999), pg. 147-8, 159; Robinson, A.H.W., *Marine Cartography in Britain* (Leicester University Press, 1962), pg. 34-6, 224. Anthony Ashley was Clerk to the Privy Council and translated the 1586 Latin edition; it took him nearly three years and was effectively an anglicized form of the original.

¹⁵ Ericsson, C., Miekkaavaara, L., Nurminen, J., & Raurala, N., *The Routes of the Sea: Sea chart from the 16th century to present times* (Mäntän Kirjapaino Oy, 1988), pg. 16-17. In addition, it introduced various symbols to represent soundings, hazards, anchorages, and other navigational data; some of the symbols first printed in the *Spiegel der Zeevaert* are still used today.

[t]he commercial revolution has rightly been identified with product diversification and the expansion of long-distance trading, but the reorganization of England's nearby European trades was equally important, providing the foundation for eighteenth-century commercial growth and facilitating the expansion of the Atlantic economy.¹⁶

Furthermore, the methods of trade changed as well. As English trade expanded throughout the later sixteenth and the seventeenth centuries, models of commercial development ensued: corporate monopolies and open trades. Restricted by memberships, these corporate monopolies were royally privileged joint stock companies. Accordingly, they were able to exploit their privileged trades and thereby provide the Crown with financial support. Open traders depended upon low custom duties and unregulated trading opportunities. The diversification of imports to England throughout the seventeenth century greatly increased the opportunities of open traders and drastically curtailed the monopolistic practices of the traditionally restricted joint stock companies. In fact, nearly of all England's trading concerns were radically redefined in the 1690s as Parliament, at the behest of open traders, ended most of the corporate monopolies' privileged status.¹⁷ Famously, the Merchant Adventurers' privileges were abolished in 1689 as the effects of the Anglo-Dutch wars, Dutch competitors, and English interlopers – open traders – had drastically reduced their viability. The Muscovy Company lost its monopoly in 1698. Despite its operators, English trade from its tepid expansion in the sixteenth century to its burgeoning growth in the seventeenth century depended on northern staples.

By the mid-seventeenth century the Northern staples were dominated by timber, iron, hemp, corn, potash, and pitch and tar. The Eastland Company, founded in 1579 to trade English woolens in Elbing, shifted to Danzig in

¹⁶ Ormrod, David, *The Rise of Commercial Empires: England and the Netherlands in the Age of mercantilism, 1650-1770* (Cambridge University Press: Cambridge and New York, 2003), xiv.

¹⁷ Ormrod, 32-33, 42-45; Robert Brenner, *Merchants and Revolution. Commercial Change, Political Conflict, and London's Overseas Traders, 1550-1653* (Cambridge University Press: Cambridge, 1993), 598-9, 625-8. The East India Company and the Hudson's Bay Company remained largely unscathed by the Parliamentary assault on privileged trade. The trades throughout the Atlantic, however, were opened to traders free of restricted participation because of the royal privilege.

1630.¹⁸ Like Danzig, Königsberg and Memel offered the English the opportunity to acquire timber, potash, and linen goods. Hemp was readily found in Riga, and Narva was the greatest supplier of flax. Norwegian ports overwhelmingly shipped timber for masts and spars from the small ports around the river Oslofiord. By the end of the seventeenth century Norwegian timber, as a bulk trade, comprised the largest volume of all English imports.¹⁹ Stockholm and Gothenburg were the principal Swedish ports. At the beginning of the seventeenth century, pitch and tar were characteristic exports from Sweden. As the century wore on, iron became more important as the pitch and tar trade increasingly switched to ports in North America. In exchange for the invaluable naval stores of the Baltic, English merchants had long sent woolen products and, as their trading concerns expanded, began to re-export Atlantic tobacco and sugar. Nonetheless, the size and value of imports always exceeded the size and value of exports to the Baltic ports.

In the first half of the century, to offset poor harvests at home, corn from Danzig sporadically claimed the largest percentage of English shipping. Normally, however, timber, hemp, and flax were the principal Baltic exports to England. Throughout the Baltic, English merchants were serviced by local Englishmen who served as factors, helping to ensure that the short trading season could be as profitable as possible. The sailing season to and from the Baltic lasted between March and November each year, as severe storms and icy conditions swept across the North Sea and Baltic during the winter months. Yet, as the English entered the Northern trades they were constantly beset by stiff Dutch competition. Though the English eventually rivaled and then displaced the Dutch as the principal exporters of Baltic goods, the process was a long and difficult one. Largely as a result of protectionist policies, famously the Navigation Acts, English merchants displaced the Dutch.²⁰ By the end of the seventeenth century, English merchants controlled Baltic exports, despite their ships having been built with northern timber, hemp, and flax.

Though not as obviously important to a growing maritime power, the nearby trades of Europe completed the circuit in the staple trades of

¹⁸ Davis, 213-7. Danzig was the principal outlet for corn in Europe and a great trading hub until well into the eighteenth century.

¹⁹ Davis, 213-4.

²⁰ Ormrod, 337-8.

England. Hamburg and the ports of Holland supplied linens and metalwares, while French wines and salt were all highly sought imports into England.²¹ When Antwerp began to experience difficulties many merchants, particularly the Merchant Adventurers, moved to Hamburg. As the seventeenth century closed, Hamburg was well on its way to rivaling Amsterdam as one of the major trading centers of Europe. By 1678, Hamburg's English imports began to be increasingly in the hands of interlopers, non-contracted traders outside of royal privilege, and even exceeded Spanish and Dutch imports as well.²² Despite the diversification of English exports, English woolens remained the principal Dutch imports as Dutch bleached-linens were still highly prized in England. Trade in French wines employed a large number of English ships; in fact, many ships not sailing to the Baltic because of the weather participated in the nearby trades during the winter months.²³

English woolens, coal, and eventually American and Asiatic re-exports provided the means to sustain English trade throughout nearby and Northern Europe. The Northern economy, broadly defined to include the nearby and Baltic trades, comprised fifty percent of England's overseas commerce in 1663, and declined to 37 percent in 1686 as the Atlantic trades increased.²⁴ Paralleling the growth in English shipping was the emergence of a distinctly English nautical cartographic tradition, the Thames School.

²¹ Davis, 204-5.

²² Ormrod, 75.

²³ Davis, 208-9.

²⁴ Davis, 17.

Image 2: Chart of the Atlantic Coasts of Europe

Nicholas Comberford, 'Atlantic Coasts of Europe (1666),' NMM G215:1/3

Thames School Charts of Northern and nearby Europe

It was not until the late-sixteenth century that the English can be said to have developed a formalized nautical cartographic tradition, commonly referred to as the Thames School. As often as not, the Thames

School was a collection of copyists and cartographers, who transferred and updated information on charts that were mainly produced as manuscripts, not print charts. Despite their secondary role in the history of cartography in light of Dutch prominence, the Thames School is a direct result of the expansion of English overseas trade throughout the sixteenth and the seventeenth centuries. Their charts clearly expressed English commercial interests. Yet, unlike the charts of the Dutch companies and earlier Iberian powers, the work of the Thames School was not a corporate or crown affair. By the end of the century, Thames-men were associated with the East India and Hudson's Bay companies. But neither they, nor the charts themselves, were a part of or a function of an overt institutionalization of knowledge. For the English, the institutionalization of nautical knowledge came in the eighteenth century under the auspices of the Board of Admiralty, Hydrographic Office.

Ultimately, England's commercial and imperial ventures could not have succeeded without an English charting tradition. The charts of the Thames School reflect the breadth of English overseas interests. The internal makeup of the Thames School, while the subject of some debate among scholars, certainly rests upon two factors: the records of an extensive apprentice-master relationship spanning over one hundred years and the stylistic similarities of English charts throughout the seventeenth century.²⁵ The uses of Thames school charts and maps suggest that not only

²⁵ The debate surrounding the naming of this cartographic movement and its membership has involved two scholars: Tony Campbell and Thomas Smith. Campbell argued that the locality should not be used to label the people involved in the stylistic school that arose along the River Thames. Rather, what makes the cartographers part of a distinctive body of work "was the fact that they, and only they, were the product of one particular master-apprentice" program as institutionalized by their membership in the Drapers' Company in London (Campbell, Tony, 'The Drapers' Company and its school of Seventeenth century chart-makers," ed. Helen Wallis and Sarah Tyacke, *My Head is a Map* (Francis Edwards and Carta Press, 1973), pg.99). The realization of the magnitude of the master-apprentice relationship—a total of thirty-seven people spanning nearly one hundred and twenty-five years, as recorded in the ledgers of the Drapers' Company—lends much weight to a narrow definition of the perimeters of the school and its renaming as the "Chart-makers of the Drapers' Company" (Campbell, 100-101). However, Smith (who initially discovered and started compiling the master-apprentice tree within the Drapers' Company records) has argued that it is the stylistic similarities of the charts that should define them as part of a "Thames School" (Smith, Thomas R., "Manuscripts and Printed Sea Charts in Seventeenth century London," ed. Norman Thrower, *The Compleat Plattmaker* (University of California Press, 1978), pg.52-3). Accordingly, he embraced the term "Thames School" because it better explains the evolution of the style that developed around the River Thames, a style that did

was commercial expansion indebted to the rise of nautical cartography in England but so too was the formation of colonial policy. Moreover, as products of the center, namely London's central role in all aspects of English life, the charts inherently represent the cosmography of London's elite as well. As instruments of commerce and empire, or as cultural reflections of desire and consciousness, Thames School charts are consistent cartographic representations of English interests. Like the origins of English overseas trade and nautical cartography, the earliest Thames School members and surviving charts are intimately connected with the Northern trades, following English commercial interests to and from the Baltic and White Sea.

While only four extant manuscript Thames charts survive depicting England's Northern trades, they are nonetheless emblematic of English commercial interests. John Daniell's 1637 oceanic chart of the northern navigations stretches from Bruges, Amsterdam, Bremen, and Hamburg along the North Atlantic, to Lübeck, Rostock, Danzig, Narva, and Stockholm in the Baltic Sea, and charts the northern waters around Norway, Sweden, and Lapland to the White Sea.²⁶ Daniell's chart is believed to be one of the charts that Sir Robert Dudley used to compile his *Arcano del Mare* in 1646; the chart is located in Italy at the Biblioteca Nazionale in Florence.²⁷ Nicholas Comberford's three charts of Northern Europe cover similar waters and ports.²⁸ Comberford, however, includes Ireland and Flanders on his 1651 and 1665 charts of Northern Europe—both important trading destinations in their own right. Close examination of Daniell's 1637 and Comberford's 1665 manuscript charts of Northern

not necessarily include just the people in the master-apprentice tree found in the Drapers' records. In fact, Smith suggests that four additional cartographers should be added to the litany of "Thames School" members as forerunners of the style, even though they are not mentioned in the Drapers' Company records: Nicholas Reynolds, Gabriel Tatton, Thomas Lupo, and Thomas Hood (Smith, 65-70. Each of these cartographers, Smith argues, reflects distinctive elements that can be traced throughout the evolution of the Thames School). This historical debate rests upon where the scholar places his emphasis, the written documents and records *or* upon the analysis of the style and context of early-seventeenth century English cartographers. The difference is methodological.

²⁶ John Daniell, 1637, 'Chart of Northern Europe,' Florence, Bib. Naz., Port. 14.

²⁷ The *Arcano del Mare* is the first printed sea-atlases made by an Englishmen; however, as an exile, Dudley marketed his product for continental Europeans, as his atlas is in Italian.

²⁸ Nicholas Comberford, 1651, 'Chart of Northern Europe,' Greenwich, NMM, G.213:3/1; 1665, 'Chart of North Sea and Baltic,' Helsingør, Danish Maritime Museum 121:49; 1665, 'Chart of Northern Europe,' Oxford, Bodleian, MS don.a.4.

Europe provides a unique way in which to plot changes and developments in England's Northern trades and to conclude from the visual evidence the continuing importance of the Baltic in an age of global commerce.

Information concerning John Daniell is scant, though what remains provides fascinating hints concerning the ties to Baltic trades and the birth of 'formalized' English nautical cartography. James Walsh in 1590 freed John Daniell from his apprenticeship, along with Piers Walsh. A mariner, compass-maker, and possible chart-maker, James Walsh was possibly the founding member of the Thames School of cartographers as recorded in the Drapers' Company records; unfortunately, no charts by him have survived. Piers Walsh appears only once in the records; none of his charts have survived, either. Thirteen charts by John Daniell, however, have survived and they represent the earliest examples of charts by a member of the Drapers' Company.²⁹ In the *Quarterage Book* (1628-41) of the Drapers' Company, John Daniell is listed as a sea compass maker and master to Nicholas Comberford.³⁰ In addition, Daniell supervised at least four other apprentices: William Chisleden (1604-?), William Hanmer (1622-1625), Josias Solmes (1632-40), and Richard Fletcher (1635-1644).³¹ Nicholas Comberford, Daniell's second apprentice, went on to accept six apprentices, four of whom eventually accepted apprentices of their own. Most likely Daniell was a practiced mariner, as his master before him.³² His first recorded chart, now lost but referred to in 1612, was a chart of Spitsbergen for the Muscovy Company.³³ Like England's first notable overseas cartographer, William Borough, Daniell can also be tied to a commercial venture in the North. Moreover, the records of the Drapers' Company reveal that its members were active in the Muscovy Company as

²⁹ Tyacke, Sarah, "Chartmaking in England and Its Context, 1500-1660," David Woodward, *History of Cartography, vol. 3: Cartography in the European Renaissance* (University of Chicago Press, 2007)

³⁰ Campbell, pg. 91-92; Smith, pg. 97. Nicholas Comberford was apprenticed to John Daniell between 1612 and 1620. Comberford is one of the most important Thamesmen as 27 charts survive and depict the global extent of English maritime interests from 1641-1670.

³¹ Ibid., 101. The dates mark each apprentice's entrance and freedom by his master. Hanmer, however, died before his freedom and was buried at St. Katherine's by the Tower, London on April 27.

³² Ibid, 90-93, 101. Tony Campbell convincingly argues that Daniell most likely went to sea, albeit briefly.

³³ Ibid., 92, fn47. By 1622 the *Binding Book* of the Drapers' Company noted Daniell as a seacard drawer- a clear reference to his chart making endeavors (Campbell, pg. 93).

merchants and seamen. This suggests why the Drapers' Company included chart-makers, but more intriguingly signifies the natural connection that Daniell and the Thames School has with the evolution of a formalized charting tradition wedded to England's continuing interests in the Baltic and with England's global aspirations.³⁴

The first surviving chart by Daniell is of the west coast of Africa in 1614 but Daniell's works span the globe as he also composed charts covering the Mediterranean, Asia, and the Atlantic. For example, Daniell's 1639 North Atlantic chart acts as a nexus outlining England's Atlantic endeavors by delineating England, West Africa, South America, the Caribbean, the Chesapeake, and the Newfoundland fisheries. Daniell marks the beginning of the prescribed Thames School since some of his charts survive and, more importantly, he was the first to have freed apprentices who furthered their craft by similarly accepting apprentices of their own. Moreover, such maritime origins allow Daniell to symbolize the birth of the modern English maritime community – an interwoven group of people tied to the industries of the sea. John Daniell's important and symbolic career came to an end on August 1, 1649 when he was buried at St. Katherine's, London. His activities reflect upon the naissance of an English maritime community complete with a formalized charting tradition.³⁵

Daniell's first recorded chart, now lost, represented England's northern interests. What little is known about his 1612 chart of Spitsbergen derives from a notation that "one Allan Sallows, an employee of the [Muscovy] Company, being in debt, fled to Holland and took this map with him."³⁶ Daniell's extant 1637 chart of Northern Europe clearly elucidates the entirety of English mariners' northern navigations and trades. Encompassing England north from Dover, Daniell's chart includes the

³⁴ Smith, pg. 56. Smith noted how A.H. Johnson's multi-volume *The History of the Worshipful Company of Drapers* (Oxford, 1914, 1922) referenced the increasing interest of Drapers in the direct overseas trades to the North and beyond.

³⁵ It is extremely interesting to note that charts survive by all but one freed apprentice who went on to accept apprentices. It appears that those who guided their cartographic successors were more prolific and perhaps were more cognizant of the need to maintain a cartographic tradition.

³⁶ As published in Hessel Gerritsz's *Histoire du pays nommé Spitsberghe* and reprinted in Conway, Sir W. Martin (ed), *Early Dutch and English voyages to Spitsbergen in the Seventeenth century*, (Hakluyt Society, Second Series, 1902), 21.

remainder of Britain and follows the coast north from Calais around the Danish Peninsula into the Baltic and out around Norway, Finland, Lapland into the White Sea; it quickly ends thereafter. North of Finland and Lapland, Spitzbergen is confusingly labeled Grenland, though perhaps it is a conjecturally located Greenland. The innumerable islands and navigation hazards in the North Sea are noted, so too are those through the Skagerrak and the Kattegat, and along the Gulf of Finland.

Another interesting feature of Daniell's 1637 chart of Northern Europe is the absence of any mention of Denmark. Earlier Dutch charts depicted Denmark, as it was a known entity.³⁷ In characteristic Thames style, regional place names are emboldened while towns are listed at right angles along the coast. The Netherlands, Pomerland, Sprusland (Prussia), Curland, Lifland, Russia, Lapland, Finland, Swedland (Sweden), Norwaie (Noway), are all prominently written in alternating black and red capital typography, dissecting northern Europe into regions. The compass roses and cartouches are elaborately decorated and colored. Both the English and Scottish coat of arms are depicted on Britain, though no other heraldry is present on the chart. This is ironic since, when noted, most maps and charts mark them wherever appropriate as a reference to geopolitics or, more often as not, are coupled with images of power projections, like ships showing the flag or firing their broadsides. Rhumb lines radiate all over the chart marking cardinal directions throughout. Interestingly, Daniell's chart outlines the 'North Bottom,' the Gulf of Bothnia, between Sweden and Russia as opposed to similar charts by the Dutch that left it blank with a notation reading 'noordt bodem.'³⁸

³⁷ Willem Janszoon Blaeu, 1622 'Pascarte vande Lijflandsche zee, van Revel en Elsenvos tot het uijterste der Oost-zee' as reprinted in Ericsson, C., Miekkavaara, L., Nurminen, J., & Raurala, N., *The Routes of the Sea: Sea chart from the 16th century to present times* (Mäntän Kirjapaino Oy, 1988).

³⁸ Blaeu's 1622 chart of the Baltic, Hendrik Doncker's 1664 chart, nor Peter Goos' 1669 chart, or Frederick Wit's 1675 chart of the Baltic attempt to outline or detail the Gulf of Bothnia. As reprinted in Ericsson, C., Miekkavaara, L., Nurminen, J., & Raurala, N., *The Routes of the Sea*.

Image 3: Chart of Northern Europe

Daniell, John, 'Chart of Northern Europe, 1637,' Florence, Bib. Naz. Port 14.7

Leena Miekkavaara explained the absence of the Gulf of Bothnia as a reflection of Swedish policy, since foreign trade had been forbidden north of Stockholm since the mid-fourteenth century except at Åbo and Gävle; by 1636 new regulations completely closed the Gulf to foreigners. Accordingly, Dutch cartographers omitted the Gulf of Bothnia as not only did they not have reliable information but open trade was illegal; this omission highlights the commercial nature of charts. The *Spieghel der Zeevaerdt*, however, does depict the Gulf of Bothnia and was likely a primary source for Daniell's 1637 chart. While Swedish authorities possessed new hydrographic data for the Gulf in 1628, the information was not publicly disseminated for seven decades until Werner von Rosenfeldt and Peter Gedda produced their *General Hydrographisk Chart-Book öfwer Östersjön, och Katte-Gatt* (1695). Prior to the emergence of this marine atlas, access to the information was only by royal decree.³⁹ Daniell's depiction of the Gulf is crude and effectively useless, but it is roughly the correct size and shape. Ironically, Thamesman John Thornton's 1700 printed chart of the Baltic mimics the earlier Dutch charts and omits the Gulf of Bothnia, failing to incorporate the recent publication of the *General Hydrographisk Chart-Book öfwer Östersjön, och Katte-Gatt*.⁴⁰

Nicholas Comberford, Daniell's apprentice from 1612 until 1620, produced three charts of Northern Europe that survive. One of the most prolific Thames School cartographers, Comberford also apprenticed six men, three of whom went on to accept and guide their own apprentices.⁴¹ Married in 1624, Comberford had at least one son named Thomas, who was recorded as his apprentice in 1656.⁴² His last surviving chart is dated 1670; he died in 1673 at the age of eighty and was buried at St. Dunstons, Stepney.⁴³ Like Daniell, Comberford produced works global in context. Of the twenty-seven extant charts by Comberford, ten depict various parts of the Atlantic, seven are of the Mediterranean, three illustrate the Americas and Northern

³⁹ Miekkavaara, L., 'Finland on Printed Sea Charts: examples from the John Nurminen Collection,' *Routes of the Sea*, 50-1, 55-7.

⁴⁰ Specifically, John Thornton's 'A General Chart of the North Seas,' 1700.

⁴¹ Campbell, pg 100-6. Comberford accepted the following apprentices: John Burston (1628-1638), George Cockett (1634-), Charles Wild (1637-1652), John Collier (1638-), Andrew Welch (1649-1669), and his son Thomas Comberford (1656-). Burston, Wild, and Welch all went on to accept apprentices and ironically, works have survived by each of them.

⁴² Smith, pg .53

⁴³ Campbell, pg.100. He was buried on December 6, 1673.

Europe each, two cover Asian waters, and two pilotage charts of the English Channel survive. Two of Comberford's northern navigation charts are remarkably similar to Daniell's 1637 chart, as may be seen in this 1651 chart of the northern navigations held at the National Maritime Museum in Greenwich, England.

Image 4: Chart Northeast Atlantic and Northern Europe

Nicholas Comberford, "Northeast Atlantic and Northern Europe (1651)," NMM G213:3/1

The third Comberford chart, his 1665 Chart of the North Sea and Baltic, differs in that it harkens back to Borough's 1580 chart by only focusing on the North Sea and the Baltic rather than including the western coast of Russia. However, his 1665 Chart of Northern Europe, though similar to Daniell's chart, offers a timely comparison and perspective into England's northern trading ventures. For example, by the mid-seventeenth century the White Sea route was not only a declining avenue, but trades in the Baltic were dramatically increasing.

Encompassing Northern Europe from Ireland and the Isle of Wight to Iceland, Greenland, and Spitzbergen, Comberford's 1665 chart nearly shadows Daniell's earlier work. Still, differences exist and the quality of the surviving chart is markedly better.

Comberford's chart still rests on the four original panels, as opposed to the apparently folded Daniell chart, and the vellum still exudes an unweathered creamy luster that highlights the vibrant colorations of the chart. Complete with highly decorative scales and compass roses, the chart also possesses rhumb lines that radiate throughout, delineating the cardinal directions. The two elaborate scales are embossed with gold leaf and note that "this scale containth one hundred English leagues twentie to one degree." Only England, Scotland and Ireland are denoted with a coat of arms in addition to their emboldened names across the British Isles. Like Daniell's earlier chart, these coats of arms merely recognize royal authority in the British Isles and do not act as a symbol of power projection abroad. The shape of the Danish Peninsula has been more accurately updated though the Gulf of Bothnia, affixed as the 'North Bottom,' has regressed and become a mere geographical acknowledgement. Place names alternate in bold red or black capital letters throughout the chart and few names have been added; however, some of the names are spelled differently and some areas are also named differently as compared to Daniell's chart. Denmark is affixed and located below a reduced Sweden; Flanders, Brabant, and Holland have replaced the Netherlands. Russia has moved northeasterly as Finland is now demarcated across from Narva on the northern coast of the Gulf of Finland. In effect, the changes are relatively minor.

Image 5: Chart of Northern Europe

Comberford, Nicholas, 'Chart of Northern Europe, 1665,' Oxford, Bodleian, MS Don. A.4

A detail of the chart from Lübeck to Koningberg (Kalingrad) offers some interesting insights. The island of Zeeland is highlighted in yellow with its major ports of Roskilde and Copenhagen written in small red ink. The lesser ports are written in small black ink; surprisingly Helsingör, the first town of the Danish sound, is in black. Helsingör was the town where the infamous Danish Sound Toll was collected and where pirates were hanged to show foreign sailors the fruits of their fees to pass through the Sound – surely a worthy enough port for red ink.⁴⁴

Image 6: Inset of Chart of Northern Europe

Comberford, Nicholas, 'Chart of Northern Europe, 1665,' Oxford, Bodleian, MS Don. A.4

The surrounding islands are correctly noted: Langeland, Lolland, Fehmarn, Falster, and Møn. Also various navigational hazards northwest of Zeeland are noted, thereby warning the mariner to take heed. Below Zeeland is Lübeck, written in a somewhat larger red script – most likely larger because there was more space and it had long been a notable port of call. In similar fashion, Wismar, Rostock, Stalsund, Kołobrzeg and Danzig are highlighted in red along the southern Baltic shoreline. The island of Rügen accurately opposes Stralsund and aptly suggests its northern protrusions. The other major trading ports follow suit: Riga, Narva, and

⁴⁴ Glete, Jan, *Warfare at Sea, 1500-1650: Maritime conflicts and the transformation of Europe* (Routledge, 2000) pg. 114, 125. (125).

Stockholm are all printed red. What is significant is the fact that the chart is legible, relatively accurate in shape, and that by the use of bright red place-names the major trading ports are contrasted with lesser destinations. Moreover, nothing impedes the functionality of the chart—there are no demonstrative power projections common in other European contemporaneous mapping traditions. Comberford's chart, in short, is emblematic of the commercial interests and viability of English trade to Northern Europe in the seventeenth century.

The emergence of the Thames School and its manuscripts charts is important as they offer a unique vantage point to visualize English expansion from an English perceptive. Admittedly, other charts were used, especially printed charts after 1677 and innumerable Dutch charts. But the fact that English cartographers and copyists emerged in the latter sixteenth century and then flourished in the seventeenth century marks a crucial step for England's maritime community. Prior to the efforts of William Borough, the success of the *Mariners Mirrour*, and the formulation of the Thames School, English commercial interests lacked their own cartographic tradition. Without a cartographic tradition, English mariners, merchants, and ministers could not have effectively promoted English interests. The Baltic, an important staple market, served as an essential prelude to the materialization of England's overseas trades and more importantly as the birthplace of English overseas nautical cartography. It was the Muscovy Company that was England's first direct trading venture, and it was under the aegis of the Muscovy Company that William Borough became the preeminent Tudor cartographer and helped to promote the navigational sciences. The *Mariners Mirrour*, whose focus was on the northern navigations, popularized graphicacy and stimulated greater demand among mariners for charts. And within this milieu, several cartographers—James Walsh, John Daniell, and Nicholas Comberford—created a body of work that served as a vital underpinning to English interests, a formalized English charting tradition that complemented the concurrent rise of capital and consumerism throughout the seventeenth century. By the close of the seventeenth century, English woollens and Baltic naval stores had united the English Channel to the Baltic Sea in expansive new ways that stimulated overseas-trade as well as birthed English marine charting tradition. As a result, a modern maritime community developed in England that provided the necessary skills and services as well as ships and

supplies to traverse the globe, establishing a distinctly English ability to pursue English interests. The Baltic, then, acted as a forerunner to English empire in many ways since it provided the venue within which the true harbinger of English expansion emerged, a modern maritime community.

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