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Logistics in early-modern Europe

A discussion of specialization, flexibility and efficiency in the activities of the Dutch shipping community in the eighteenth century

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Introduction¹

In the historiography of Dutch economic history, maritime shipping records have played a crucial role. Generations of historians have put remarkable effort into the processing and publication of surviving maritime shipping records that cover various periods in time and distinct geographical areas. Sometimes these publications took the form of complete (electronic) databases of the original maritime shipping records², more often they appeared in the form of compact, statistical editions based on the original records³. While the importance of statistical sources of this kind should not be underestimated, their practical use has given rise to a remarkable ambiguity in the historiographical treatment of maritime shipping. On the one hand, numerous historians have made ample use of statistical shipping data, thus underlining the significance of maritime shipping in early-modern society. On the other hand, the very use of numerical data about maritime shipping has been overwhelmingly one-sided: maritime shipping numbers are treated almost exclusively to *illustrate* discussions about trade, trade development and regional economic growth. Except for a small number of microhistories on local shipping communities⁴, hardly any discussion of who the

¹ This paper is work in progress. Please, do not quote without notifying the author.

² Notable examples of this type are the publication of the Elbing pound-toll registers, the VOC database and the Paalgeddatabase. See: J.Th. Lindblad (ed.), *Dutch entries in the pound-toll registers of Elbing 1585-1700*, Den Haag: Instituut voor Nederlandse Geschiedenis, 1995, xxix, 499 pp. (Rijks geschiedkundige publicatiën, Grote serie 225); J.R. Bruijn, F.S. Gastra and I. Schöffer (eds.), *Dutch-Asiatic Shipping in the 17th and 18th centuries*, The Hague: Nijhoff, 1979-1987, 3 vol. (Rijks geschiedkundige publicatiën, Grote serie 165-167): Vol. 1: *Introductory Volume*, Vol. 2: *Outward-bound voyages from the Netherlands to Asia and the Cape 1595-1794*; Vol. 3: *Homeward-bound voyages from Asia and the Cape to the Netherlands 1597-1795*; G.M. Welling, *The Prize of Neutrality: trade relations between Amsterdam and North America 1771-1817: a study in computational history*, s.l.: s.n., 1998, ix, 261 pp. (Amsterdamse historische reeks, kleine serie 39). On line databases of the maritime shipping records in these publications can be found at: <http://www.inghist.nl> and <http://www.jet.rug.nl/~welling/>.

³ For examples, see: *Tabeller over skibsfart og Varetransport gennem Øresund 1497-1660*, I: Nina Ellinger Bang (red.), *Tabeller over Skibsfarten*. Copenhagen: Gyldendalske Boghandel – Nordisk Forlag; Leipzig: Otto Harrassowitz, 1922; II. Ibidem, *Tabeller over Varetransporten A*. Copenhagen: Gyldendalske Boghandel – Nordisk Forlag; Leipzig: Otto Harrassowitz, 1922; II. Nina Ellinger Bang, Knud Korst (red.), *Tabeller over Varetransporten B*. Copenhagen: Gyldendalske Boghandel – Nordisk Forlag; Leipzig: Otto Harrassowitz, 1933. *Tabeller over skibsfart og Varetransport gennem Øresund 1661-1783 og gennem Storebalt 1701-1748*, I: Ibidem, *Tabeller over Skibsfarten*. Copenhagen: Gyldendalske Boghandel – Nordisk Forlag; Leipzig: Otto Harrassowitz, 1930; J. Thomas Lindblad. *Sweden's trade with the Dutch Republic, 1738-1795: a quantitative analysis of the relationship between economic growth and international trade in the eighteenth century*. Assen, Van Gorcum, [1982]. xiii, 201 pp; Jake Th. Knoppers. *Dutch trade with Russia from the time of Peter I to Alexander I: a quantitative study in eighteenth century shipping*. Montréal, ICES, 1976. 3 vol.; Werner Scheltjens, Hans van Koningsbrugge (red.), *Van onze reporter ter plaatse: neerlandica in de Sint-Petersburgse Tijdingen 1728-1775*. Groningen: NRAC, 2003. 404 pp.

⁴ For examples, see: P.A. Boon, *Bouwers van de zee: zeevarenden van het Westfriesse platteland c. 1680-1720*, Den Haag: Stichting Hollandse Historische Reeks, 1996, x, 276 pp. (Hollandse Historische Reeks 26); P. Boon, 'West Friesland and the Sound

shipmasters were, where they came from and how they organised their professional activities can be found in studies on Dutch economic history. Information on transportation networks, on the behavioural patterns of individual shipmasters, on patterns of specialization and flexibility in the shipmaster's activities is scattered and often based on assumptions about trade patterns rather than that they concern shipping itself as an *integral economic activity*. However, following the viewpoint of Philip E. Steinberg, it must be said that 'transportation routes are socially constructed spaces in many of the same ways as the nodes they connect'⁵.

In this paper, I will try to substantiate the necessity of studying maritime shipping as an *integral economic activity*, by which I mean that maritime shipping is defined not only by the nodes it connects, nor by its own social structures exclusively, but by both elements at the same time. Moreover, maritime shipping must be viewed in an unabridged fashion: it is an economic activity that covers large distances and long periods of time. This implies that we need to find a way to overcome the limitations of the currently predominant view of maritime shipping as a set of condensed numerical data. I will prove empirically that transportation networks were indeed socially constructed spaces with the necessary features to allow us to speak of maritime shipping as an *integral economic activity*. I will do this by studying the operational and organizational structures of Dutch maritime shipping in the first half of the eighteenth century. In these structures, a number of distinguishing parameters could be identified, namely: cargo, port of destination and external shocks.

Theory & Method

This paper will deal with developments in the operational and organizational structure of Dutch maritime shipping in the first half of the eighteenth century. In order to be able to capture the dynamic nature of maritime shipping, I have chosen to embrace an evolutionary approach to the study of economic activity. In particular, the micro-meso-macro framework developed by Dopfer, Foster and Potts appears to be suited for the study of economic change in a spatio-temporal context,

(1681-1720). Sound Toll registers, Sound Toll Tables and the Facts in West Friesland' // W.G. Heeres (red.), *From Dunkirk to Danzig: Shipping and trade in the North Sea and the Baltic, 1350-1850*, Hilversum, 1988, pp. 171-189. Pieter Dekker, 'Friese schippers op de Amsterdamse Oostzeevaart in 1731' // *It beaken: meidielingen fan de Fryske Akademy*, 1977, Vol. 39, pp. 229-265; J.Th. Lindblad, P. de Buck, 'Shipmasters in the shipping between Amsterdam and the Baltic 1722-1780' // W.J. Wieringa (ed.), *The interactions of Amsterdam and Antwerp with the Baltic Region, 1400-1800: papers presented at the 3rd international conference of the "Association internationale d'Histoire des Mers Nordiques de l'Europe"*, Utrecht, August 30th-September 3rd 1982, Leiden: Nijhoff, 1983, viii, 199 pp.

⁵ Philip E. Steinberg, 'Transportation Space: A Fourth Spatial Category for the World Systems Perspective?' // Paul S. Ciccantell, Stephen G. Bunker (red.), *Space and transport in the World System*, Westport: Greenwood, 1998, pp. 19-35; Philip E. Steinberg, 'Navigating to multiple Horizons: toward a geography of ocean-space' // *The Professional Geographer*, 1999, Vol. 51, pp. 366-375; Philip E. Steinberg, *The Social Construction of the Ocean*, Cambridge: University Press, 2001, 239 pp. (Cambridge Studies in International Relations, Vol. 78). See also: Christopher S. Fowler, *Missing the Boat: The role of transportation networks in shaping global economic relations*, 2003, pp. 38-39. (Unpublished Master Thesis, University of Washington).

while Ioannides and Minoglou have presented interesting new insights in the study of ethnic networks from an evolutionary perspective⁶.

A number of electronic datasets available for the study of eighteenth century Dutch shipping was combined. These datasets were made available by Dr. George Welling, by the Dutch National Archives and through archival research that I carried out myself. George Welling has created an electronic database of the Paalgeld Registers of Amsterdam, which cover the years 1742 and 1771-1787. Also, he has created a similar database of the so-called Lastgeld Registers, another Amsterdam-based source, covering the years 1744-1748. Both these sources contain registrations of all shipmasters entering the harbour of Amsterdam from the high seas. In this paper, the focus will be on the in-depth study of the years 1742 and 1744-1748. Additional sources include the Dutch Sound Toll Tables, the Galjootsgeldregisters of the Directory Board for Baltic Shipping and Trade in Amsterdam and the Danish Sound Toll Registers⁷. Using this variety of sources, I have created a relational database which makes it possible to carry out a layered analysis of the activities of the Dutch shipping community in the years mentioned above. Every registered ship movement in any of the sources used, has the form of a single record. After the completion of a number of preparatory steps like name standardization, nominal record linkage, comparison and measurement, the resulting meta-source could be put to use as a 'new' source, next to a number of other specialized historical sources.

Making use of a critical realist approach, I will study the characteristics of the activities of a particular group of economic agents; a population. As will become clear in the analysis, the micro-meso-macro theoretical framework, typical for evolutionary approaches to economics, is reflected in the way the alphanumeric multi-source database is constructed. Accordingly, it is possible to use this alphanumeric multi-source database as a starting point on all three levels of analysis. By using this

⁶ See: Kurt Dopfer, John Foster, Jason Potts, 'Micro-meso-macro' // *Journal of Evolutionary Economics*, 2004, Vol. 14, pp. 263-279; Kurt Dopfer, Jason Potts, 'Evolutionary Realism: an new ontology for economics' // *Journal of Economic Methodology*, 2004, Vol. 11, Nr. 2, pp. 199-200; Jason Potts, 'The New Evolutionary Economics of Micro Meso Macro: All about how an economic systems is a complex systems (with some applications to financial markets)' // *Presentation at ACCS Winter School*. 2005; Stavros Ioannides, Ioanna Pepelasis Minoglou, 'Explaining the longevity of market-embedded clans: the case of Greek shipping' // *Conference paper, presented at the XIVth International Economic History Congress*, Helsinki, Finland, 21-25 August 2006.

⁷ For details about these sources and publications based upon them: see footnotes 1 and 2 and K. Labahn, S. Kroll, 'Die "niederländischen Sundregister" als Quelle für den Fernhandel der Hafenstädte des Ostseeraums während des 18. Jahrhunderts' // F. Braun, S. Kroll (red.). *Städtesystem und Urbanisierung im Ostseeraum in der Frühen Neuzeit: Wirtschaft, Bankkultur und Historische Informationssysteme*. [Münster], LIT, 2004. pp. 299-301. Descriptions of the characteristics of Dutch Sound Toll Tables, Gajootsgeldregisters and Danish Sound Toll Registers can be found in: Werner Scheltjens, 'Sources for the study of Dutch trade in the Gulf of Finland, 1558-1780' // *Stadt und Meer im Ostseeraum während des 17. und 18. Jahrhunderts. Seehandel, Sozialstruktur und Haubau – dargestellt in historischen Informationssystemen*. (forthcoming); Werner Scheltjens, *When Nyen became St. Petersburg, Patterns of specialization in Dutch shipping in the eastern Gulf of Finland in the first half of the eighteenth century*. Conference Paper, presented at the Second Flemish-Dutch Conference 'Economic History of the Low Countries before 1850' (Antwerp, 20-21 April 2006). Both papers are available on line at: <http://www.rug.nl/staff/w.f.y.scheltjens/index>. An on-line version of part of the Dutch Sound Toll Tables can be found at: <http://esf.niwi.knaw.nl/esf1998/projects/sont/html/search.cfm>.

method, I make a claim for a more profound understanding of the use of databases in historical research, and I aim to prove that the use of historical databases can provide new insights both for economic history as well as for economic theory. At the same time, however, I would like to take the opportunity to stress the importance of contextual information, that lies outside the database.

Obviously, working with eighteenth-century sources has serious limitations. For one, the availability of the sources often has its limits. Some sources are only partly available in electronic form, while others have only been preserved for a limited number of years. At the same time, the possibilities for researchers to make archival sources available for computational analysis suffer from the limited time and funds usually available for data input. In this paper, a number of archival sources that will be used, were excerpted with a specific aim. Only registrations of Dutch shipmasters active in the eastern part of the Gulf of Finland and Archangel in the first half of the eighteenth century have been collected from the sources. Obviously, this makes a comprehensive view on the development of the structure of Dutch early-modern maritime shipping impossible. On the other hand, however, we can treat the data made available as a sample and we can enhance it by making use of the other sources mentioned above. This, it is hoped, will be sufficient for an introductory discussion of specialization, flexibility and efficiency in the activities of the Dutch shipping community in the eighteenth century.

Structure of the paper

The analytical parts of the paper start with the analysis of the *microlevel*. On the microlevel, it is possible to trace back the economic behaviour of individual Dutch shipmasters involved in European shipping in the eighteenth century. The continuity, the repetitive character and the predictable behaviour that come to light in these microlevel cases all provide evidence of a considerable degree of specialization, while at the same time signs of flexibility do exist.

The next part of the paper will be focused on the contextualization of the analytical results of individual cases. In this part of the paper, the data of individual shipmaster's activities is put in a larger context: that of the *population* under study. Here, evolving operational and organizational structures are identified and analyzed, while explanations are sought to clarify irregularities. The dynamics of networks are central to this level. While on the microlevel, the focus is on individual shipmasters, we now must look beyond the surface of the database records, in search for a deeper structure that might give more meaning to the behaviour of one individual shipmaster.

Finally, a number of conclusions will be drawn from the analysis of the micro- and population-level, paving the way for a discussion of early-modern shipping as an integral economic activity. In this final part of the paper, technological evolutions, institutional changes and regional economic

development will be assessed as important aspects surrounding and influencing the operational and organizational structures of early-modern Dutch maritime shipping.

The individual case

Let us start by examining a specific case, of which the details can be found in the appendix. The case is that of the shipmasters with registered name 'Hop'. The data in appendix 1 was gathered from the various datasets introduced earlier. The case I will discuss here can easily be replaced by similar examples. An examination of this introductory case reveals a number of issues related to the data of which the registrations reproduced here consist.

The geographical data in the shipping records is centered around the homeports of the captains, their routes and the relation between homeport(s) and port(s) of departure/destination. It is clear that statements in shipping record about homeports are not always unambiguous⁸. However, it seems safe to say that the homeport of the captain as it is registered in various shipping records refers in most cases to the actual homeport of the captain and in some cases to the geographical area of which the various registered homeports are part. A particularity of the Dutch Sound Toll Tables and the Danish Sound Toll Registers is that the registered homeport in these sources is Amsterdam in a larger number of cases than in the Galjoots- and Lastgeldregisters.

The Hop-shipmasters, of which a total of 71 ship movements was found in five different sources, came from the West-Frisian countryside. Apart from the records in which Amsterdam is given as homeport, almost all of the 12 different shipmasters stated Warder, Edam or Broek (in Waterland) as their homeports. Quite possibly, the shipmasters were related, but additional research into the parish registers and so-called *quotisatiecobieren* would be necessary to fully prove family ties. However, in this particular paper, it is not necessary to establish kinship. Our goal is to identify and explain the main features of the operational and organizational structures of Dutch maritime transportation in the first half of the eighteenth century. The meaning of the homeport of the shipmaster will be treated in relation to the routes and routines that become apparent from these structures. The shipmasters will be treated primarily as individuals, connected through their names and homeports.

⁸ A number of scholars have devoted a great deal of attention to what is now known as the 'hjemsted' problem. For more information, see: J.Th. Lindblad; P. de Buck, 'Shipmasters in the shipping between Amsterdam and the Baltic 1722-1780' // J.W. Wierenga (red.), *The interactions of Amsterdam and Antwerp with the Baltic region, 1400-1800 = De Nederlanden en het Oostzeegebied: papers presented at the third international conference of the "Association Internationale d'Histoire des Mers Nordiques de l'Europe"*, Utrecht, August 30th-September 3rd 1982, Leiden: Nijhoff, 1983, pp. 133-152; Pieter Dekker, 'Friese schippers op de Amsterdamse Oostzeevaart in 1731', pp. 233-240. Aksel E. Chistensen, *Dutch trade to the Baltic about 1600: studies in the Sound Toll Register and Dutch shipping records*, Copenhagen: Einar Munksgaard / The Hague: Martinus Nijhoff, 1941, pp. 60-64; Jake Th. Knoppers, *Dutch trade with Russia*, vol. I, pp. 65-66; 97-103.

A closer look at the shipping patterns of the Hop-shipmasters reveals a clear repetitive character in [1], [5], [7], [9]⁹. Apparently, some of the Hop shipmasters specialized in the Archangel route. At the same time, the patterns of [1], [3], [5], [6] and [9] clearly show that the shipmaster consciously shifted from one route to the other when (external) circumstances required him to do so. When turning to the additional information gathered from the sources, we can get a first clue of the reasons for the emergence of these ‘pattern shifts’.

Dirk Janse Hop [1] carried out 22 return voyages in the years 1724-1739. Eight of them were between Narva and Amsterdam, 14 between Archangel and Amsterdam. As far as we know, Dirk Janse Hop started his career on the Narva route, from where he imported cargoes of timber [1.1-1.4]. He then switched to Archangel for the first time in 1726 returning with a cargo of grain (?) [1.5]. This journey set the tone of the next thirteen years, during which Dirk Janse Hop annually made one return journey to Archangel earlier that year [1.6-1.22]. Interestingly enough, in four cases in the years 1730-1733, he completed a journey to Narva after having returned from Archangel [1.9, 1.11, 1.13, 1.15]. This is in itself evidence of the shipmaster’s concern with his possibilities to maximize profit. More important, however, is that this operational strategy coincided with a further evolution of Dirk Janse Hop’s activities on the Archangel route. From 1731 onwards, Hop returned from Archangel with an ever increasing volume of cargo (expressed in the *lastage* of the cargo¹⁰, or CL). Following Knoppers’ analysis of the meaning of ‘*lastage* of the cargo’ (CL) and ‘*lastage* of the ship’ (SL), it can be stated that these cargoes did not consist of timber¹¹. We will follow this simple rule throughout the paper. Hence, in that case, CL would be equal to SL. The pattern of Dirk Janse Hop can thus be summarized as *repetitive in routes, flexible in cargoes*.

Gerrit Claas Hop [5] shows a pattern that is different from that of Dirk Janse Hop [1]. Gerrit Claas carried out a number of journeys to Narva, Archangel, Vyborg and possible other ports in the 1730s [5.1-5.5]. As far as we can conclude from the data in the sources, he did not import cargoes of timber to the Netherlands [5.2-5.3]. Unfortunately, we do not have sufficient information to establish when Gerrit Claas started to travel to Riga, what we do know is that his dealings with Riga intensified in the second half of the 1740s, and especially in 1748 [5.8-5.10]. Referring to the uniformity of the CL data, we can summarize the pattern of Gerrit Claas Hop as *flexible in routes, repetitive in cargoes*. The same is true for Gerrit Jacobse Hop [6], who frequented at least five different ports of destination (the least expected being Cadix [6.7]) to return to Amsterdam with a cargo of timber. The changes in port of destination in the examples discussed above do not carry a permanent character. Rather, they must

⁹ Here and in the rest of the paper, numbers between [...] refer to the correspondent number in the appendices. When reference is made to one particular journey registered in the appendices, the number will be structured as follows: [6.5], which means that I am talking about the fifth journey of the shipmaster located under number [6] in appendix.

¹⁰ A *last* is a volumetrical measure and a measure of weight that was equal to approximately 2000 kg.

¹¹ Knoppers, *Dutch trade with Russia*, I, pp. 67-89.

be understood as *minor shifts*, provoked by a context-dependent decision made by the shipmaster. By acknowledging the occurrence of such *minor shifts* in the shipmasters' operational strategies, we are forced to take the social, political and economic context of maritime shipping into account. The awareness of the influence of externalities in the shipmasters' strategies will be captured in a third distinguishing parameter: *the external shock*.

The shipping pattern of Gerrit Janse Hop [7] differs from the previous patterns in the way that there no shift to a different port of destination could be discovered in the sources. Even though such a shift may have occurred eventually, it is safe to say the the pattern of Gerrit Janse Hop was *repetitive in routes*. At the same time, we can see that Gerrit Janse Hop imported mixed cargo (Dutch: *stukgoed*) to St. Petersburg and exported products valued highly by the Danish customs officers in the Sound. Even though the actual diversity of products exported from St. Petersburg is unknown, it can be assumed that they were similar throughout the journeys. Therefore, I will call this pattern *repetitive in cargoes*.

So far, I have identified three variables that seem to determine the shipmasters' strategies. The first one is the cargo, the second one is the port of destination (the route) and the third one is the occurrence of external shocks, that result in temporary pattern shifts. Dependent on the relative weight of either of these variables in the shipmaster's decision making, a continuous trade-off between cargoes and routes can be observed, resulting in a prevalence of either flexibility or repetitiveness in the operational and organizational structures of the shipmasters' activities.

Now, let us take a closer look at the shipping strategy unfolded by Klaas Gerrits Hop [9]. To a certain extent, it is similar to that of Gerrit Janse Hop [7], but there is one important difference: from 1712 until 1721, Klaas Gerrits Hop sailed the Archangel route [9.1-9.6]. Then he disappears from the records. In 1724 he reappears, but now on the Narva route, exporting timber [9.7-9.9]. While both stages in Klaas Gerrits Hop's career could be seen seperately as *repetitive in routes*, *flexible in cargoes* in the first stage and *repetitive in routes*, *repetitive in cargoes*, the caesura between the two stages cannot be explained on the basis of the shipping data alone. By acknowledging the fact that one *major shift* determined the further development of Klaas Gerrits Hop's activities, we are – again – obliged to look for an answer to this shift outside the shipping data. A third variable must have influenced the choice of destination in such a way that it provoked a *major, permanent shift*. Following the terminology of Dopfer, Foster and Potts we could related this variable to the phase of *de-coordination*, that occurred on the macrolevel as a result of the origination of a new institution, namely the re-opening of the Narvaroute in 1722 after two decades of war.

A number of questions remains, however. First of all, it is unclear from the examples above what exactly provoked the prevalence of either flexible or repetitive approaches to cargo and port of destination. Why did Gerrit Claas Hop frequent all the major timber export ports in the Baltic instead

of sticking to one route for a longer period of time like Dirk Janse Hop did? Secondly, it is unclear if there is a connection between the shipmaster's region of origin and the scope and focus of his activities? Are the Hop-shipmasters the only West-Frisian shipmasters that frequented the Archangel route on a regular basis in the first half of the eighteenth century, or can a special connection be identified between these two regions? Can we find similar connections for different routes as well? Lindblad, for instance, pointed out a particular connection between shipmasters from the Frisian town Hindeloopen and the Amsterdam-Narva route, establishing that "the share of Hindeloopen among domiciles of shipmasters [in the Narva trade] was consistently very high at a level of two-thirds or three-quarters throughout the 1720s, 1730s and 1740s"¹². Thirdly, it is unclear to what extent *shocks* played a role in the *minor shifts* that can be observed in the *flexible in routes*-pattern. In view of the cargoes carried and the selection of ports of destination as examined in the Hop-cases, we must now expand our focus and try to answer the following questions: With regard to the port of destination, what were the shipmaster's selection criteria and how were these criteria defined? With regard to the origin of the shipmaster, how does the shipmaster's origin influence his choice for specific ports of destination? Other than the influence of external shocks – provoking either minor or major shifts – these questions relate directly to the shipmasters' behaviour, which is defined by (bounded) rationality, flexibility, imitation and habering¹³.

The Dutch maritime shipping population

In this paragraph, I will focus on the contextualization of the analytical results of the individual cases. In the first place, I will provide evidence for the fact that the cases of the Hop-shipmasters are indeed far from unique. Then, I will expand our focus and put the data of individual shipmasters' activities in the context of the population under study. With the aid of statistical data based on the sources, evolving operational structures are identified and analyzed, while explanations are sought to clarify irregularities. While on the microlevel, the focus was on individual shipmasters, I now look beyond the surface of the database records in search for a deeper structure that might give more meaning to the behaviour of each individual shipmaster.

¹² J. Thomas Lindblad, 'Dutch trade on Narva in the Eighteenth Century' // C. Horstmeier, e.a. (red.). "Around Peter the Great": *Three centuries of Russian-Dutch Relations. Proceedings of the conference at the Rijksuniversiteit Groningen, 15-17 October 1997*. Groningen, INOS, 1997. p. 105.

¹³ Richard H. Day, 'Evolution in Economic Processes: Introductory remarks' // *Structural change and Economic Dynamics*, vol. 4, no. 1, 1993, p. 4. Day explains habering as follows: "Habering is simply to do what one has been doing. It requires neither imagination nor rationality (...)".

A parallel to the *repetitive in routes, flexible in cargoes*-pattern of Dirk Janse Hop [1] can be found in the shipping pattern of Wijbrand Wiebes [13]. The *repetitive in cargoes, flexible in routes*-pattern can be found in [14]. Cases of repetitiveness in both cargo and route can be found in [15] and [16].

The search for the underlying structure will be carried out in connection with the *minor* and *major shifts* identified earlier. I will argue that these shifts occurred as a reaction to changes in the geographical areas surrounding the ports of destination of the shipmaster. At the same time, I will substantiate that the origin of the shipmaster also played a role in the structure of his professional activities. Thus, referring to the introductory case of the ‘Hop’-shipmasters and the views of Lindblad with regard to Hindeloopen and Narva, I can now look for a relation between the origin of populations of shipmasters and the ports of destination frequented by these populations.

In the first chart, a breakdown of the frequency of the port of departure of the population of shipmasters with Hindeloopen as their registered homeport is given. This chart is made on the basis of the Danish Sound Toll Registers for the years 1703-1740 and includes shipping records of which the registered port of departure is Narva, Vyborg, St. Petersburg or Kronstadt.

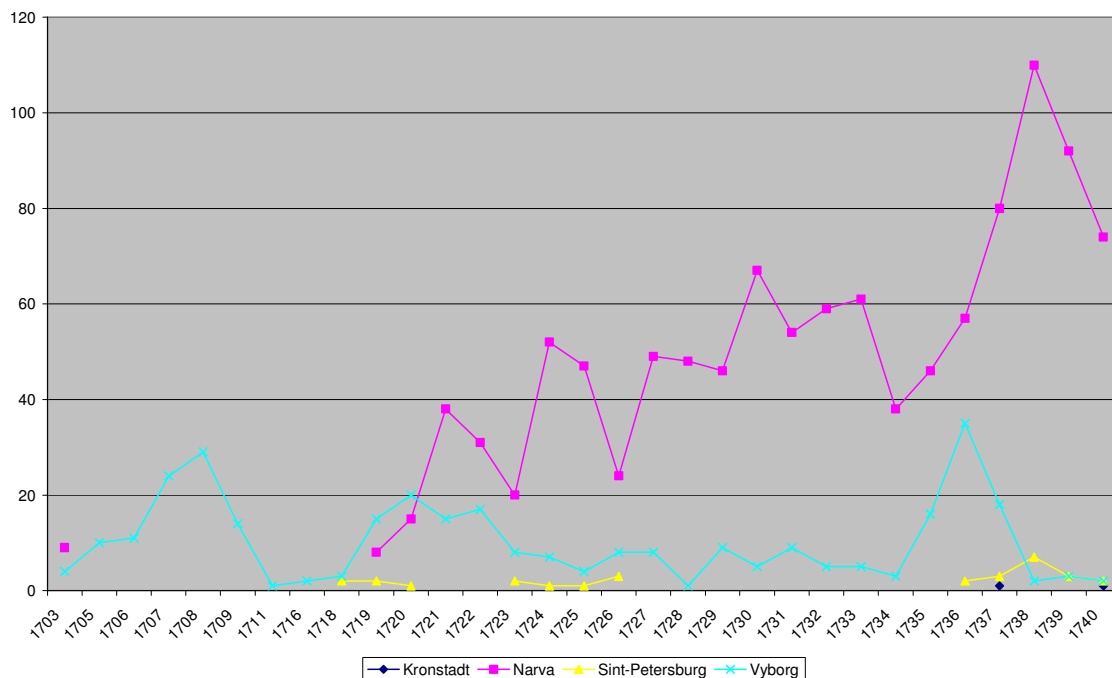


Figure 1: breakdown of the frequency of the port of departure of the population of shipmasters with Hindeloopen as their registered homeport. Source: Danish Sound Toll Registers, 1703-1740.

The pattern observed here underwrites the insights of Lindblad and the microlevel data of Jan [14] and Jappe Swaan [15], Klaas Gerrits Hop [9] and Gerrit Jacobse Hop [6]. Lindblad’s views, that were limited to Narva exclusively, can now be put in a broader context. In the chart, it becomes clear that in the first decade of the eighteenth century only Vyborg was regularly frequented by shipmasters

from Hindeloopen. This was the direct result from a war between Sweden and Russia that had started in 1700 and was, at least at first, fought in this particular area. In 1703, the Swedish town Nyen, located at the mouth of the Neva, was conquered by Peter the Great. Nyen was demolished; St. Petersburg was founded instead. In 1704, Narva was conquered by the Russians. Until 1709, Vyborg was Swedish, and – despite a number of successes in the early stages of the war – Russia was not yet in control of the Baltic Sea. In that very same year, however, the Russian army managed to triumph in Poltava (now Ukraine); a victory that marked the turning point in the ongoing war between Russia and Sweden. In 1710 Vyborg was conquered by the Russians and subsequently burned down. Shipping almost completely disappeared from the Gulf of Finland. Part of the shipmasters from Hindeloopen probably shifted to Archangel to continue operations, at least until 1718.

In the years 1718-1721, new incentives were introduced to the now Russian ports in the eastern part of the Gulf of Finland. In 1718, Vyborg reappears, joined by the newly founded city of St. Petersburg. In 1719, Narva makes its re-appearance in the records. At the same time a very low degree of participation of Hindeloopen-shipmasters on the Archangel route can be observed in the galjootsgeldregisters. The years 1718-1723 mark the *origination*-period of the Narva route as a new *institution* for the part of the shipping population that had Hindeloopen as its homeport. This new *institution* comprised three ports of destination in the early stage of the development of the Narva route. All three of them served the shipmasters from Hindeloopen as timber outlets. Clearly, in the opening years, choices were being made in favor of certain ports and options for finding different outlets were tested. A trade-off between Narva and Vyborg resulted in a decline of the number of shipmasters from Hindeloopen in both ports in 1722 and 1723, while in the same year, a small number of shipmasters from Hindeloopen made its appearance in St. Petersburg. The St. Petersburg route was abandoned quickly, however, while as early as 1721, Narva had already emerged as the most-favored port of call for shipmasters from Hindeloopen. The spectacular growth of the presence of shipmasters from Hindeloopen on the Narva route from 1724 onwards can now be explained by the cumulative effect of some four different factors.

First of all, it should be noted that shipmasters from Hindeloopen had been known as timber transporters for centuries¹⁴. A number of historians find an explanation for this product-specialization in the ships used by shipmasters from Hindeloopen¹⁵. This, however, is difficult to

¹⁴ S. Lootsma, 'De Zeevaart van Hindeloopen in de zeventiende en achttiende eeuw' // *Economisch-Historisch Jaarboek*, 1940, Vol. 21, pp. 218-296; M.P. van Buijtenen, 'De Scheepvaart van Hindeloopen' // *Tijdschrift voor economische geographie: orgaan van de Nederlandsche Vereeniging voor Economische Geographie*, 1940, Vol. 31, pp. 144-150; H.A. Poelman, 'De Handelsstad Hindeloopen' // *De vrije Fries*, 1924, Vol. 27, afl. 4, pp. 326-344.

¹⁵ Snapper, 'Veranderingen in de Nederlandse scheepvaart op de Oostzee in de achttiende eeuw' // Joh. De Vries (red.), *Ondernemende geschiedenis: 22 opstellen geschreven bij het afscheid van Mr. H. van Riel als voorzitter van de Vereniging Het Nederlandsch*

substantiate. What we do know, is that shipmasters from Hindeloopen were active in the Norwegian timber trade in the sixteenth and seventeenth centuries¹⁶. It appears that a gradual shift towards the eastern part of the Gulf of Finland occurred in the second half of the seventeenth century, with a culmination point around 1700. From then onwards, shipmasters from Hindeloopen focused their activities in the Gulf of Finland rather than in Norway. With regard to the position of Hindeloopen, an interesting remark is made by Dekker, who points out that Hindeloopen was the centre of a so-called micro-area of shipmasters active in the export of timber from the Baltics¹⁷. The second and third factors shed a light on the underlying reasons for this movement from the Norwegian coasts to the Gulf of Finland. The second factor was the excessive growth in the demand for timber in the Netherlands (and mainly the shipping industry in the Zaan region) in the eighteenth century¹⁸. Shipmasters from Hindeloopen managed to achieve a dominant position in the fulfilling of this demand. The third factor was the diffusion of a new technology along the shores of the Gulf of Finland in the period 1685-1738. The Dutch fine-blade saw made its appearance there at the end of the seventeenth century and was spread widely across these forested areas, especially after the Peace of Nystadt was signed between Sweden and Russia in 1721¹⁹. A fourth and final factor stimulated the spectacular growth of the participation of shipmasters from Hindeloopen in timber exports from Narva from a different angle. In my opinion, Russia's regional economic policy of the first two decades of the eighteenth century also created part of the necessary prerequisites for the apparent boom in the timber exports from Narva. These incentives are exemplified in Peter the Great's ukaz of December 5, 1721, stating "let there be timber in Narva"²⁰ and in the active reshaping of the hinterland of Russian ports in the 1720s²¹. Without going into detail, this reshaping should be understood as the limitation of the export possibilities of possible competitors of the port of St.

Economisch-Historisch Archief, 's-Gravenhage: M. Nijhoff, 1977, pp. 130-132; Dekker, 'Friese schippers op de Amsterdamse Oostzeevaart in 1731', p. 241.

¹⁶ Leo H. Bouma, 'Ten en oar oer de Fryske houtfeart op Noarwegen' // *It beaken: meidielingen fan de Fryske Akademy*, 1972, Vol. 34, pp. 134-149; J.A. Faber, 'Handel und Schifffahrt Frieslands im Laufe der Jahrhunderte' // *It beaken: meidielingen fan de Fryske Akademy*, 1962, Vol. 24, nr. 1, pp. 6-9.

¹⁷ Dekker, 'Friese schippers op de Amsterdamse Oostzeevaart in 1731', pp. 242-265. According to Dekker, this micro-area was comprised of Hindeloopen, Koudum, Molkwerum, Warns en Stavoren.

¹⁸ Richard W. Unger, 'Technology and Industrial Organization: Dutch shipbuilding to 1800' // *Business History*, 1975, Vol. 17, pp. 58-59.

¹⁹ Sven-Erik Åström, *From Tar to Timber: Studies in Northeast European Forest Exploitation and Foreign Trade 1660-1860*, [Helsinki]: Societas Scientiarum Fennica, 1988, pp.44-56.

²⁰ M.D. Čul'kov, *Istoričeskoe opisanie rossijskoj kommercii pri vsech portach i granicah ot drevnich vremjan do nyne nastojasščego i vsech preimuščestvennyh zakonov po onoj gosudarja imperatora Petra Velikogo i nyne blagopolučno carstvujuščej gosudarnyi imperatricy Ekateriny Velikaja, sočinennoe Michajlom Čul'kovym*. Sankt-Peterburg, pri Imperatorskoj Akademii Nauk, 1781-1787, tom V, kn. 2, p. 118; 125.

²¹ *Polnoe Sobranie Zakonov Rossijskoj Imperii. Pervaja Serija s 1649 po 12 dekabnja 1825 goda* (sost. pod rukovodstvom M.M. Speranskogo). Sanktpeterburg: [s.n.], 1830, vol. VI, Nr. 3860; N.N. Repin, 'Ot diskriminacii k fritrederstvu: pravitel'stvennaja reglamentacija torgovli čerez Archangel'sk v 20-60-e gody XVIII v. i ee rezul'tat' // Ju.N. Bespjatych (red.), *Archangel'sk v XVIII veke / Arkhangelsk in the XVIII century*, Sankt-Peterburg: Rossijsko-Baltijskij informacionnyj cent' BLIC, 1997, p. 231; Čul'kov, *Istoričeskoe opisanie rossijskoj kommercii*, tom I, kn. 2, pp. 103-105.

Petersburg through the *de facto* limitation of their hinterlands to their adjacent areas. Such policies were put into effect towards Archangel, Riga, Narva and Vyborg. In 1724, these policies were strengthened by the introduction of a new, protectionist tax system, in which not only the early Russian industrial developments were protected, but also the position of St. Petersburg as opposed to Archangel, Riga, Narva and Vyborg²². The differentiated approach led to a serious decline in the Archangel trade. Thanks to new regulations in 1727 and 1731, Archangel's burden was - at least partly - lightened²³. Of importance here, however, are the increases in the taxes on timber exports from Narva and Vyborg in 1732, followed by a number of export restrictions issued in Narva between 1735 and 1738, in an attempt to prevent Narva's hinterland of becoming completely deforested. In 1738, a new ukaz issued by the Senate, made exports from Narva almost impossible. Only at the end of August 1739 could a large portion of timber stored at the port of Narva since 1736 be exported, following the permission granted by the Senate²⁴.

The cumulative effect of these four factors resulted in the swift adoption of the Narva route by shipmasters from Hindeloopen in the early 1720s. By 1727 a relatively stable distribution of shipmasters on the Narva route and Vyborg route can be observed. This stability lasted until 1733. In 1734 a new phase of *de-coordination* began, probably as a reaction to the severe actions the local government of the St. Petersburg district (of which Narva was part) undertook to fight the increasing abuse of forest resources for export purposes. Shipmasters from Hindeloopen temporarily moved away from Narva, and called at Vyborg (until 1737), Kronstadt and even St. Petersburg and Archangel instead. This *minor shift* is exemplified by the shipping patterns of Jan [14] and Jappe Swaan [15], Gerrit Jacobse Hop [6] and Wijbrand Wiebes [13]. In those cases, where the shipmasters in question re-oriented from Narva to Vyborg and Kronstadt, no changes in the cargo can be found. In case of a shift to Archangel, the different route also provoked a different kind of cargo to be exported from these places. A good example is Jappe Swaan's journey to Archangel in 1740 [16.18]. A particular case is that of Wijbrand Wiebes [14.3, 14.6], who frequented the St. Petersburg route, but executed a *minor shift* to Kronstadt in the years 1738 and 1740. Only in these two years did Wijbrand Wiebes export a cargo of timber. After 1740, his pattern returned to that of the 1730s: *repetitive in route, repetitive in cargo*.

²² Repin, 'Ot diskriminacii k fritrederstvu', p. 231; PSZ, VI, Nr. 3860; Čulkov, *Istoričeskoe opisanie rossijskoj komercii*, tom V, kn. 2, pp. 132-136; 174; 368-369; A. Semenov, *Izučenie istoričeskikh svedenii o rossijskoj vnesnej torgovle i promyšlennosti s poloviny XVII-go stoletija po 1858 god (3 parts bound in 2 vols)*. Newtonville: Oriental Research Partners, 1977 (reprint 1859), part I, pp. 58-60; 'Tarif sanktpeterburgskogo, vyborgskogo, narvskogo, archangelogorodskogo, kol'skogo portov' // *Ukazy blažennye i večnodostojnye pamjati gosudarka imperatora Petra Velikogo samoderžca vserossijskogo. Sostojavšiesja s 1714, po končnu Ego Imperatorskogo Veličestva, Genvarja po 28 čislo, 1725 godu. Napečatany po ukazu vsepresvetlejšei deržavnejšei velikoi gosudaryni imperatricy Anny Ioannovny samoderžicy vserossijskoj*. Sanktpeterburg: Imperatorskaja Akademija Nauk, 1739, pp. 47-81.

²³ Kozinceva, *Očerki vnešnej torgovli i tamožennoj politiki Rossii pervoj treti XVIII veka*, Leningrad: s.n., 1963, pp. 14-15.

²⁴ Čulkov, *Istoričeskoe opisanie rossijskoj komercii*, tom V, kn. 2, pp. 142-144; 162-212; 202; 205.

Now that we have enhanced the insights of Lindblad by adopting a view on the ports of destination as integrated parts of regions, it is time to look for types of relations that are similar to the one described above. Similar connections between the region of origin of a population of shipmasters and the destination(s) frequented by these populations are relatively easy to find. Instead of presenting these patterns one-by-one, I have summarized the data in the following table.

port of destination	region of origin												
	TOTAL	Frisia		North-Holland		Wadden Islands		West-Frisia		Baltics		Others	
		TOT	%	TOT	%	TOT	%	TOT	%	TOT	%	TOT	%
Archangel	547	125	23%	137	25%	140	26%	84	15%	6	1%	55	10%
Kronstadt	77	40	52%	11	14%	22	29%	1	1%	2	3%	1	1%
St. Petersburg	563	97	17%	192	34%	142	25%	22	4%	80	14%	30	5%
Vyborg	400	201	50%	82	21%	85	21%	19	5%	5	1%	8	2%
Narva	2213	1537	69%	306	14%	239	11%	55	2%	42	2%	34	2%
GRAND TOTAL	3800	2000	53%	728	19%	628	17%	181	5%	135	4%	128	3%

Table 1: Relation between region of origin and port of destination, Source: Galjootsgeldregisters, 1717-1740.

What we observe in the table above, based on the galjootsgeldregisters for the years 1717-1740, is an obvious distinction between the timber exporting ports of Narva, Vyborg and Kronstadt on the one hand and the ports of St. Petersburg and Archangel on the other hand. The differences are most notable with regard to the participation of Frisian shipmasters in maritime shipping on these routes. While Frisian shipmasters accounted for at least half of all ship movements from Narva, Vyborg and Kronstadt, with an exceptionally high number of movements coming from Narva (69%). On the other hand, shipmasters from Frisia were not involved in maritime shipping on the Archangel or St. Petersburg routes to an extent larger than 23%. On these routes, shipmasters from North-Holland and from the Wadden Islands were in favor. Of particular importance is the extent to which West-Frisian shipmasters were active on the Archangel route as opposed to the other routes mentioned in the table. Fifteen percent of all Dutch shipmovements on the Archangel route in the years 1717-1740 were executed by West-Frisian shipmasters, most of them coming from Warder. This share is exclusive for Archangel and deserves to be studied in detail. Apparently, some of these shipmasters made a shift to Narva at some point, which is reflected in the absolute numbers for West-Frisian shipmasters on the Narva route; the share of these West-Frisians on the Narva route, however, remained very small (2%). The overall picture that evolves from the table above is one of specialization of Frisian shipmasters in timber exports from the eastern Gulf of Finland. The exports of other goods (like hemp, for instance) were concentrated in St. Petersburg and to a lesser degree

Archangel in the years 1717-1740. Frisian shipmasters participated in these exports only to a limited extent, while shipmasters from North-Holland and the Wadden Islands had a greater share on these routes. To sum up, we can indeed observe interdependence between the origin of the shipmaster and the port of destination, as this has already been recognized by Unger and Lindblad and De Buck²⁵. More precisely, we have observed that shipmasters from one region seemed to be able to gain a dominant position on a limited number of routes. In the cases of Narva, Vyborg and Kronstadt, this position can be directly related to the export characteristics of these ports (timber exclusively), while in the cases of Archangel and St. Petersburg the situation is less univocal. However, even in those cases, the underlying patterns of flexibility and repetitiveness in terms of cargo, origin and destination are just as present, as can be seen in numerous examples in the appendices (e.g. [1], [7], [14])

Conclusion

In this paper, I have presented a preliminary taxonomy of shipping patterns on the basis of a continuous trade-off between cargo, port of destination and origin of the shipmaster. Dependent on the shipmaster's preferences with regard to cargo and destination, the following scheme could be established:

Routes/cargoes	Flexible	Repetitive
Flexible	Various cargoes, various routes	Various cargoes, one route
Repetitive	One cargo, various routes	One cargo, one route

Table 2: trade-off between repetitiveness and flexibility in the choice of cargo and routes

As I have elaborated in the analytical paragraphs of this paper, the combination of flexibility in routes and flexibility in cargoes occurred in the lesser amount of cases. The majority of cases showed evidence of flexibility towards either cargoes or routes, with a responsive higher or lower degree of repetitiveness in the choice of the corresponding variable. The last type of pattern, in which one cargo is exported from one port for a long period of time, often occurred in the shipping records, mostly in combination with temporary rises in flexibility in either cargoes or routes. The trade-off between flexibility and repetitiveness in routes and cargoes alone lacked the necessary explanatory power to address these temporary changes in *repetitive in routes*, *repetitive in cargoes*-patterns. This was where the third variable – *the external shock* – came into play. Based on the nature of the shocks, I have made a distinction between *minor shifts* and *major shifts*. As a rule, temporary changes in a *repetitive*

²⁵ Lindblad, De Buck, 'Shipmasters in the shipping between Amsterdam and the Baltic 1722-1780', pp. 151-152; W.S. Unger, 'De publikatie der Sonttabellen voltooid' // *Tijdschrift voor Geschiedenis*, 1958, nr. 71, p. 187.

in routes, repetitive in cargoes-pattern were defined as a *minor shift*. Permanent changes in the shipmasters' routes were defined as *major shifts*. The analysis of the source material has brought a number of possible explanations for these shifts to our attention. Economic policy changes in the geographical areas that serve the port of destination of the shipmaster were the most common explanatory factor. Additionally, (cultural) changes in the region of origin at the port of destination also provoked shifts in the shipmasters' behavioural patterns. The localization – be it in a physical or in a political sense – of the explanatory factors of *minor* and *major shifts* in the geographical areas connected to the port of destination and to the origin of the shipmasters was interpreted as a call for the interpretation of maritime transportation as an economic activity that has its own, independent structures, while at the same time being complemented by economic change in the 'nodes' that these transportation structures connect. In order to fully comprehend the changes that occur in shipping patterns as a consequence of *minor* or *major shifts*, it is necessary to define these 'nodes', i.e. the ports of destination, in their regional economic environment. The resultative view is one of maritime transportation as an *integral economic activity*.

I have underlined the importance of choice in the behaviour of Dutch shipmasters in the first half of the eighteenth century. The regional characteristics of both the areas surrounding possible ports of destination and the areas of origin of the shipmasters have been put forward as decisive elements in the direction of the choices made by shipmasters. Additionally, we have identified a number of factors that limit and structure the choices of shipmasters in certain directions. Regional economic policies and the geographical embeddedness of the shipmaster in his region of origin have been described. As a result, we have established that shipmasters operated within a multifaceted context in which the geographies of markets on the supply and on the demand side are main constituents.

Looking back at the detailed information in the appendices and at the statistical data in the previous paragraph it is fair to say that the shipmaster cared about the efficiency of his operations. Only when circumstances forced him to do so, would the shipmaster change his destination. Depending on the type of circumstances, be it a political change or a change on the demand side, the shipping patterns that evolved, showed a tendency towards more flexibility in the choice of either routes or cargoes. The examples where a relatively high degree of flexibility could be observed both in the treatment of cargoes and in the choice of routes are small in number, probably because of the higher operating costs involved in these continuous strategy changes.

From a historiographical point of view, the analytical results of this paper serve as an answer to Paul van Royen's statement that "[the assumption] that shipmasters 'specialized' in the navigation to a certain sea, as it is usually taken for granted, still has to be proved"²⁶. From a methodological point of

²⁶ P.C. van Royen, *Zeevarenden op de koopvaardijvloot omstreeks 1700*, Amsterdam: De Bataafsche Leeuw, 1987, p. 16.

view, the analysis of microcases and their subsequent integration into a broader scope have proved that databases in which the evolutionary framework of Dopfer, Foster and Potts is reflected (even though implicitly), enhance the explanatory possibilities of economic historians. From a theoretical point of view, these ‘new’ explanatory possibilities, that are the result of the assessment of economic-historical phenomena through the adoption of evolutionary realism as ontology for economics, are deemed to create a ‘new’ economic history that will be an integrated part of evolutionary economics, both as a library of empirical case-studies and as a laboratory for the development of economic theory.

APPENDIX 1: HOP shipmasters

- [1] HOP (Hoop), DIRK (Dirick, Dirck, Direck) Claasze(n) (Claas(en), Claesze, Claasz, Claesen, Clase, Classen), from Warder, Amsterdam, Hindeloopen, Wartena²⁷
Ship²⁸: Jonge Stam (Jonge Ham; 1725-1739, SL: 154 / 146 / 128²⁹)
1. Amsterdam – Narva – Amsterdam
 - a. 1-5-1724. Amsterdam to Narva. Ballast [dsr1466]³⁰
 - b. 23-6-1724. Narva to Amsterdam. 30 rks³¹ [dsr1497]
 2. 20-8-1724. Amsterdam to Narva. Ballast [dsr1489]
 3. Amsterdam – Narva – Amsterdam
 - a. 1-7-1725. Narva to Amsterdam. 29 rks [dsr1654]
 - b. 21-8-1725. Narva to Amsterdam. CL³²: 154 [ggr12471]
 4. Amsterdam – Narva – Amsterdam
 - a. 6-9-1725. Amsterdam to Narva. Ballast [dsr1785]
 - b. 29-11-1725. Narva to Amsterdam. 28: 18 rks [dsr1871]
 - c. 26-1-1726. Narva to Amsterdam. CL: 146 [ggr12583]
 5. Amsterdam – Archangel – Amsterdam
 - a. 1726. Amsterdam to Archangel. [sr1307]
 - b. 12-2-1727. Archangel to Amsterdam. CL: 180 [ggr12023]

²⁷ Here and elsewhere, information about the homeport of the shipmaster is extracted from the galjoetsgeldregisters (GGR) of the Directory Boards of Baltic and Muscovy Trade. In a number of cases, several different homeports appeared in connection to one shipmaster. We will treat these variations as facts, and refer to the scholarly works mentioned in footnote 7 for a discussion of the meaning of statements about homeports in early-modern maritime shipping records.

²⁸ Here and elsewhere, the years in which the shipmaster used the same ship are added in brackets. The information is based on the schipgeldregisters (SR) and galjoetsgeldregisters (GGR) of the Directory Boards of Baltic and Muscovy Trade exclusively and does not stand for the years the ship existed. E.g. after 1724 another ship may have started to use the ‘Schoenenburg’ instead. Unfortunately, we do not know that. The exact occurrences of name variations, both with regard to the name of the ship as to the name of the shipmaster, can be found in the on line databases of SR and GGR at: <http://www.rug.nl/staff/w.f.y.scheltjens/index.html>.

²⁹ SL stands for lastage of the ship, a measure that gives an indication of the ship size. Information about SL is taken from the GGR of both Directory Boards mentioned before. Variations regularly occurred, even when clearly one and the same ship was measured. This was probably due to changes in the measurement procedures and happened mostly in the early 1720s. In such cases, the details about changes in the SL can be found in the on line database.

³⁰ Here and elsewhere, the number between [] stands for the corresponding number of the record in the Access-databases of the archival sources used. dsr = Danish Sound Toll Registers, nst = Dutch Sound Toll Tables, ggr = Galjoetsgeldregisters, sr = Schipgeldregisters and lg = Lastgeldregisters.

³¹ rks stands for ‘riksdalers’ and refers to the amount of customs due at the Sound in Elsinore.

³² CL stands for lastage of the cargo, a measure of the volume of the cargo carried by the ship. Information about CL can be found in the Galjoetsgeldregisters (ggr) and in the lastgeldregisters (lg). CL was the basis for the calculation of the galjoetsgeld (*galliot duty*) each shipmaster was due upon arrival in Amsterdam. Following the findings of Knoppers, we use the following rule in this paper: CL = SL = cargo of timber; CL > SL ≠ cargo of timber. For details, see: Knoppers, Dutch trade with Russia, I, pp. 67-89.

6. Amsterdam – Archangel – Amsterdam
 - a. 1727. Amsterdam to Archangel. [sr1322]
 - b. 11-2-1728. Archangel to Amsterdam. CL: 128 [ggr12039]
 7. Amsterdam – Archangel – Amsterdam
 - a. 1728. Amsterdam to Archangel. [sr1332]
 - b. 10-11-1728. Archangel to Amsterdam. CL: 128 [ggr12047]
 8. Amsterdam – Archangel – Amsterdam
 - a. 1729. Amsterdam to Archangel. [sr1354]
 - b. 29-3-1730. Archangel to Amsterdam. CL: 128 [ggr12073]
 9. Ameland – Narva – Amsterdam
 - a. 18-4-1730. Ameland to Narva. Ballast [dsr3345]
 - b. 15-6-1730. Narva to Amsterdam. 32:42 rks [dsr3446]
 - c. 14-7-1730. Narva to Amsterdam. CL: 130 [ggr10648]
 10. Amsterdam – Archangel – Amsterdam
 - a. 1730. Amsterdam to Archangel. [sr1373]
 - b. 6-3-1731. Archangel to Amsterdam. CL: 128 [ggr12082]
 11. Amsterdam – Narva – Amsterdam
 - a. 16-5-1731. Amsterdam to Narva. Ballast [nst872], [dsr7656]
 - b. 1-7-1731. Narva to Amsterdam. 32:30 rks [dsr7744]
 - c. 27-7-1731. Narva to Amsterdam. CL: 130 [ggr10809]
 12. Amsterdam – Archangel – Amsterdam
 - a. 1731. Amsterdam to Archangel. [sr1391]
 - b. 7-3-1732. Archangel to Amsterdam. CL: 198 [ggr12095]
 13. Amsterdam – Narva – Amsterdam
 - a. 25-4-1732. Amsterdam to Narva. Ballast [dsr6842]
 - b. 7-6-1732. Narva to Amsterdam. 33 rks [dsr7257]
 - c. 1-7-1732. Narva to Amsterdam. CL: 130 [ggr11024]
 14. Amsterdam – Archangel – Amsterdam
 - a. 1732. Amsterdam to Archangel. [sr1400]
 - b. 4-4-1733. Archangel to Amsterdam. CL: 160 [ggr12116]
 15. Amsterdam – Narva – Amsterdam
 - a. 27-4-1733. Amsterdam to Narva. Ballast [nst1009]
 - b. 6-6-1733. Narva to Amsterdam. Timber, 33 rks [nst1100], [dsr6406]
 - c. 18-7-1733. Narva to Amsterdam. CL: 130 [ggr11314]
 16. Amsterdam – Archangel – Amsterdam
 - a. 1733. Amsterdam to Archangel. overwintert in Archangel, in 1734 weergekeert [sr1426]
 - b. 7-8-1734. Archangel to Amsterdam. CL: 215 [ggr12133]
 17. Amsterdam – Archangel – Amsterdam
 - a. 1734. Amsterdam to Archangel. [sr1464]
 - b. 24-12-1734. Archangel to Amsterdam. CL: 128 [ggr12154]
 18. Amsterdam – Archangel – Amsterdam
 - a. 1735. Amsterdam to Archangel. [sr1482]
 - b. 13-10-1735. Archangel to Amsterdam. CL: 230 [ggr12167]
 19. Amsterdam – Archangel – Amsterdam
 - a. 1736. Amsterdam to Archangel. [sr1511]
 - b. 24-8-1736. Archangel to Amsterdam. CL: 250 [ggr12192]
 20. Amsterdam – Archangel – Amsterdam
 - a. 1737. Amsterdam to Archangel. [sr1529]
 - b. 14-9-1737. Archangel to Amsterdam. CL: 240 [ggr12206]
 21. Amsterdam – Archangel – Amsterdam
 - a. 1738. Amsterdam to Archangel. [sr1547]
 - b. 27-8-1738. van Archangel gearriveert. [sr1547]
 - c. 17-9-1738. Archangel to Amsterdam. CL: 128 [ggr12222]
 22. 20-10-1739. Archangel to Amsterdam. CL: 214 [ggr12251]
- [2] HOP, DIRK J., from Warder
Ship: Pieter & Wilhelmina Catharina (1742, SL: 125)
 1. 27-11-1742. Narva to Amsterdam. CL: 125 [ggr9201]
- [3] HOP, DIRK, from Amsterdam
 1. 28-1-1745. Archangel to Amsterdam. CL: 139 [lg2372]
 2. Amsterdam – Narva / Pernau – Amsterdam
 - a. 9-5-1745. Amsterdam to Narva. Ballast [nst4582]
 - b. 14-7-1745. Pernau to Amsterdam. CL: 139 [lg3461]

3. 12-3-1746. Archangel to Amsterdam. CL: 139 [lg5212]
 4. 10-2-1747. Archangel to Amsterdam. CL: 139 [lg7703]
 5. 8-2-1748. Cadix to Amsterdam. CL: 139 [lg10459]
- [4] HOP, GERBRAND, from Amsterdam
1. 9-9-1757. Wiborg to Lissabon. delen [nst8312]
 2. 15-9-1759. Wiborg to Cadix. masten, delen [nst8690]
- [5] HOP, GERRIT Claas (Classen, Cl.), from Warder, Edam, Texel, Amsterdam
Ship: Juffrouw Elisabeth (1734-1748, SL: 84)
1. 25-4-1732. Texel to Narva. Ballast [dsr6843]
 2. Amsterdam – Archangel – Amsterdam
 - a. 1734. Amsterdam to Archangel. [sr1453]
 - b. 19-10-1734. Archangel to Amsterdam. CL: 122 [ggr12147]
 3. Unknown – Narva – Amsterdam
 - a. 12-10-1735. Narva to Amsterdam. 124 ½:18 [dsr5612]
 - b. 17-11-1735. Narva to Amsterdam. CL: 115 [ggr7832]
 4. 26-4-1738. Amsterdam to Narva. Ballast [dsr4460]
 5. 22-5-1740. Amsterdam to Wiborg. Ballast [dsr3649]
 6. 16-11-1746. Riga to Amsterdam. CL: 114 [lg7292]
 7. 18-8-1747. Riga to Amsterdam. CL: 114 [lg9378]
 8. 4-1-1748. Riga to Amsterdam. CL: 114 [lg10437]
 9. 27-8-1748. Riga to Amsterdam. CL: 114 [lg11913]
 10. 12-12-1748. Riga to Amsterdam. CL: 114 [lg12950]
- [6] HOP, GERRIT Jacobse (Jacobs), from Edam, Amsterdam, Ameland, Warder
Ship: Harmanus & Jacob (1742-1751, SL: 156)
1. Edam – Wiborg – Amsterdam
 - a. 27-4-1739. Edam to Wiborg. Ballast [nst2259]
 - b. 8-7-1739. Wiborg to Amsterdam. 35:12 rks [dsr4017]
 2. Amsterdam – Wiborg – Edam (or Amsterdam)
 - a. 20-8-1739. Amsterdam to Wiborg. Ballast [nst2515]
 - b. 29-9-1739. Wiborg to Edam (or Amsterdam³³). Balks, 35 rks [nst2601], [dsr3917]
 3. Amsterdam – Narva – Amsterdam
 - a. 3-9-1742. Amsterdam to Narva. Ballast [nst3598]
 - b. 1-11-1742. Narva to Amsterdam. Balks [nst3691]
 - c. 9-4-1743. Narva to Amsterdam. CL: 156 [ggr9254]
 4. 20-1-1745. Archangel to Amsterdam. CL: 156 [lg2364]
 5. 10-5-1745. Amsterdam to Narva. Ballast [nst4587]
 6. 18-3-1747. Frederikshavn to Amsterdam. CL: 156 [lg7868]
 7. 15-7-1748. Cadix to Amsterdam. CL: 156 [lg11460]
 8. Unknown – Wiborg – Amsterdam
 - a. 14-7-1749. Wiborg to Amsterdam. Balks, deals [nst5850]
 - b. 22-9-1749. Wiborg to Amsterdam. CL: 156 [ggr2869]
 9. Unknown – Narva – Amsterdam
 - a. 17-6-1750. Narva to Amsterdam. Balks, deals [nst6157]
 - b. 20-7-1750. Narva to Amsterdam. CL: 156 [ggr2974]
 10. Amsterdam – Narva – Amsterdam
 - a. 4-8-1750. Amsterdam to Narva. Ballast [nst6317]
 - b. 24-9-1750. Narva to Amsterdam. Balks [nst6434]
 - c. 30-3-1751. Narva to Amsterdam. CL: 156 [ggr3102]
- [7] HOP, GERRIT Janse (Janson, J., Hanssen, Jantzen), from Warder, Amsterdam, Broek
Ship: Jonge Cornelis (1737-1738, SL: 50 / 30), Vrijheid (1753, SL: 109)
1. Amsterdam – Sint-Petersburg – Amsterdam
 - a. 20-7-1737. Amsterdam to Sint-Petersburg. 104:6 rks [dsr4957]
 - b. 13-9-1737. Sint-Petersburg to Amsterdam. Blanco, 63½:6 rks [nst1528], [dsr4867]
 - c. 4-10-1737. Sint-Petersburg to Amsterdam. CL: 70 [ggr8160]
 2. Amsterdam – Sint-Petersburg – Amsterdam
 - a. 22-10-1737. Amsterdam to Sint-Petersburg. Mixed cargo, 156½:12 [nst1589], [dsr4758]
 - b. 30-5-1738. Sint-Petersburg to Amsterdam. Blanco [nst1759]

³³ According to nst: edam, according to dsr: amsterdam

- c. 1-7-1738. Sint-Petersburg to Amsterdam. CL: 50 [ggr8273]
 3. Amsterdam – Sint-Petersburg – Amsterdam
 - a. 23-5-1740. Amsterdam to Sint-Petersburg. Mixed cargo, 173½ rks [nst2721], [dsr3661]
 - b. 7-9-1740. Sint-Petersburg to Amsterdam. CL: 71 [ggr8758]
 4. Amsterdam – Sint-Petersburg – Amsterdam
 - a. 2-10-1740. Amsterdam to Sint-Petersburg. Mixed cargo, 261½:12 rks [nst2779], [dsr3718]
 - b. 9 (10)³⁴-12-1740. Sint-Petersburg to Amsterdam. Rye, hemp, 61:6 rks [nst2867], [dsr3627]
 5. 9-5-1753. Archangel to Amsterdam. CL: 150 [ggr3218]
- [8] HOP, JURRIAN (Jurriaan)
 1. 16-12-1744. Cartagena to Amsterdam. CL: 18 [lg2257]
 2. 23-6-1745. Bayonne to Amsterdam. CL: 59 [lg3232]
 3. 6-7-1748. Galipoli to Amsterdam. CL: 59 [lg11371]
- [9] HOP, KLAAS GERRITS (Gerrit(n), G., P.), from Warder, Hindeloopen
Ships: Stam (1712), Jonge Stam (Jonge Star, 1715-1721, SL: 170 / 164 / 154), Christina (1725, SL: 165)
 1. 20-4-1712³⁵. Amsterdam to Archangel. Charterer: Lups, Jacob for 7100 f. [sr714]
 2. 1-6-1715. Amsterdam to Archangel. Charterer: Thesingh for 6600 f. [sr902]
 3. Amsterdam – Archangel – Amsterdam
 - a. 25-7-1716³⁶. Amsterdam to Archangel. Bij 't last. [sr1016]
 - b. 4-4-1718. Archangel to Amsterdam. CL: 170 [ggr11800]
 4. Amsterdam – Archangel – Amsterdam
 - a. 15-7-1718³⁷. Amsterdam to Archangel. Charterer: Hoesem, van for 5800 f. [sr1090]
 - b. 24-3-1719. Archangel to Amsterdam. CL: 210 [ggr11845]
 5. Amsterdam – Archangel – Amsterdam
 - a. 1719³⁸. Amsterdam to Archangel. Charterer: Hoesem, van for 5700 f. [sr1121]
 - b. 22-11-1719. Archangel to Amsterdam. CL: 190 [ggr11865]
 6. Amsterdam – Archangel – Amsterdam
 - a. 15-5-1720. Amsterdam to Archangel. Bij 't last. Spent winter in Archangel; returned to Amsterdam in 1721 [sr1193]
 - b. 19-11-1721. Archangel to Amsterdam. CL: 170 [ggr11932]
 7. Unknown – Narva – Amsterdam
 - a. 21-12-1724. Narva to Amsterdam. 30 ½:18 rks [dsr1560]
 - b. 14-4-1725. Narva to Amsterdam. CL: 175 [ggr2756]
 8. Amsterdam – Narva – Amsterdam
 - a. 7-5-1725. Amsterdam to Narva. Ballast [dsr1581]
 - b. 6-7-1725. Narva to Amsterdam. 47 rks [dsr1662]
 - c. 17-8-1725. Narva to Amsterdam. CL: 171 [ggr12465]
 9. Amsterdam – Narva – Amsterdam
 - a. 5-9-1725. Amsterdam to Narva. Ballast [dsr1620]
 - b. 30-11-1725. Narva to Amsterdam. 30 ½ rks [dsr1725]
 - c. 25-1-1726. Narva to Amsterdam. CL: 165 [ggr12581]
- [10] HOP, CLAES Gerrits, from Edam
 1. Amsterdam – Sint-Petersburg – Amsterdam
 - a. 21-8-1758. Amsterdam to Sint-Petersburg. Mixed cargo, ballast [nst8464]
 - b. 1-6-1759. Sint-Petersburg to Amsterdam. various [nst8540]
- [11] HOP, CLAAS
 1. 3-3-1747. Archangel to Amsterdam. CL: 151 [lg7806]
 2. 15-5-1748. Cadix to Amsterdam. CL: 151 [lg10875]
- [12] HOP, VOLKERT PIETERS, from Hindeloopen
 1. 29-9-1739. Narva to Amsterdam. 28 ½:12 [dsr3922]

APPENDIX 2: additional examples

³⁴ Date of return 9-12 according to nst, 10-12 according to dsr

³⁵ Early fleet. Groenlands convooi.

³⁶ Late fleet.

³⁷ Late fleet.

³⁸ Early fleet.

- [13] SLEESWIJK (Sleeswyk, Sleswijk, Sleesewick), SIKKE (Sicke), from Lemmer, Hindeloopen, Amsterdam
1. Ship: Houtmolen (1737-1748, SL: 132)
 2. 9-9-1737. Vyborg to Amsterdam. Deals [nst1491]
 3. Amsterdam – Narva / Kronstadt – Amsterdam
 - a. 12-8-1741. Amsterdam to Narva. Ballast [nst3177]
 - b. 27-9-1741. Kronstadt to Amsterdam. Timber [nst3254]
 - c. 22-3-1742. Kronstadt to Amsterdam. CL: 132 [ggr9062]
 4. Amsterdam – St. Petersburg / Kronstadt – Amsterdam
 - a. 28-8-1742. Amsterdam to St. Petersburg. Herring [nst3573]
 - b. 12-10-1742. Kronstadt to Amsterdam. Balks [nst3660]
 - c. 16-11-1742. Kronstadt to Amsterdam. CL: 132 [ggr9191]
 5. Amsterdam – St. Petersburg – Amsterdam
 - a. 9-5-1744. Amsterdam to St. Petersburg. Ballast [nst4256]
 - b. 5-8-1744. St. Petersburg to Amsterdam. Blanco [nst4454]
 - c. 16-9-1744. St. Petersburg to Amsterdam. CL: 132 [ggr9584]
 6. 4-8-1745. Riga to Amsterdam. CL: 132 [lg3673]
 7. 21-4-1746. Riga to Amsterdam. CL: 132 [lg5454]
 8. 18-7-1747. Riga to Amsterdam. CL: 132 [lg9062]
 9. 20-4-1748. Riga to Amsterdam. CL: 132 [lg10650]
 10. Amsterdam – Narva / Pernau – Amsterdam
 - a. 6-6-1748. Amsterdam to Narva. Ballast [nst5478]
 - b. 17-8-1748. Pernau to Amsterdam. CL: 132 [lg11796]
- [14] WIEBES, WIJBRAND (Wibrand, Wiebrand), from Amsterdam, Hindeloopen, Molkwerum
Ship: St. Petershof (1736, SL: 102)
1. 24-10-1736. St. Petersburg to Amsterdam. CL: 148 [ggr7973]
 2. 9-10-1737. St. Petersburg to Amsterdam. CL: 144 [ggr8168]
 3. 16-8-1738. Kronstadt to Amsterdam. CL: 102 [ggr8369]
 4. 11-5-1739. St. Petersburg to Amsterdam. CL: 102 [ggr8532]
 5. Amsterdam – St. Petersburg – Amsterdam
 - a. 27-7-1739. Amsterdam to St. Petersburg. Mixed cargo [nst2469]
 - b. 20-4-1740. St. Petersburg to Amsterdam. CL: 115 [ggr8696]
 6. Unknown – Kronstadt – Amsterdam
 - a. 17-10-1740. Kronstadt to Amsterdam. Blanco [nst2829]
 - b. 19-12-1740. Kronstadt to Amsterdam. CL: 102 [ggr8847]
 7. Amsterdam – St. Petersburg – Amsterdam
 - a. 24-5-1741. Amsterdam to Kronstadt. Ballast [nst2969]
 - b. 9-8-1741. St.-Petersburg to Amsterdam. Hemp [nst3159]
 - c. 2-10-1741. St. Petersburg to Amsterdam. CL: 187 [ggr8996]
 8. Amsterdam – St. Petersburg – Amsterdam
 - a. 15-6-1742. Amsterdam to St. Petersburg. Mixed cargo [nst3415]
 - b. 26-10-1742. St.-Petersburg to Amsterdam. Hemp [nst3674]
 - c. 17-4-1743. St. Petersburg to Amsterdam. CL: 102 [ggr9257]
 9. Amsterdam – St. Petersburg – Amsterdam
 - a. 18-6-1743. Amsterdam to St. Petersburg. Mixed cargo [nst3878]
 - b. 19-10-1743. St. Petersburg to Amsterdam. Balks [nst9591]
 - c. 22-5-1744. St. Petersburg to Amsterdam. CL: 102 [ggr9488], [lg416]
 10. Amsterdam – St. Petersburg – Amsterdam
 - a. 14-6-1744. Amsterdam to St. Petersburg. Mixed cargo [nst4352]
 - b. 28-9-1744. St. Petersburg to Amsterdam. Hemp [nst4509]
 - c. 22-12-1744. St. Petersburg to Amsterdam. CL: 172 [ggr9633], [lg2287]
 11. Amsterdam – St. Petersburg – Amsterdam
 - a. 6-8-1745. Amsterdam to St. Petersburg. Mixed cargo [nst4791]
 - b. 13-1-1746. St. Petersburg to Amsterdam. CL: 112 [ggr9819], [lg5078]
 12. Amsterdam – St. Petersburg – Amsterdam
 - a. 11-6-1746. Amsterdam to St. Petersburg. Blanco [nst4998]
 - b. 21-10-1746. St. Petersburg to Amsterdam. Blanco [nst5201]
 - c. 3-2-1747. St. Petersburg to Amsterdam. CL: 115 [ggr9946], [lg7665]
 13. 18-11-1747. St. Petersburg to Amsterdam. Blanco [nst5424]
 14. 26-6-1748. St. Petersburg to Amsterdam. CL: 102 [ggr10096], [lg11255]
 15. 28-6-1750. Amsterdam to St. Petersburg. Mixed cargo [nst6211]
- [15] SWAAN, JAN PIETERS, from Amsterdam, Hindeloopen

Ship: Vrede van Utrecht (1732-1740, SL: 150)

1. 19-7-1732. Narva to Amsterdam. CL: 156 [ggr1107]
2. 1-12-1732. Narva to Amsterdam. CL: 156 [ggr11220]
3. 14-7-1733. Narva to Amsterdam. Timber [nst1203]
4. 16-7-1733. Narva to Amsterdam. CL: 156 [ggr11288]
5. 23-6-1734. Narva to Amsterdam. CL: 156 [ggr11520]
6. 22-9-1734. Narva to Amsterdam. CL: 156 [ggr11653]
7. 15-11-1735. Narva to Amsterdam. CL: 156 [ggr7826]
8. 1-8-1736. Narva to Amsterdam. CL: 156 [ggr7917]
9. 20-11-1736. Vyborg to Amsterdam. CL: 156 [ggr8011]
10. 19-3-1738. Vyborg to Amsterdam. CL: 156 [ggr8256]
11. 1-12-1738. Narva to Amsterdam. CL: 156 [ggr8503]
12. 11-9-1739. Narva to Amsterdam. CL: 156 [ggr8616]
13. 9-9-1740. Vyborg to Amsterdam. CL: 156 [ggr8760]

[16] SWAAN, JAPPE P., from Hindeloopen

Ship: Vrouw Geertrui (1729-1744, SL: 146)

1. 1-9-1729. Narva to Amsterdam. CL: 146 [ggr10517]
2. 8-11-1730. Vyborg to Amsterdam. CL: 146 [ggr10732]
3. 21-7-1732. Narva to Amsterdam. CL: 146 [ggr11081]
4. 25-11-1732. Narva to Amsterdam. CL: 146 [ggr11211]
5. 19-8-1733. Narva to Amsterdam. CL: 146 [ggr11366]
6. 5-4-1734. Narva to Amsterdam. CL: 146 [ggr11506]
7. 19-7-1734. Narva to Amsterdam. CL: 146 [ggr11589]
8. 17-11-1734. Narva to Amsterdam. CL: 146 [ggr11723]
9. 29-6-1735. Narva to Amsterdam. CL: 146 [ggr7747]
10. 12-11-1735. Narva to Amsterdam. CL: 146 [ggr7822]
11. 2-8-1736. Narva to Amsterdam. CL: 146 [ggr7924]
12. 21-12-1736. Kronstadt to Amsterdam. CL: 146 [ggr8034]
13. 12-10-1737. Kronstadt to Amsterdam. CL: 146 [ggr8171]
14. 9-7-1738. Kronstadt to Amsterdam. CL: 146 [ggr8306]
15. 27-10-1738. Narva to Amsterdam. CL: 146 [ggr8451]
16. 7-8-1739. Narva to Amsterdam. CL: 146 [ggr8569]
17. 3-11-1739. Narva to Amsterdam. CL: 146 [ggr8651]
18. 18-10-1740. Archangel to Amsterdam. CL: 275 [ggr12282]
19. 9-10-1741. Kronstadt to Amsterdam. CL: 146 [ggr8999]
20. 1-11-1742. Narva to Amsterdam. CL: 146 [ggr9176]
21. 26-6-1743. Narva to Amsterdam. Balks [nst3900]
22. 24-7-1743. Narva to Amsterdam. CL: 146 [ggr9340]
23. Amsterdam – Narva – Amsterdam
 - a. 7-8-1743. Amsterdam to Narva. Ballast [nst4042]
 - b. 14-9-1743. Narva to Amsterdam. Balks [nst4162]
 - c. 12-11-1743. Narva to Amsterdam. CL: 146 [ggr9439]
24. Amsterdam – Narva/Pernau – Amsterdam
 - a. 29-4-1744. Amsterdam to Narva. Ballast [nst4211]
 - b. 2-7-1744. Pernau to Amsterdam. CL: 146 [lg748]
 - c. 25-11-1744. Pernau to Amsterdam. CL: 144 [lg2134]