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DUTCH MARITIME CARTOGRAPHY OF THE BALTIC IN THE 16TH AND EARLY 17TH CENTURIES*

In Dutch trade and shipping of the 16th century, it was the Baltic sea-borne trade which expanded most. As a consequence, Dutch charting of coasts and waters of this region improved, as well. In fact, representations of the Baltic lay at the early 16th century roots of maritime cartography in the Netherlands.

In order to secure safe navigation, seamen in those days made use, first of all, of their own powers of observation and extensive experience practised during many years of sailing on, mostly, fast routes. Traditional aids for navigation in coastal waters, to which the Baltic trade belonged for the greater part, were the compass and the sounding-line. Throughout the 16th century, cartographical aids were to serve the needs of seamen increasingly, despite the often reluctant attitude of traditional-minded seamen towards such a revolutionary development. The advantages of the sea chart or *paskaart* were however quite evident; it represented the area in a graphical way, besides offering the seaman the opportunity to plot his course. However, because the charts were composed without any projection system, so-called plane charts or *platte caerten*, a certain amount of error in plotting the course of a ship could not be avoided. These charts were preceded by rutters of the sea or *leeskaarten*, i.e. sailing directions for fast routes, giving information on courses, tides, winds, shoals, harbours, etc., written by and for seamen. No charts were inserted. The only graphical elements sometimes included were often rather primitive, coastal profiles showing the coastline as seen from the sea. With these rutters, the history of Dutch maritime cartography in general and

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also in relation to the Baltic started.¹

Rutters and charts

In North-Western Europe the oldest descriptions of searoutes date back to the 13th century. It was not until the 15th and 16th centuries that the compilation of these northern European rutters was taken in hand more seriously. The manuscript texts of the so-called *Seebuch*, dated to about 1450, contain for the greater part descriptions of coastal waters in Western Europe but also hold some elementary information about navigation in the Baltic as far as Reval, port-town on the Finnish Gulf. Dutch seamen are considered to be largely and perhaps even completely responsible for the compilation of this work. It reflects Dutch interests in trade and shipping in the Baltic region already by then.²

The oldest known rutter printed in the Netherlands dates back to 1532. *De Kaert vâder zee*, published in Amsterdam by Jan Zeverszoon Creupel vander Schelling, comprises both the western and, to a far lesser extent, the eastern navigation, with the Netherlands as the starting point. Compared with the *Seebuch* the information about the Baltic is supplemented with sailing directions for the fairway to and through the Belt.³

The next edition was published in 1541 by Jan Jacobsz. in Amsterdam, named *Dit is die Caerte vander Zee, om Oost ende West te Zeylen*. For the Baltic, the only supplement concerns a description of the Skagerrak and Kattegat. Rutters of this kind, both in printed and in manuscript form, remained in use into the 17th century, often enlarged and supplemented

¹G. Schilder, 'Zeekaarten en navigatie-instrumenten. Zeekaarten', in: *Maritieme Geschiedenis der Nederlanden* I, Bussum, 1976, pp. 239-240; C.A. Davids, *Zeewezen en wetenschap. De wetenschap en de ontwikkeling van de navigatietechniek in Nederland tussen 1585 en 1815*, Amsterdam-Dieren, 1986, pp. 56-57; C. Koeman, *Atlantes Neerlandici* IV, Amsterdam, 1970, pp. 7-8.

²Schilder, 'Zeekaarten', p. 240; C.P. Burger, 'Oude Hollandse zeevaart-uitgaven', in: *Tijdschrift voor boek- en bibliotheekwezen* VI, 1908, p. 250; A.W. Lang, 'Seekarten der südlichen Nord- und Ostsee', in: *Ergänzungsheft zur Deutschen Hydrographischen Zeitschrift*, Reihe B, 10, Hamburg, 1968, p. 8.

³Burger, 'Zeevaart-uitgaven', pp. 251-255; Lang, 'Seekarten', pp. 9-10.

with coastal profiles.⁴

The oldest known printed sea chart produced in North-Western Europe for the benefit of navigators was of Dutch origin, dated to 1526. This woodcut was prepared by Jan de Beeldsnijder van Hoirne and printed in Antwerp. It represents part of the North Sea and in its complete state it very likely also represented part of the Baltic Sea as the title indicates: *Caerte van de Oosterscher zee* (Chart of the Eastern sea, i.e. the Baltic). Unfortunately, however, the only copy known is preserved in fragments which do not show any part of the Baltic. This is too bad, even more so because the surviving part depicts the Dutch-German-Danish coasts of the North Sea surprisingly accurately although rather generally.⁵

In 1530, another Dutchman, Jan de Pape prepared a chart of which we positively know that it must have contained the coastal regions from Bretagne to as far as Danzig. A short note about it is all that has survived though, for no copy of the chart exists.⁶

In the very same decade in which Amsterdam more and more became the national and international centre of trade with and shipping to the Baltic, its municipality commissioned the Amsterdam artist and cartographer Cornelis Anthonisz. to design a general chart of the North Sea and the Baltic. This *Caerte van oostlant* (Chart of the eastern lands, to which the Baltic countries belonged), a woodcut map on nine sheets, first appeared in 1543 in Amsterdam but has only come down to us in its third edition of ca. 1560 published in Antwerp by Arnoldus Nicolai:

⁴Koeman, *Atlantes*, pp. 7-13; Davids, *Zeewezen*, pp. 56-57, 99, 164.

⁵B. van 't Hoff, 'Jan van Hoirne's Map of the Netherlands and the 'Oosterscher Zee' printed in Antwerp in 1526', in: *Imago Mundi* XI, 1954, p. 136; B. van 't Hoff, L.J. Noordhoff, 'Een kaart van de Nederlanden en de 'Oosterscherzee' gedrukt door Jan de Beeldesnyder van Hoirne te Antwerpen in 1526', in: *Het Boek XXXI*, 1953, pp. 151-156; A.W. Lang, *Die 'Caerte van oostlant' des Cornelis Anthonisz. 1543. Die ältesten gedruckte Seekarte Nordeuropas und ihre Segelanweisung*, Hamburg, 1986, p. 17; Lang, 'Seekarten', pp. 19-22; Schilder, 'Zeekaarten', p. 241.

⁶J. Keuning, 'XVIth Century Cartography in the Netherlands', in: *Imago Mundi* IX, 1952, pp. 37, 42; Lang, 'Seekarten', p. 20; Schilder, 'Zeekaarten', p. 241.

Fig. 1: Detail of the *Caerte van oostlant* (Chart of the eastern lands) by Cornelis Anthonisz. (Antwerp, third edition ca. 1560). Herzog August Bibliothek, Wolfenbüttel.

It was meant as a sea chart for navigators sailing as far as the Eastern Baltic, with special attention for the coastal regions. Compass-roses and compass-lines were drawn on the chart, which was designed without any projection system, containing only a graduation in degrees of latitude. Most places are situated too northerly. For drawing up the chart no mathematical basis was used.⁷

Not surprisingly, the coasts and waters of the Kattegat and the Sound are most of all Baltic regions in accordance with the real situation. The eastern coast of Sweden is depicted in a far less accurate way. Quite remarkable is the curved shape of the coastline south of Stockholm, whose entire length is pushed too much to the east. The island of Öland is treated rather inaccurately both in form and in contents, in contrast to the islands of Bornholm and Gotland which are dealt with fairly well.⁸

The delineations of the coasts of Finland, Russia and the eastern Baltic are represented in a strongly generalized form. Besides a shortness of detailed geographical knowledge, the distorted shape of these coasts is also due to the lack of space in this corner of the map. This must be the reason why the names of Narva (*Narven*) and Riga (*Rij*) are placed just outside the actual map. For the coastal regions in question above all the more important port-towns such as Reval, Pernau, Windau, Memel and Königsberg are mentioned.⁹

The southern coast of the Baltic is not depicted appropriately either. Only the Danziger Bucht is fairly represented. The further the Pomeranian coast extends to the east, the further northwards it is situated. The island of Rügen is situated too far to the east. The Kieler Bucht has been overlooked completely.¹⁰

The sources upon which Cornelis Anthonisz. based his chart consisted

⁷H.P.H. Jansen, 'Handelsvaart van de Noordnederlanders', in: *Maritieme Geschiedenis der Nederlanden I*, Bussum, 1976, p. 276; N.W. Posthumus, *De Uitvoer van Amsterdam 1543-45*, Leiden, 1971; Lang, *Caerte van oostlant*, pp. 20, 25-29; J. Keuning, 'Cornelis Anthonisz', in: *Imago Mundi VII*, 1950, pp. 52-53; Schilder, 'Zeekaarten', pp. 241-242.

⁸Lang, *Caerte van oostlant*, pp. 32-34, 56-57.

⁹Lang, *Caerte van oostlant*, pp. 33, 56; Keuning, 'Cornelis Anthonisz', p. 57.

¹⁰Lang, *Caerte van oostlant*, pp. 32-33, 46, 56.

in the first place of the then available rutters, updated by oral consultation of experienced sailors and, possibly, by his own observations as a seaman.¹¹

Thus, without a prototype to draw upon, Cornelis Anthonisz. succeeded in compiling a first overall view of fair quality covering the entire Baltic and the sailing-route to it, produced specifically for the benefit of seamen. However, because his chart could not adequately enough express all characteristic phenomena of the coasts and waters of the Baltic, Cornelis Anthonisz. produced for it a separate rutter of which the second part, entitled: *Hier beghint die Caerte van die Oosterse See*, was entirely devoted to the eastern navigation. Its first edition appeared in ca. 1544, but only a copy of the third edition has been preserved, published by Jan Ewoutsz. in Amsterdam in 1558. An innovation was the inclusion of coastal profiles between the descriptions.¹²

Despite the many shortcomings, both chart and rutter cannot be praised highly enough. Especially in combination, the two served to a considerable extent the needs of seamen sailing for the Baltic, in a time that the Dutch and in the first place the Amsterdam trade and shipping to this region was rapidly expanding. Formerly, as we have seen, reliable information on eastern navigation was hardly available. In fact the combination of chart and rutter was something completely new. It preceded the later pilot guide.

¹¹No unanimity exists on this point. According to Lang, *Caerte van oostlant*, pp. 19-20, 38, 40, 77, 93, Cornelis Anthonisz. had sailed the Baltic in the early 1540s and again about 1550. Keuning, 'Cornelis Anthonisz.', p. 51 and G. Schilder, 'Cornelis Anthonisz.', in: *Lexikon zur Geschichte der Kartographie: Von den Anfängen bis zum Ersten Weltkrieg*, Wien, 1986, p. 18, think it probable that he sailed in his youth. C. Koeman, *Geschiedenis van de kartografie van Nederland. Zes eeuwen land- en zeekaarten en stadsplattegronden*, Alphen aan den Rijn, 1985, p. 59, has his doubts about Cornelis Anthonisz.' seamanship; F.J. Dubiez, *Cornelis Anthoniszoon van Amsterdam 1507-1553*, Amsterdam, 1969, pp. 10-11, excludes any seamanship at all.

¹²For a general description of the second part: Keuning, 'Cornelis Anthonisz.', pp. 53-57 and Lang, *Caerte van oostlant*, pp. 58-61, 75-81.

Pilot guides

The first printed rutter ever that included nautical charts of the coasts of Europe came out in 1584/85. This combination of descriptions and charts is usually called a pilot book or seaman's guide. The *Spieghel der Zeevaerdt* was compiled by Lucas Jansz. Waghenaer of Enkhuizen and published by the printing-house of Christoffel Plantijn in Leiden. The charts were engraved on copper by the creative artist Johannes van Deutecum, which explains their aesthetic value.

The processing of hydrographic information into a series of sectional charts depicting the coasts of Western, Northern, and Eastern Europe was unprecedented. For its compilation, Waghenaer drew upon a variety of written and printed sources such as rutters, pilot books and sea charts, supplemented by his own extensive personal observations as a pilot.¹³

The first volume (1584) represents the coasts of Western Europe, preceded by one larger general portolan chart of Europe and an introduction into the art of navigation. The second volume (1585) is entirely devoted to the northern and eastern navigation for which twenty-one coastal charts are included. Each of the charts is executed in a large folio format and is preceded by a very brief text of sailing directions. All charts are of uniform design and of uniform, relatively large, scale. A graduation in latitude and longitude is lacking, as is any kind of projection system. The presence of compass-roses, with lines extending to the coast, makes them real sea charts. All symbols and signatures inserted have standard meanings. Coastal profiles were drawn, very originally, in combination with the coastline on the chart itself, and no longer in between the text as was common in the older rutters. The rather generalized form of the coast-line is interrupted by estuaries and harbour-entrances drawn at a larger scale and in greater detail, facilitating the pilotage in these waters. The technical

¹³C. Koeman, *The History of Lucas Jansz. Waghenaer and his Spieghel der Zeevaerdt*, Amsterdam-Lausanne, 1964, pp. 22, 33, 38-39; R.A. Skelton, *Bibliographical Note to the Facsimile Edition of Lucas Janszoon Waghenaer's Spiegel der Zeevaerdt (1584-1585)*, Amsterdam, 1964, pp. V-VI; Lang, 'Seekarten', p. 26; Schilder, 'Navigatie'. Zeekaarten, in: *Maritieme Geschiedenis der Nederlanden II*, Bussum, 1977, pp. 159-183.

line-up is quite innovative for a 16th century sea chart.¹⁴

Concerning the Baltic, four charts represent the coasts of Sweden and Denmark. The first one depicts the west coast of Sweden. Then follows a chart which was used for navigating *Die Sondt* (the Sound). Numerous soundings are given for securing a safe journey through the small corridor between Helsingør and Helsingborg into the *Ooster Zee* (Baltic Sea). On the next chart the south-east coast of Sweden is shown as far as Kalmar. The Danish island of Bornholm and the Swedish island of Öland are only partly shown. The last chart of the Swedish coast covers the region between Kalmar and the northern part of Öland in the south and *T gatt nha Stockholm* (Gateway to Stockholm) in the north, however, without showing the port-town itself. Most remarkable is the absence of any picture of the large, at that time Danish, island of Gotland. Unlike its western coast, which seems fairly well depicted, Sweden's eastern coast is drawn quite out of line. The absence of any profiles for this coastline accentuates the rather poor knowledge of the region during this period.

Leaving out the Åland-archipelago and the western half of the south coast of Finland, Waghenauer continues with five charts representing the coasts of the eastern Baltic. First of all, the easternmost part of the Finnish Gulf is depicted. Finland and *Lijflandt* (Livonia) lie on opposite sides. From the island of *Hoogelandt* (Gogland), situated in the centre of the Gulf, sailing directions are given for the fairway to *Wijburch* (Vyborg) as well as to *Narua* (Narva). In between these two ports the Russian coast is shown, drawn in a more or less straight line, interrupted only by a few nameless rivermouths. In reality a large inlet is situated here which is connected with the river Neva. The text does not mention any inlet either. Nor are there any coastal profiles or any soundings given. It is therefore reasonable to assume that the Russian coastline had not been navigated very thoroughly. Obviously, Narva and Vyborg were the final destinations for Dutch trading-vessels in these years and no eastward crossing of the waters in between will have taken place.

Next, a chart is included showing the coast on either side of Reval, including parts of the islands of *Dageroort* (Dagö/Hiiumaa) and *Oesel* (Ösel/Saaremaa). Three coastal profiles are added. Then follows a chart of the Gulf of Riga, surrounded by the coasts of Livonia and Courland (*Fig.*

¹⁴Lang, 'Seekarten', pp. 27-28; Koeman, *Waghenauer*, pp. 42-43.

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Fig. 2. Chart of the Gulf of Riga. The east is at the top. From Lucas Jansz. Waghenaer, *Spieghel der Zeevaerdt*. (Leiden 1585). Universiteitsbibliotheek Amsterdam.

Fig. 3: Chart of the coasts of Prussia between Memel and Danzig. The east is at the top. From Lucas Jansz. Waghenaer, *Spieghel der Zeevaert*. (Leiden 1585). Universiteitsbibliotheek Amsterdam.

The most important port-towns for trading are presented, *Pernout* (Pernau/Pärnu) and above all *Rijghe* (Riga), as is shown by the profile of the coast east of the mouth of the river Dvina. The straits on either side of Ösel, both connecting the Baltic Sea with the Gulf of Riga, are the subjects of the next chart. The only profile given is that of the north-western tip of Courland around *Der wind* (Windau/Ventspils) which emphasizes the greater importance of the southern strait. The chart of the coasts of Prussia shows the entire coastline from *Der memel* (Memel/Klaipeda) as far as *Dantzick* (Danzig/Gdansk) and *De Wijssel fluvius* (the river Weichsel/Vistula) (*Fig. 3*). Profiles are given for the coasts just near the entranches leading to Memel and *Coninxbergen* (Königsberg). For Danzig, a profile is drawn in a curved line. The delineation of the eastern Baltic coast seems on the whole quite fair despite some false assumptions such as a direct waterway-connection between Königsberg and Memel. The omission of some coastal sections seems legitimate because of their minor importance in matters of navigation and trade.

Two charts are devoted to the coastal regions of the southern Baltic. One shows the coastline of *Pomeren* (Pomerania). The absence of any soundings and the fact that only the eastern part of the coast is presented in profile, suggests that ships only set sail for Danzig, coming for the greater part from Bornholm, which is shown at the bottom of the map. The other one represents the coasts of Mecklenburg and the east coast of *Holster Landt* (Holstein) until the entrance of the Belt is reached. The Kieler Bucht is drawn in a rather distorted way. More disturbing is the complete lack of any chart of the Belt. However, this was rectified quite soon in the Latin edition of 1586.

On the whole, the representation of the Baltic Sea coasts seems quite fair. The reason why some regions are absent or drawn in a less accurate way seems to lie in the unfamiliarity of the seamen with those parts. This was not so much due to ignorance, unskilled survey technics or whatsoever, as did it reflect the minor importance of those regions in matters of navigation and commercial interest. The absence of the Belt and Gotland in the first edition of the *Spieghel* is therefore all the more surprising and should be seen as the exception to the rule. However, the Belt and Gotland were mapped quite soon in next editions. The charts show no basic distinction in representation of the Northern and Southern Baltic. This

suggests that a regular Dutch trade to the Northeastern Baltic, all the way up to Narva and Vyborg, had taken place already in the decades previous to the date of publication of the *Spieghel*.

The *Spieghel der Zeevaerdt* represented a watershed in the development of cartographic aids for the navigation of the European coasts, and the more so for the coastal waters of the Baltic. It was soon reprinted many times, besides being translated into Latin, French, German, and English. The work was also often imitated and served as a model for sea atlases in the 17th and 18th centuries.¹⁵

Notwithstanding all this praise, the fine charts alone could not serve the entire needs of pilotage in coastal waters, and they were therefore not able to replace the old rutters completely. Extensive and detailed sailing directions remained in great demand. Waghenaer was well aware of this omission in his chart book for he continuously enlarged the text in successive editions.

Rutters of contemporaries formed serious competition for Waghenaer, e.g. Albert Haeyen and his pilot guide, *Amstelredamsche Zeevaarten*, published in 1585 by Plantijn in Leiden, the same printing house as that of the *Spieghel*. The emphasis of this work lay on the description of coasts and waters, which were consequently very exhaustive and precise. About 1580 the municipality of Amsterdam charged Haeyen with the task of surveying the coastal waters from Spain to the Baltic. However, Haeyen succeeded in the preparation of only one part concerning the navigation of the North Sea coasts between Flandria and Cape Skagen. Included were only five charts. Even though Haeyen's work was never to be continued because of the success of the *Spieghel*, Waghenaer was not in the position of just ignoring it. In fact he inserted some of its features in his later work.¹⁶

Another thing was that the rapid expansion of Dutch trade and shipping in the 1580s demanded a new set of charts rather than a simple

¹⁵Koeman, *Waghenaer*, pp. 63-70; idem, *Atlantes*, p. 469; Schilder, 'Navigatie', p. 159; E. Bos-Rietdijk, 'Het werk van Lucas Jansz. Waghenaer', in: *Lucas Jansz. Waghenaer van Enkhuysen*, Enkhuizen, 1984, p. 21.

¹⁶Koeman, *Atlantes*, pp. 220-221; Schilder, 'Navigatie', pp. 162-163; Lang, 'Seekarten', pp. 28-32.

correction of the charts in the *Spiegel*.¹⁷

For these matters Waghenaer compiled a second pilot guide in 1592: *Thresoor der Zeevaert*, which differs considerably from his *Spiegel* in form and contents. In fact it was an improved rutter of the sea for its greatly enlarged descriptions of the coastal waters of Europe and for its new additions, such as the regions of the White Sea. Its oblong format was also more suitable for the needs of seamen. The *Thresoor* was to be used at sea more frequently than the *Spiegel* which eventually became a collector's item in the first place.¹⁸

The first edition of the *Thresoor* contains 22 newly drawn sectional charts (no general map is included) of which six are representing the coastal waters of the Baltic. The decrease in the number of the charts is mainly the result of a reduction in scale. Each smaller scale chart in the *Thresoor* comprises the coastal regions of two to four charts in the *Spiegel*. As in the *Spiegel*, harbours and estuaries are drawn on a larger scale than the intervening coasts. Imitating Haeyen, course lines are added which were very helpful for approaching landmarks. For certain coasts, among which parts of the Baltic, the delineation is corrected as a result of the supply of new information by Dutch pilots in the 1580s. Coastal profiles have been removed from the charts to the text, as was the tradition in the old rutters.

Concerning the Baltic, the first chart shows the coast and waters of the Kattegat as well as the fairway through the Sound into the *Mare Balticum*. New is the insertion of a part of Bornholm and some Danish islands south of Sjælland. The second chart depicts the entire eastern coast of Sweden up to and, this time including, Stockholm. The islands of Bornholm, Öland, and Gotland are represented in full.

On the next chart the Finnish Gulf is shown entirely, including even some of the islands belonging to the Åland-archipelago (Fig. 4). This time the shape of the coastline between Vyborg and Narva is presented as a curved line, somewhat more resembling the real situation, although an inlet is still lacking. The drawing in of the *Nioa fluvius*

¹⁷R.A. Skelton, *Bibliographical Note to Lucas Janszoon Waghenaer's Thresoor der Zeevaert (1592), Facsimile edition*, Amsterdam, 1965, p. VI; Koeman, *Atlantes*, p. 502.

¹⁸Skelton, *Thresoor*, p. V; Koeman, *Atlantes*, pp. 502-503.

Fig. 4: Chart of the Finnish Gulf. From Lucas Jansz. Waghenaer, *Thre-soor der Zeevaert*. (Leiden 1592). Universiteitsbibliotheek Amsterdam.

rising from a great lake located in the interior indicates some knowledge about the river Neva and Lake Ladoga, which is confirmed in the text. Concerning the rest of the eastern Baltic, the regions of four sectional charts in the *Spieghel* are comprised in one chart depicting the entire coastline from Reval to Königsberg, including the islands of Dagö and Ösel.

Next there is a chart covering the southern Baltic coasts of Prussia, Pomerania, and the eastern part of Mecklenburg. On the last chart that covers part of the Baltic, navigation through the Belt is dealt with, depicting the Kieler Bucht as a real bend.

Compared to the *Spieghel* the charts are to some regions supplemented,

to others they are greatly improved. The loss of detail produced by the smaller scale, which made the charts alone inaccurate to

navigate by, was for a great deal compensated by the enlarged sailing directions. As in the *Spiegel*, textual descriptions and corresponding charts are not always in entire agreement. In later editions, no charts concerning the Baltic were supplemented, nor did great alterations occur with regard to the contents.

The *Enchuyser Zeekaartboeck*, Waghenaer's last work printed in 1598 in a small octavo format, is the most comprehensive of all the rutters printed at that time. Of the ca. 350 pages of sailing directions and coastal profiles, about 50 are dedicated to the Baltic. In this rutter, no charts are

included save two small ones, of no concern here.¹⁹

¹⁹Koeman, *Atlantes*, pp. 513-516; Schilder, 'Navigatie', pp. 161-162.

Fig. 5: Chart of Northern Europe including the entire Baltic by Cornelis Doetsz. (Amsterdam 1589). British Library, London.

Fig. 6: Chart of the Sound. The east is at the top. From Willem Jansz. Blaeu, *Zeespiegel*. (Amsterdam 1623). Universiteitsbibliotheek Amsterdam.

Besides the depiction of sections of the Baltic on detailed charts inserted in pilot guides, from the 1580s, the Baltic as a whole was represented on general charts compiled by Dutchmen. In fact, it was Waghenaeer himself who in 1583 started to publish a loose chart of Western and Northern Europe, including the entire Baltic. As the first chart, it was also inserted in the *Spieghel*. Other Dutch charts representing the entire Baltic are those of Adriaen Gerritsz. (1587 and 1591), Cornelis Doetsz. (1589) (*Fig. 5*) and again Waghenaeer (1589 and 1592).

Epilogue

The former, dynamic way of charting the coasts and waters of the Baltic came to an end at the close of the 16th century. In a relative short period of time it had resulted in a qualitatively high and quantitatively large amount of sea charts, which were to serve as the prototypes for the 17th century. The charting of the Baltic was almost exclusively a Dutch affair, of which the products were highly valued in foreign countries too. In the history of Dutch maritime cartography of the Baltic, the end of the 'Waghenaeer era' must be considered as its highlight. Basically, this was due to two related factors. Dutch maritime cartography in general had reached maturity as early as the end of the 16th century, ahead of its time in relation to other northern European countries. Meanwhile, the great Dutch shipping and trade interests in the Baltic area caused these regions to be charted in the first place.

About 1600, things were going to change, which for the 17th century resulted in an obvious stagnation in the development of Dutch maritime cartography of the Baltic. Starting from the 1590s a rapid expansion in Dutch trade and fishing took place to areas like the Mediterranean, the Arctic Sea, and coastal regions across the oceans. The charting of these

newly discovered and economically highly promising lands and waters was more and more taken in hand, at the expense of the traditionally depicted areas as the Baltic, no matter how great the latter's economical importance remained for the Dutch.²⁰

Probably, the charts of the Baltic in use by then were considered to be the best possible for the time being, enough to secure safe navigation when used in combination with sailing directions. The absence of real technical innovations in the field of mapping after 1600 is another reason why no new charts of the Baltic occurred, differing substantially from Waghenauer's.²¹

The work of Waghenauer remained in service for a while and when it was replaced by a new pilot guide, it still served as a model. Willem Jansz. Blaeu's pilot guide, *Het Licht der Zeevaart*, published in 1608, resembles in its whole appearance and contents much of Waghenauer's *Thresoor*. The size and scale of the charts is only slightly enlarged. The sectional charts representing the various Baltic regions cover more or less the same types of areas as those in the *Thresoor*; only the Belt is divided up into two charts. The whole is placed in, a reverse order, starting with the Belt and ending with the Sound. The contents have only here and there undergone minor improvements. The number and contents of the charts did not alter in the reprints.²²

In response to his competitor, Johannes Janssonius, Blaeu published a new and greatly enlarged pilot guide in 1623: the *Zeespiegel*. For the part dealing with the Baltic, it meant an expansion up to 18 charts. These larger scale maps, carried out in folio format, were far more detailed and to some extent improved as well, see e.g. the chart of the Sound (*Fig. 6*), however without unveiling many details not yet known.²³

The *Zeespiegel* became the prototype of the Dutch pilot guides in the

²⁰Lang, 'Seekarten', pp. 40-48; Schilder, 'Navigatie', p. 169.

²¹Lang, 'Seekarten', p. 41; Schilder, 'Navigatie', pp. 169-170.

²²Koeman, *Atlantes*, pp. 27-29, 35-36; J. Keuning, M. Donkersloot-de Vrij, *Willem Jansz. Blaeu. A Biography and History of his Work as a Cartographer and Publisher*, Amsterdam, 1973, pp. 76-86; Schilder, 'Navigatie', pp. 170, 173; Lang, 'Seekarten', p. 42.

²³Koeman, *Atlantes*, pp. 78-81; Keuning, *Blaeu*, pp. 86-89; Lang, 'Seekarten', pp. 42-44.

17th century. Concerning maritime cartography in general, the Dutch succeeded in continuing their position as the international centre of map-production and map-trade throughout most of the 17th century. However, as far as the charting of the Baltic is concerned, the monopoly of the Dutch was disputed and overcome as early as 1650. Numerous so-called modern publishing-houses in Amsterdam contented themselves with copying the charts of Blaeu instead of attempting to modernize them. The prime motives for producing pilot guides in the 17th century, at least for the representation of traditional regions such as the Baltic, were obviously commercial rather than expressing the wish to improve contents. This can be considered another reason for the stagnation in Dutch printed maritime cartography of the Baltic. Thus, as the Dutch were not able any longer to satisfy the needs of seamen sailing for the Baltic, foreign hydrographers, especially those from the countries surrounding the Baltic Sea, starting with Sweden from about 1650, took their chances and filled the gap the Dutch had left behind.²⁴

²⁴Lang, 'Seekarten', pp. 45-48, 56-69 ff.

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