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COGS ON ELBLĄG SEALS DATING FROM 1242 AND 1367

It has long been known that water routes are the most convenient way of travelling and shipping goods. The Baltic Sea seems a particularly important route, not separating but connecting peoples living on its different coasts. Rock carvings discovered in Sweden suggest that coastal navigation was known there as early as the Bronze Age. Besides, the most ancient sea boat wrecks, dated to the 4th century BC (Als) and the 4th century AD (Nydam), come from Denmark. Baltic sailing further developed in the Early Middle Ages and the Roskilde, Gokstad and Oseberg ships, all found in Scandinavia, are among the most famous medieval vessels¹.

Simultaneously, Slavic sailing flourished and boats discovered in Gdańsk, Szczecin and Puck are well known Slavic ships, equalling their Viking counterparts².

The development of trade relations with remote countries, particularly between Hanseatic trading cities, which took place in the 12th and 13th centuries in Northern Europe, resulted in a change of the means of transport. Ships used in the Early Middle Ages were no longer sufficient and were replaced by nefs, cogs, hulks and carracks³.

In the Late Middle Ages the most typical ship used by Hanseatic traders was the cog, most probably of Frisian provenance. The term cog first appeared in written records as early as the 9th century. However,

the real development of this type of ship took place in the 13th century⁴. A cog was fitted with a single mast and a square-rigged single sail. It was a heavy vessel used for the transportation of goods. It had a straight keel. Both the stempost and sternpost were also straight and leaning. A hinged rudder was attached to the sternpost. The earliest cogs could have been equipped with oar rudders. However, traces of mounting a hinged rudder were to be seen in the case of a cog wreck dating back to 1250 found in Kollerup, Jutland.⁵ The ship strakes overlapped each other. The earliest vessels of this type did not have stern-castles or forecastles, which were first introduced at the turn of the 13th century⁶.

Shipwrecks discovered during archaeological excavations provide the most comprehensive information about the structure of the historic ship in question. Let me discuss two of them found in Kalmar and Bremen respectively.

The shipwreck from Kalmar, Sweden, is an early development form of the cog, approximately dated to the mid-13th century. The Kalmar cog was about 11 x 4.5m in size and the larboard and starboard were about 2m high. It had a straight keel, a straight sternpost and a curving stempost, which was unusual for the cog. The overlapping planks were insulated with animal hair. The forecastle and sterncastle were fitted with additional half-decks and the midship was open. The cog was equipped with neither sterncastles nor forecastles. The mast, fitted in the keelson, was supported by a yoke made from stringers and a crossbeam. This was a square-rigged vessel and its single sail was hoisted by means of a windlass⁷.

¹ M. Prosnak, *Okręty skandynawskie wczesnego średniowiecza*, „Kwartalnik Historii Kultury Materialnej”, vol. 9, 1961, No 3, pp. 407-425; eadem, *Z zagadnień skandynawskiej sztuki korabniczej wczesnego średniowiecza*, „Materiały Zachodniopomorskie”, vol. 13, 1967, pp. 199-238. P. Smolarek, *Dawne żaglowce*, Gdańsk 1963, p. 7-24; V. Hynek, P. Klučina, *Válečné lodě*, part 1, *Lodě veslové a plachetní do roku 1860*, Praha 1985, pp. 58-65; J. Litwin, *Medieval Baltic Ships – Traditions and Construction Aspects*, [w:] *L'innovation technique au moyen age. Actes du VI^e Congrès International d'Archéologie Médiévale, 1-5 octobre 1996*, Paris 1998, pp. 89-90.

² M. Prosnak, *Zachodnio-słowiańska sztuka korabnicza wczesnego średniowiecza*, „Materiały Zachodniopomorskie”, vol. 9, 1963, pp. 241-273; W. Stępień, *Odkrycia archeologiczne w Zatoce Puckiej*, „Nautologia”, vol. 21, 1986, No 1, pp. 79-83; V. Hynek, P. Klučina, *op. cit.*, pp. 66-67; J. Litwin, *op. cit.*, pp. 91-93.

³ J. Schildhauer, *Dzieje i kultura Hanzy*, Warszawa 1995, pp. 13-31, 75-83.

⁴ J. Schildhauer, *op. cit.*, p. 75;

⁵ F. Hocker, A. Daly, *Early Cogs, Jutland Boatbuilders, and the Connection between East and West before AD 1250*, [in:] *Connected by the Sea, Proceedings of the Tenth International Symposium on Boat and Ship Archaeology Roskilde*, ed. L. Bluce, F. Hocker, A. Englert, Oxford 2003, p. 192, fig. 31.9

⁶ P. Smolarek, *op. cit.*, pp. 30-31; V. Hynek, P. Klučina, *op. cit.*, pp. 73-74; J. Litwin, *op. cit.*, pp. 93-94; P. Olender, *Okręty średniowiecza – okręty Północy*, „Morza – Statki i Okręty”, No 3/2004, pp. 60-61.

⁷ P. Smolarek, *op. cit.*, pp. 32-35; V. Hynek, P. Klučina, *op. cit.*, pp. 73-74.



Fig. 1. Cog on the seal dating from 1242 a. by H. Kownatzki, *Siegel, Wappen und Fahnen von Elbing*, „Elbinger Jahrbuch“, fasc. 9, 1931, fig. 1; b. by F.A. Voßberg, *Münzen und Siegel der preußischen Städte Danzig, Elbing, Thorn so wie Herzöge von Pomerellen im Mittelalter*, Berlin 1841, Pl. IVA (reproductions and computer graphics by E. Wtorkiewicz-Marosik).



Fig. 2. Cog on the seal dating from 1367 a. by H. Kownatzki, *Siegel, Wappen und Fahnen von Elbing*, „Elbinger Jahrbuch“, fasc. 9, 1931, fig. 3; b. by F.A. Voßberg, *Münzen und Siegel der preußischen Städte Danzig, Elbing, Thorn so wie Herzöge von Pomerellen im Mittelalter*, Berlin 1841, Pl. IVB (reproductions and computer graphics by E. Wtorkiewicz-Marosik).

The second wreck, found during the dredging operations at Bremen harbour in 1962, is a remains of a well developed cog with castles. The excavation results revealed that the ship was never fitted with a mast and rigging. It seems that it was washed off the slipway by an exceptionally high wave and abandoned in the shallows.

The wreck was 23.5m long and 7.5m wide. The draft of the ship was about 2m and the midship was approximately 5.3m tall. The total height of the vessel, the stern-castle included, was 7.5m. The load-carrying capacity was about 130 tons. The ship was an oak wood construction. It was fitted with a straight keel. Both the stempost



Fig. 3. Construction details of the hull and rigging (Photo by J. Słomska).

and sternpost were straight too. The ship's transverse structure consisted of 40 frames, placed every 50cm. The hull planks overlapped each other, except for 4 bottom flush laid strakes. The surviving fragments of the sterncastle are 7.6m in length. The forecastle has not been found and probably never built. However, the solidly strengthened structure of the bow suggests that it was planned to be added⁸.

Medieval iconography seems a perfect complement to our knowledge on the structure of the type of ship in question. Miniatures illustrating contemporary books

frequently depict cog-built vessels. A miniature found in Froissart's Chronicles representing French and British cogs competing in the Battle of Ecluse (Sluys), fought in 1340, may serve as an example here⁹.

However, representations of cogs are most common on North European town seals. The interesting thing is that so many construction details particularly significant for a vessel's structure and repeatedly appearing on various seals, undoubtedly picturing different sailing craft, are to be seen on relatively small seals. It seems evident that contemporary artists were familiar with these vessels.

⁸ V. Hynek, P. Klučina, *op. cit.*, p. 74; M. Prosnak, *Baltycki okręt wojenny późnego średniowiecza*, „Materiały Zachodniopomorskie”, vol. 32, 1986, fig. 8.20; J. Litwin, *op. cit.* p. 94.

⁹ D. Pataky, I. Marjai, *Żaglowce w sztuce*, Warszawa 1977, fig. 6; U. Israel, J. Gebauer, *Segelkriegsschiffe*, Berlin 1982, fig. on p. 8.

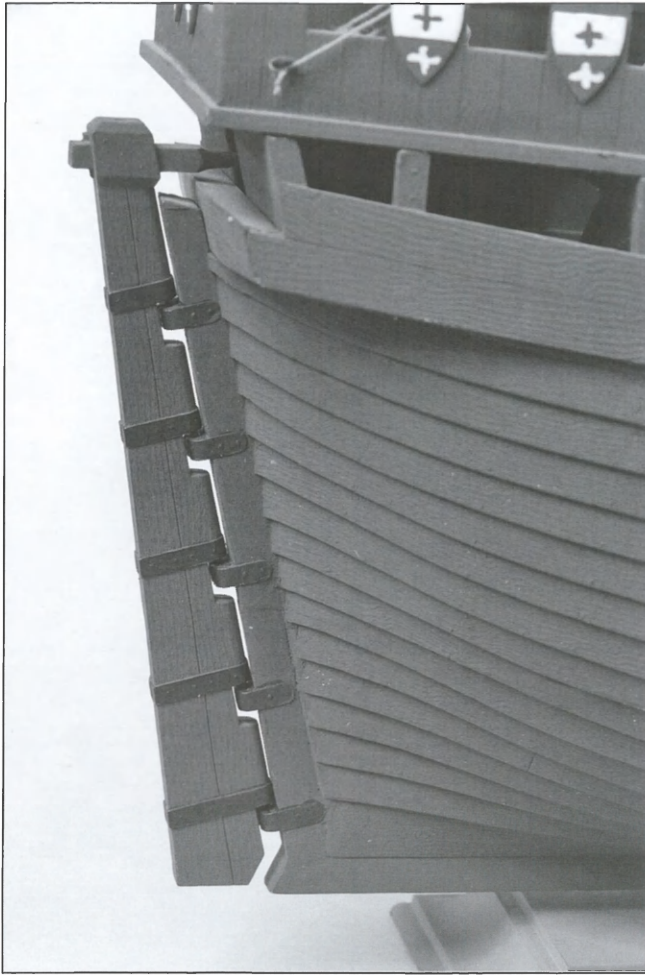


Fig. 4. Structure and mounting of the rudder (Photo by J. Słomska).

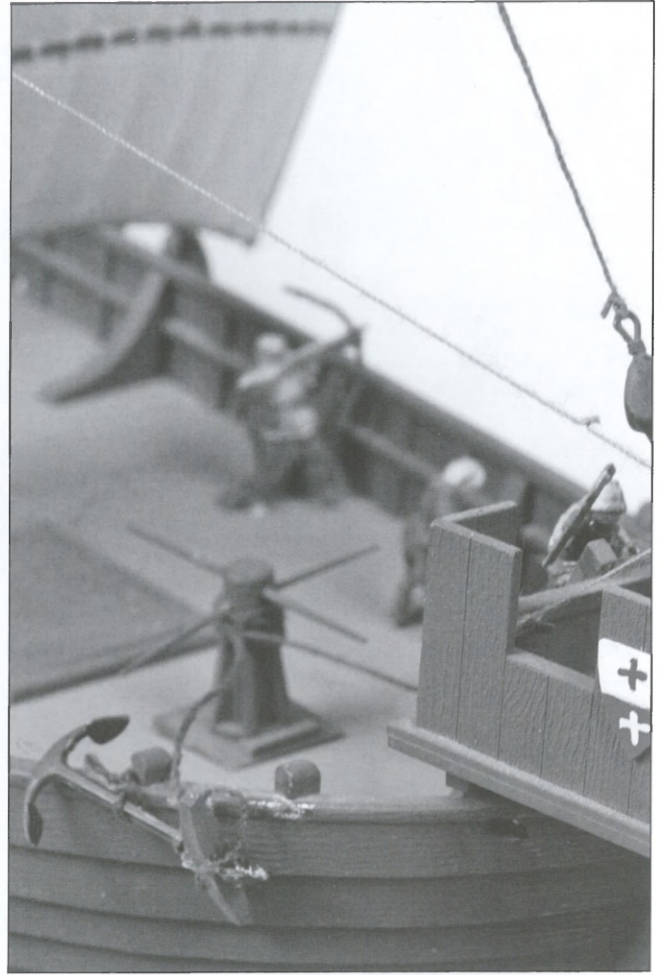


Fig. 5. Stempost with bowsprit (Photo by J. Słomska).

What is more, the images may have been representations of concrete ships berthed at the harbour.

Pictures of early cogs, without sterncastles and fore-castles, are to be found on, among others, seals from Elbląg, dating back to 1242, from Stavoren, Frisia, dating from 1246, from Wismar (1256) and Harderwijk, Holland, dating back to 1280¹⁰.

Seals dating back to the turn of the 13th and the 14th centuries depict cogs fitted with both a sterncastle and a fore-castle. A seal from Gdańsk dating back to 1294 is one of the oldest. Seals from Damme, Lower Saxony, dating from 1309, from Straslund, dating back to 1329, Ipswich and Poole, both dating from the mid-14th century, and finally a seal from the Old Town of Elbląg, dating from 1367, are also worth mentioning here¹¹.

The construction details of both types of cog which I would like to discuss here are clearly depicted on the Elbląg seals. To illustrate the discussion, let me use a number of photographs of a model cog made by the author.

¹⁰ P. Smolarek, *op. cit.*, pp. 30-37; P. Olender, *op. cit.*, pp. 60-61.

¹¹ P. Smolarek, *op. cit.*, pp. 38-41; P. Olender, *op. cit.*, pp. 60-61.

Two identical seals, 85mm in diameter, were attached to documents of 1242¹² and 1290. The outer circle of the seals holds the words 'SIGILLVM BURGENSIVM IN ELVIGGE'¹³ (Fig. 1). Another seal was fixed to a resolution of 1367 passed by the Prussian towns convention, where representatives from Netherlands towns were also in attendance, regarding a war with Valdemar IV of Denmark. The specimen was 86mm in diameter and the inscription surrounding the seal read 'SIGILLUM CIVITATIS ELBINGENSIS'¹⁴. Such seals were in use until 1440¹⁵ (Fig. 2).

A number of photographs and drawings of the seals have already been published. The majority of the illustrations used in the present paper come from

¹² Both the metal stamps impressed were probably older than the documents the seals were applied to. However, for simplification purposes, only the date of the earliest document known to be sealed with any of them will be given. Cf.: *Historia Elbląga*, vol. I (*do 1466 r.*), eds. S. Gierszewski and A. Groth, Gdańsk 1993, pp. 144-145, 160-161.

¹³ *Ibidem...*, pp. 144-145.

¹⁴ *Ibidem*, p. 145.

¹⁵ H. Kownatzki, *Siegel, Wappen und Fahnen von Elbing*, „Elbinger Jahrbuch”, fasc. 9, 1931, p. 126.



Fig. 6. Ways of fixing the shrouds (Photo by J. Słomska).

the works by F. A. Voßberg, H. Kownatzki, T. Lockemann, E. Carstenn, P. Smolarek as well as P. Olender¹⁶.

The hulls of the cogs depicted on these seals are similar in construction (Fig. 3). The hull consists of a straight keel, which is clearly visible only on the seal dating from 1242 and hidden in the waves washing the ship's hull on the second one, a sternpost and a stempost, fixed slantingly in relation to the keel, and ribs with strengthening crossbeams added. The ribs, hidden inside the hull, cannot be seen but it may be assumed that they were placed very close to each other, like in the case of the Bremen cog. Two rows of triangles, probably representing the ends of the transverse supporting beams strengthening the hull are pictured on the panels of the later cog. Similar supporting beams can be noticed in other representations of cog-built vessels, the Bremen cog included.

The planks of both cogs overlap each other, which is particularly visible in the earlier specimen. The clenched

nails fastening the panels to the ship's hull are shown on both the seals and in the Bremen analogue as well.

Long rudders, slightly broadening towards the bottom, were attached to the sternposts of both cogs by at least three hinges to withstand the stresses applied while turning the ship. The rudders were operated by means of tillers. The tiller of the older cog was equipped with a crossbar facilitating keeping the rudder in position. The tiller of the second cog is almost completely hidden behind the sterncastle structure (Fig. 4).

Both the cogs had bowsprits extending forward from the stemposts. While the bowsprit of the cog dating from 1242 is a long, relatively thin, spar fitted in a yoke, the bowsprit of the cog dating back to 1367 is a solid spar constituting an extension of the stempost (Fig. 5).

Masts, extremely thick at the base and tapering towards the top, are depicted in the central part of both ships (Fig. 3). The characteristic thing is the relative thickness of the masts even if one takes into consideration the undoubtedly distorted proportions of both representations. It may only be noted that the Bremen cog was to be fitted with an 80cm diameter mast, as measured at the base, that is, at keel mast step level¹⁷. The cogs pictured

¹⁶ F.A. Voßberg, *Münzen und Siegel der preußischen Städte Danzig, Elbing, Thorn so wie Herzöge von Pomerellen im Mittelalter*, Berlin 1841, pl. IV.A, B; H. Kownatzki, *op. cit.*, pp. 116-119, fig. 1, 3; T. Lockemann, *Elbing*, Berlin-Halensee 1926, p. 4; E. Carstenn, *Geschichte der Hansestadt Elbing*, Elbing 1937, pl. 9, 10, 16; P. Smolarek, *op. cit.*, p. 31, fig. 36, p. 39, fig. 49; J. Litwin, *op. cit.*, pp. 93-94, fig. 15-16; P. Olender, *op. cit.*, p. 60.

¹⁷ V. Hynek, P. Klučina, *op. cit.*, p. 74.



Fig. 7. Structure of the sterncastle, the windlass for raising the yards below (Photo by J. Słomska).

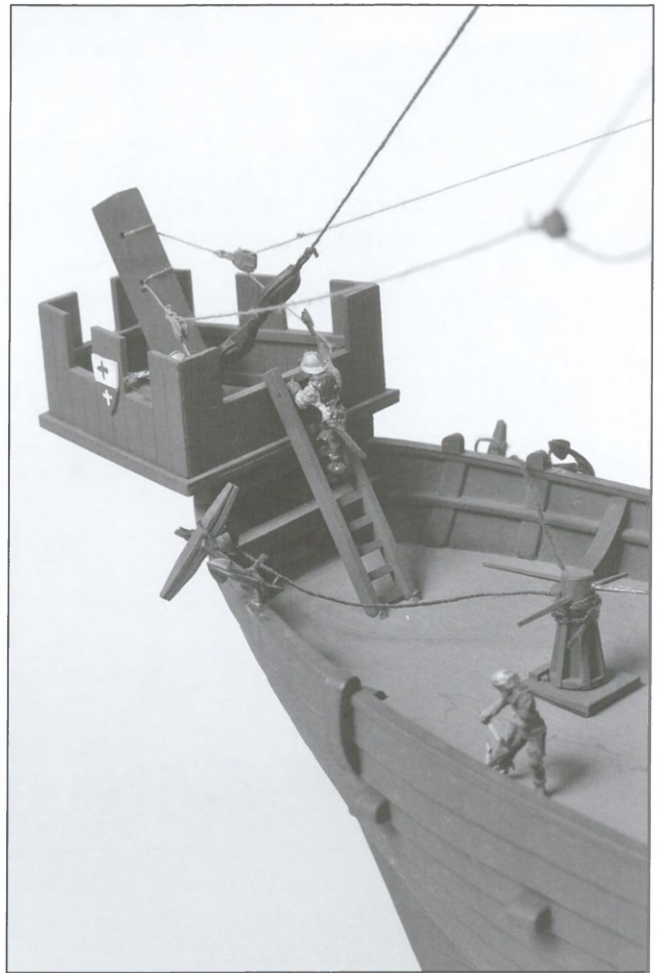


Fig. 8. Structure of the forecastle, the capstan and anchors next to it (Photo by J. Słomska).

on the Elbląg seals seem to have been equipped with similar masts. We have no information about their structure, but as no clasps are pictured, it may be assumed that they were made from one single spar each. In addition, a cross is attached to the mast top of the later vessel. Needless to say, the masts must have been solidly fitted and firmly fixed. The cogs shown on both seals have three shrouds on both the larboard and starboard. What is more, the later cog, dating back to 1367, has some strengthening elements clearly visible on the bulwarks, which may have been used for fixing the shrouds as is the case with the model vessel. Alternatively, the shrouds might have been run underneath the deck and fixed to the hull's structure. Both methods required the use of deadeyes in the form of a system of two or more pulleys used for standing the rigging (Fig. 6).

Stays were another kind of rope used for supporting the mast. They ran from the mast top to the bow and stern. The cog dating from 1242 is fitted with one single bow stay and the cog dating back to 1367 was equipped with two bow stays and one stern stay, which clearly came loose (Fig. 1-3). It seems that the artist saw a similar cog with a loose stay berthed at the harbour or that the element

is not a stay but a rope for raising the yard, which was actually lowered or even dismantled at the moment.

In fact, none of the ships discussed here is fitted with a yard, though the cogs depicted on the Stavoren, Hardervijk, Damme and Gdańsk seals are equipped with such spars¹⁸. Thus, it may be assumed that the practice of lowering the yard at the harbour was a common practice at that time. Raising and lowering the yard required considerable strength and a special windlass was needed (Fig. 7). Although the device was hidden behind the bulwarks, both the Bremen cog and the cogs pictured on the Elbląg seals must have been fitted with such windlasses as well as anchor windlasses (capstans). However, neither the former nor the latter are shown on the seals. Only the model vessel can give one a general idea of what such devices looked like (Fig. 8).

The basic difference between the two ships described above lies in the fact that the earlier vessel was equipped with neither a sterncastle nor a forecastle. As a general rule, although cogs were merchant ships, they must have

¹⁸ P. Smolarek, *op. cit.*, pp. 36-38, fig. 43-44, 46-47.

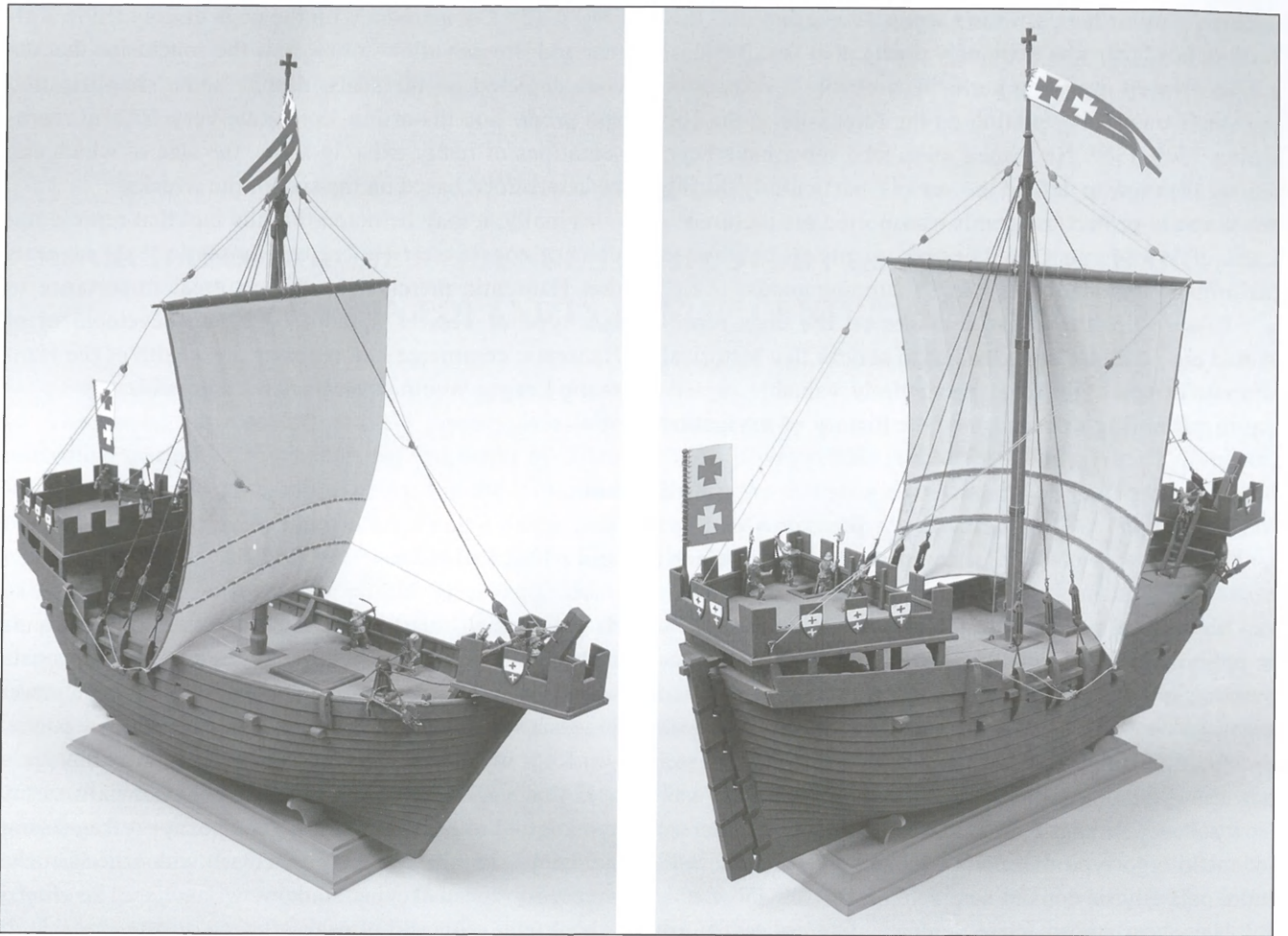


Fig. 9. Reconstruction of a cog (Photo by J. Słomska).

been fitted with some defenses against attack. Gradually, they began to perform the function of war vessels, as evidenced by the above-mentioned miniature from Froissart's Chronicles.

For this reason and to make the crew's task easier, sterncastles and forecastles started to be built as early as the close of the 13th century. Made of wood and fitted with crenellations, modeled on defensive city walls and castle fortifications, they were placed on both the bow and stern, and in some cases on the mast as well¹⁹. The forecastle of the cog dating from 1367 was located on the stempost. No additional supporting or strengthening elements are visible. However, the vessel must have been equipped with some supports to maintain stability. Let us cite the Bremen cog again, where a castle was never mounted but the supporting elements had been added²⁰ (Fig. 8).

In the case of this cog, the sterncastle, resting on two vertical supports, is larger than the forecastle. The photographs I have at my disposal do not show clearly whether the space below the castle was used to erect a stern

superstructure. A drawing of a seal dating back to 1841 represents thick, openwork, vertical beams supporting the castle. A tiller can be seen between the vertical beams²¹. It is hard to say whether it is a result of the author's accuracy or whether the seal he represented was in such good condition that he could actually see the tiniest construction details. The clearly raised bulwark in the stern section of the ship, protecting the steersman and forming only a primitive, partly closed stern superstructure seem to support the latter assumption (Fig. 7).

Both cogs fly their flags at the masts. While the flag of the cog dating from 1242 is only a symbolic flag in the form of a narrow rectangle with no design, the flag of the cog depicted on the seal dating back to 1367 is a gonfalone with three streamers, suspended from a short crossbar. Two other flags, rectangular, with their longer edges attached to vertical timbers, are located on the sterncastle. To indicate ownership of the ship or at least the seal, all the flags sport coat of arms of the town of Elbląg.

Both seals depict steersmen with long-tailed hoods, called liripipes, on their heads. Other seals show sailors

¹⁹ For example, the cog on a seal of the city of Gdańsk dating back to 1294 (P. Smolarek, *op. cit.*, p. 38, fig. 47).

²⁰ V. Hynek, P. Klučina, *op. cit.*, p. 74.

²¹ F.A. Voßberg, *op. cit.*, pl. IV.B.

wearing similar hoods, which seems to suggest that this form of headgear was extremely practical at sea. Besides, a man dressed in a long garment, probably a skipper or the ship's owner, is standing on the forecastle of the cog dating from 1367. No armed men, who must have been among the crew to defend the vessels, particularly during wars, and to protect the goods transported are pictured²². Lack of armed men on the seals seems to emphasise the original application of cogs to shipping goods.

To sum up, the above remarks on the cogs represented on the Elbląg seals lead us to believe that historical sources of this type seem particularly valuable regarding the scientific knowledge of the history of navigation

(Fig. 9-10). Comparison with the cogs discovered in Kalmar and Bremen allows us to draw the conclusion that the cogs depicted on the seals, despite some simplification and proportion distortion, constitute very faithful representations of really existing ships, the size of which can be determined based on the size of the wrecks.

Finally, it may be noted that the fact that representations of cogs were frequent on Hanseatic seals suggests that Hanseatic merchants attached great importance to this type of vessel. Without cogs, the development of Hanseatic commerce and cities or the wealth of the Hanseatic League would never have been possible.

Streszczenie

Kogi na pieczęciach Elbląga z 1242 i z 1367 r.

Najbardziej typowym statkiem hanzeatyckich kupców w późnym średniowieczu była koga. Był to statek jedno-masztowy, z jednym rejowym żaglem, przystosowany do przewozu towarów. Miał prostą stępkę, obie stawy również proste, wychylone. Do stawy tylnej zamocowany był ster zawiasowy, choć najstarsze kogi miały jeszcze ster wiosłowy. Poszycie kogi było kładzione na zakładkę. Starsze jednostki tego typu nie miały na dziobie i rufie kaszteli, które pojawiły się dopiero na przełomie XIII i XIV w.

Najwięcej informacji o budowie interesujących nas tu statków przynoszą archeologiczne znaleziska ich wraków, a do najbardziej znanych należą wraki kog z Kalmaru i z Bremy.

Doskonałym uzupełnieniem naszej wiedzy o budowie interesującego nas typu statku jest średniowieczna ikonografia. Kogi były przedstawiane w miniaturach ilustrujących księgi, szczególnie jednak często wizerunki kog występują

na pieczęciach miast północnej Europy. Pokazane są na nich ważne szczegóły konstrukcji tych statków. Doskonale widać, że ówcześni artyści dobrze je znali, a może nawet przedstawiali konkretne jednostki, stojące akurat w porcie.

Kogi wyobrażone są na dwóch pieczęciach Elbląga – z 1242 r. i z 1367 r. Pieczęć starsza przedstawia wczesny typ kogi – bez kaszteli, młodsza typ późny – z kasztelami na dziobie i rufie. Na obu pieczęciach widoczne są różne szczegóły konstrukcyjne statków, wskazujące, że chodzi o konkretne jednostki pływające.

W artykule omówiono budowę obu typów kogi, ilustrując je fotografiami modelu wykonanego przez autora.

Częste przedstawianie kog czy innych statków na pieczęciach miast hanzeatyckich świadczy o ich znaczeniu dla hanzeatyckiego handlu. Bez nich handel ten, a także rozwój i bogactwo Hanzы nie byłyby możliwe.

²² M. Prosnak, Bałtycki okręt wojenny późnego średniowiecza, „Materiały Zachodniopomorskie”, vol. 32, 1986, p. 369.