

Paweł Litwinienko

**Seafaring in the Gulf of Gdańsk area from the 10th to the 14th century in the light of
archaeological sources**

Summary

This dissertation analyses the development and change of seafaring and shipbuilding techniques in the Gulf of Gdańsk area from the 10th to the 14th century, based on available archaeological sources. The period under study was a time of significant socio-economic changes affecting the communities inhabiting the shores of the Gulf of Gdańsk: from the formation of early medieval feudal monarchies and the incorporation of the region into the early Polish state, through a period of brief independence under the rule of the Sobiesław dynasty, to the occupation of East Pomerania by the Teutonic Order and its subsequent development within the Teutonic Order State. Throughout this period, the Baltic Sea not only offered the inhabitants of its coasts the opportunity to obtain food supplies, but also enabled them to engage in intensive trade and cultural exchange, which accelerated the development of coastal centres by incorporating them into the Baltic and later European economic zone. Seafaring would be impossible without the means of maritime transport, which is the primary subject of this dissertation. The form (shape and size) of boats and ships was a result of the needs for the use of sea and centuries-old boatbuilding traditions, passed down from generation to generation. Over time, shipbuilding traditions have changed due to the emergence of new needs or contact with representatives of other traditions, which may have influenced both the form of the boats and ships built and the technical solutions employed.

The research goals leading to a picture of seafaring in the Gulf of Gdańsk from the 10th to the 14th century were as follows: the formal characterisation of studied artefacts, their assignment to specific shipbuilding tradition and identification of the changes that occurred in shipbuilding during the period under study. Another important goal was to understand the nautical properties of the analysed vessels in order to determine their intended use and their potential operating areas – whether they were seagoing vessels or were they limited to inland and coastal waters. To answer these questions, a range of research methods used in boat and ship archaeology was employed. One of these methods is the formal analysis of shipbuilding artifacts, allowing for the identification and description of distinctive features, followed by

comparison with finds described by other researchers using similar analytical criteria. The results of natural science analysis are also extremely helpful in studying the shipbuilding artifacts. Primarily, this involves dating artefacts using absolute methods: radiocarbon and dendrochronology. These methods allow to establish the chronology of the artefacts without relying solely on their typology. The dendrochronological method can also lead to the dendroprovenance identification, indicating the site of construction of a given vessel. An important part of this work is the use of an innovative method of a digital shipwreck reconstruction, developed in recent years by Western researchers. This method allows for the theoretical reconstruction of the shape of partially preserved objects, opening up new research possibilities related with simulating hydrostatic properties such as stability, load capacity and draft. Knowing these characteristics allows us to answer questions regarding the use of studied vessels, which facilitates a better understanding of past seafaring.

The dissertation is divided into seven chapters. The first is an introduction, outlining the research objectives and discussing the methods used, as well as issues related to the classification of medieval means of water transport. The second chapter outlines the brief history and state of research on medieval shipbuilding and seafaring in Poland, with particular emphasis on research conducted in East Pomerania.

The third chapter presents a detailed presentation of the thesis' source material, which consists of ten shipwrecks from the Gulf of Gdańsk region, discovered in the Puck Lagoon near Puck (four wrecks), Gdańsk (five wrecks), and Mechelinki (one wreck). Here, a formal analysis of the artifacts was conducted, the results of absolute dating were interpreted, and attempts were made to digitally reconstruct the wrecks, along with calculations of their nautical properties. Each object is presented in a broader archaeological context, using other shipwrecks and loose shipwreck elements from excavations in Gdańsk and the areas around the Baltic Sea as comparative material, with particular emphasis on the Polish and Scandinavian waters.

The fourth chapter presents the development of water transport on the Baltic Sea until the 10th century, a period preceding the chronological scope of this work. This chapter also addresses the origins and technical and cultural distinctiveness of Slavic shipbuilding.

The fifth chapter presents a comparative analysis of the described wrecks and attempts to answer fundamental questions regarding the process of transformation in shipbuilding and seafaring in the Gulf of Gdańsk.

This portrayal of maritime activity in the study area is complemented by the sixth chapter, which places each of the discussed sites in the historical, social, and economic context of their time, which seems essential for a better understanding of their use. The chapter discusses issues such as the incorporation of East Pomerania into the early Polish state, the development of Gdańsk as a centre of crafts and trade in the 10th to the 14th century, the establishment of the Hanseatic League, and finally, the annexation of Gdańsk Pomerania by the Teutonic Order, as well as the functioning of the small urban centres such as Puck within the Order's state.

The last, seventh chapter of the dissertation serves as a summary of the deliberations, bringing together the results of comparative analysis of the examined artefacts with their broad historical context in an attempt to present the image of seafaring and shipbuilding in the Gulf of Gdańsk region in the 10th to 14th century and to answer the questions posed in the introduction.

The picture of navigation in the waters of the Gulf of Gdańsk from the 10th to the 14th century as seen through archaeological sources primarily reveals the activity of the local population, operating small vessels used mostly for fishing and transport of limited quantities of goods. These vessels were built in the so-called Slavic shipbuilding tradition, characterized by the use of wooden fasteners in hull construction. Some of the examined boats and ships were capable for open sea voyages on the Baltic, while others were clearly intended for coastal or inland navigation. A certain specialization of vessels is recognizable, with longships and general-purpose vessels that could successfully serve within naval fleets as supply ships. From the 10th until the final decades of the 13th century, it is difficult to define any evolution or transformation in shipbuilding of the analysed area. Certain changes are recognisable in the material from the late 13th century: primarily a somewhat larger number of metal fasteners in the hull. However, a wreck is also known from the same period, being a near-exact replica of vessels two centuries older, which distorts the picture of gradual, evolutionary changes. This most likely reflects the strong tradition of wooden shipbuilding passed down through generations, as well as certain stability in terms of the use of the sea. A real change in

boatbuilding techniques is only recognisable in archaeological evidence in the final decades of the 14th century. Ships of similar size as before were constructed in Pomerania at this date. However, they were equipped in some technical innovations such as stern rudder and, above all, were built in a different shipbuilding tradition, utilizing metal fasteners, a tradition practiced for centuries in Scandinavia. Its full reception in the Gulf of Gdańsk only in the 14th century may be linked to the region's general economic development, the emergence of specialized crafts and improved access to metalworking specialists.

Among the archaeological sources examined in this work, in the form of boat and ship wrecks, there are no remains of the largest trading vessels of the period such as cogs. However, historical sources indicate that they were certainly present in the waters of the Gulf of Gdańsk since at least 13th century. Furthermore, wrecks of cogs, likely built in Gdańsk, are known, and have been found in locations such as Tallinn and Vejby. Reconstructing the picture of seafaring in the Gulf of Gdańsk based solely on archaeological sources would therefore be incomplete. A similar reconstruction based solely on written sources would also be equally incomplete, as demonstrated in the dissertation. This work attempts to present the analysed objects in the broadest possible context, not only of archaeological finds from the Baltic region, but also of the socio-economic events and transformations of the era. Perhaps in the future further archaeological discoveries will be made in the Gulf of Gdańsk region, shedding further light on the issues discussed here.