Abhandlung

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Bornholm – the island in the middle. Communication, mobility and trade on the example of materials from the Store Frigård cemetery

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Zusammenfassung: Für die Erforschung der Mobilität und der interkulturellen Kontakte zwischen dem europäischen Kontinent (Polen und Norddeutschland) und Jütland und Südskandinavien (einschließlich Öland und Gotland) in der Eisenzeit ist das bisher unveröffentlichte Gräberfeld von Store Frigård auf Bornholm von besonderem Belang. Die 1256 Gräber, die von der älteren Eisenzeit bis in die Spätkaiserzeit (500 v. Chr.–400 n. Chr.) reichen, machen Store Frigård zum größten und am längsten belegten Gräberfeld auf Bornholm und vielleicht im gesamten Ostseeraum. In den Gräbern wurden mindestens 650 überwiegend eiserne Funde (Schmuck- und Trachtteile, Werkzeuge und Bewaffnung) entdeckt. Als Beispiel für überregionale Kontakte werden im Folgenden „eiserne Fibeln mit langer, echter Spirale und einer großen, gegossenen Bronzeverzierung auf dem Bügel“, die Fibeln Kostrzewski Var. K, die sog. „skandinavische Gürtelgarnitur“ sowie, als lokale Variante, Fibeln vom Typ Slusegård 7c analysiert. Das Vorkommen der überregionalen Schmuck- bzw. Trachtaccessoires kann als Folge der Kulturströmungen, Tausch- und Handelsprozesse sowie als Hinweis auf Mobilität (einschließlich der Handwerker) bzw. auf Exogamie und Bündnisbildung über größer oder kleinere Distanzen gedeutet werden.

Alle diese Kontakte mussten auf dem Seeweg erfolgen. Die Lage Bornholms in der Ostsee prädestiniert die Insel als Ausgangspunkt bzw. als Zwischenstopp für längere Seefahrten. Obwohl sich aus der jüngeren vorrömischen Eisenzeit keine verlässlichen Belege für die Existenz von Booten und Schiffen finden lassen, haben Testfahrten des Nachbaus des ältereisenzeitlichen Plankenbootes von Hjortspring (DK) dies bestätigt. Die Ergebnisse dieser Testfahrten weisen darauf hin, dass das Boot für Hochseefahrten geeignet war und längere Fahrten hätte unternommen werden können. Unter optimalen Bedingungen, d. h. mit einer qualifizierten Besatzung, konnte an einem Tag eine Strecke von 40 bis 55 Seemeilen zurückgelegt werden. Dies bedeutet, dass die Strecke zwischen der schwedischen Küste (Schonen) und Bornholm, wo die kürzeste Entfernung lediglich 20 Seemeilen beträgt, problemlos zurückgelegt werden konnte. Eine ebenfalls durchführbare, jedoch wesentlich längere Reise (56 Seemeilen) wäre die Strecke von Nexø nach Mielno oder Kołobrzeg in polnischen Mittelpommern. Die Strecke von Gotland nach Bornholm (ca. 160 Seemeilen in direkter Linie) erscheint trotz der erheblich größeren Entfernung ebenfalls als machbar. Eine solche Reise hätte jedoch erheblich mehr Zeit in Anspruch genommen und einen wesentlich höheren Kraftaufwand der Besatzung erfordert. Zudem wären zahlreiche Zwischenstopps notwendig gewesen. Nichtsdestotrotz findet sich diese Route in archäologischem Fundmaterial wieder, beispielsweise in den hier besprochenen skandinavischen Gürtelbeschlägen. Eine direkte Fahrt von Gotland zur Danziger Bucht wäre wesentlich schwieriger gewesen, da die Entfernung (ca. 160 Seemeilen) zu überwinden ist und keine Zwischenhalte möglich sind. Es ist anzunehmen, dass die Fremdgüter aus Gotland auf einem Umweg über einen Umschlagplatz auf Bornholm ins Weichselmündungsgebiet gelangten. In der jüngeren vorrömischen Zeit sind Importe aus der Ostseezone im Unterweichselgebiet weit verbreitet, während sie in Mittelpommern nahezu vollständig fehlen. Eine direkte Route von Bornholm zur Danziger Bucht ist noch länger (etwa 170 Seemeilen) und ebenso schwierig, es sei denn, man fuhr zunächst nach Mittelpommern und dann entlang der Küste weiter.

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Es ist anzunehmen, dass derartige Fahrten hauptsächlich im Sommer stattfanden, da zu dieser Jahreszeit die Wetterbedingungen, der Wellengang und die Himmelssichtweite (und möglicherweise auch die Zielsichtweite) besser waren und somit die Navigation erleichterten. Die geringe Transportkapazität eines einzelnen Ruderbootes deutet darauf hin, dass die Mobilität andere, personengebundene Ursachen hatte als einen regelmäßigen, gewinnorientierten Handel mit rein kommerziellem Ziel.

Schlüsselworte: Bornholm, jüngere vorrömische Eisenzeit, Römerzeit, Seekontakte

Abstract: One of the key sites for understanding the scale of the mobility and intercultural contact between continental Europe (Poland and northern Germany) and Jutland and southern Scandinavia (including Öland and Gotland) in the Iron Age is the previously unpublished cemetery at Store Frigård on Bornholm. The 1256 graves, dating from the early pre-Roman Iron Age to the late Roman period (500 BC–AD 400), make Store Frigård the largest and longest-functioning cemetery on Bornholm and in the entire Baltic area. In the graves were recorded at least 650 metal finds (ornaments and parts of clothing, tools and weaponry). As an example of trans-regional contacts, the paper analyzes iron brooches with a long true spring and a large, cast bronze ornament on the bow, Kostrzewski type K brooches, the so-called 'Scandinavian belts' and, as a local pattern, brooches type Slusegård 7c. The presence of cross-regional clothing elements can be interpreted as an indication of the diffusion of cultural patterns, exchange and/or trade, and the mobility of people (including artisans), as well as long- or short-distance exogamy and alliance building.

All such contacts had to be undertaken by sea. The positioning of Bornholm in the Baltic meant that it could be used as a starting point or as a 'pit-stop' for longer cruises. The problem is that there are no remaining boats or ships from the younger pre-Roman and early Roman periods, but maritime attempts to reconstruct a much earlier boat from Hjorstpiring have shown that it could have made even longer cruises. With a boat paddled by a well-trained crew, it was possible to cover a distance of between 40 and 55 nm in a long day depending on weather conditions. This would easily have allowed a crew to cover the distance between the Swedish coast (Schonen) and Bornholm, which is only 20 nm, where the distance is shortest. A much longer journey (56 nm), but also possible, would be the route from Nexø to Mielno or Kołobrzeg in central Pomerania, Poland. The route from Gotland to Bornholm, despite the much longer distance (about 160 nm in a direct line), also seems quite feasible. In this case, the easiest way would be to sail to Öland and then stick to the Öland coast and then Sweden. Such a voyage, however, would require much more time and, above all, crew effort, and numerous pit-stops would be needed. This route is reflected in archaeological materials, for example, in the Scandinavian belt fittings discussed here. A direct trip from Gotland to the Gulf of Gdańsk would be much more difficult. The problem here is the long distance, some 160 nm, and the lack of stopping facilities along the way. Perhaps imports from Gotland made their way to the Vistula estuary region by a circuitous route, via the "reloading station" at Bornholm. However, Scandinavian or Baltic imports from the younger Pre-Roman period are accumulated almost exclusively in the lower Vistula region, and there are only few traces, if any, in Central Pomerania. The direct route from Bornholm to the Gulf of Gdańsk is longer, about 170 nm, and just as difficult, unless the captain chooses to sail to Central Pomerania in one jump, and then all the way along the coast.

Such voyages were most likely to have taken place in summer due to better weather conditions, milder waves and greater visibility of the sky and destination, allowing for better navigation. The relatively small amount of goods that could be taken in a fairly small paddled boats indicates that the mobility had other, more personalised reasons than a regular, profit-oriented trade with a strictly commercial function.

Keywords: Bornholm, younger pre-Roman Iron Age, Roman Period, maritime contacts

Streszczenie: Jednym z kluczowych stanowisk dla zrozumienia skali mobilności i kontaktów międzykulturowych między Europą kontynentalną (Polską i północnymi Niemcami) a Jutlandią i południową Skandynawią (w tym Olandią i Gotlandią) w epoce żelaza jest wcześniej niepublikowane cmentarzysko w Store Frigård na Bornholmie. Ogółem 1256 grobów, datowanych od starszego okresu przedrzymskiego aż do późnego okresu rzymskiego (500 p.n.e.–400 n.e.), czyni Store Frigård największym i najdłużej funkcjonującym cmentarzyskiem na Bornholmie i być może w całym regionie bałtyckim. W grobach zarejestrowano co najmniej 650 zabytków metalowych (ozdoby i części stroju, narzędzia i broń). Jako przykład kontaktów ponadregionalnych w artykule poddano analizie tzw. żelazne fibule z długą sprężyną i dużą, odlewaną z brązu półkolistą nakładką na kabłąku, zapinki typu Kostrzewski K, tzw. skandynawskie garnitury okuć pasa oraz, jako przykład form *stricte* lokalnych, zapinki typu Slusegård 7c. Występowanie ponadregionalnych ozdób i części stroju może być interpretowana jako efekt dyfuzji wzorców kulturowych, wymiany i/lub handlu oraz mobilności ludzi (w tym rzemieślników), a także egzogamii na mniejsze lub większe

odległości oraz jako indykatory intencjonalnego budowania systemów sojuszy i powiązań.

Wszelkie tego typu kontakty musiały odbywać się drogą morską. Położenie Bornholmu na Bałtyku sprawiło, że mógł on być wykorzystywany jako punkt wyjścia lub jako „pit-stop" podczas dłuższych rejsów. Problemem jest brak zachowanych łodzi lub statków z młodszego okresu przedrzymskiego i wczesnego okresu rzymskiego, jednak próby morskie rekonstrukcji dużo wcześniejszej łodzi z Hjorstpiring wykazały, że mogła ona odbywać nawet dłuższe podróże. Łódź wiosłowa, obsługiwana przez dobrze wyszkoloną załogę, mogła w ciągu długiego dnia, w zależności od warunków pogodowych, pokonać dystans od 40 do 55 mil morskich. Z łatwością można więc było przepłynąć między szwedzkim wybrzeżem (Schonen) a Bornholmem, gdzie najkrótsza odległość wynosi zaledwie 20 mil morskich. Znacznie dłuższa (56 mil), ale również możliwa, byłaby trasa z Nexø do Mielna lub Kołobrzegu na Pomorzu Środkowym. Trasa z Gotlandii na Bornholm, pomimo znacznie większej odległości (około 160 mil w linii prostej), również wydaje się wykonalna. W tym przypadku najłatwiej byłoby popłynąć na Olandię, a następnie trzymać się wybrzeża Olandii, a następnie Szwecji. Taka podróż wymagałaby jednak znacznie więcej czasu, a przede wszystkim wysiłku załogi, potrzebne byłyby też liczne pit-stopy. Trasa ta znajduje odzwierciedlenie w materiałach archeologicznych, na przykład w omawianych tu skandynawskich okuciach pasów. Bezpośrednia podróż z Gotlandii do Zatoki Gdańskiej byłaby znacznie trudniejsza. Problemem jest tu duża odległość, około 160 mil, oraz brak przystanków po drodze. Być może importy z Gotlandii docierały w rejon ujścia Wisły okrężną drogą, przez „stację przeładunkową" na Bornholmie. Jednak importy skandynawskie lub bałtyckie z młodszego okresu przedrzymskiego występują prawie wyłącznie w rejonie dolnej Wisły, przy praktycznie zupełnym ich braku na Pomorzu Środkowym. Bezpośrednia trasa z Bornholmu do Zatoki Gdańskiej jest dłuższa (około 170 mil morskich) i równie trudna, chyba że kapitan zdecyduje się popłynąć na Pomorze Środkowe jednym skokiem, a następnie kontynuować rejs wzdłuż wybrzeża.

Takie rejsy odbywały się najprawdopodobniej głównie latem, ze względu na lepsze warunki pogodowe, łagodniejsze fale i większą widoczność nieba i celu podróży, co pozwalało na lepszą nawigację. Stosunkowo mała ilość towarów możliwych do zabrania dość małą łodzią wiosłową wskazuje, że mobilność miał inne, bardziej spersonalizowane przyczyny niż regularny, nastawiony na zysk, handel o ściśle komercyjnej funkcji.

Słowa kluczowe: Bornholm, młodszy okres przedrzymski, okres rzymski, kontakty morskie

Introduction

With its central geographical location in the middle of the Baltic Sea, Bornholm has always been an obvious link between the Continent and Scandinavia. This is especially true in the Iron Age, where archaeological findings show that the island's communities were in contact with both North German and Polish areas, as well as Southern Scandinavia, especially Öland and Gotland. It is therefore only natural to go to Bornholm to seek answers regarding the nature and extent of relations between the Iron Age communities in the Baltic Sea area. The project "Bornholm – the island in the middle" aims to shed light on the societies, contacts, and alliance systems in the Baltic Sea region in the Early Iron Age (500 BC–400 AD) by analyzing the burial ground in Store Frigård[1], the largest in Bornholm. In the coming years, the total material will be analyzed and then published by an international team of specialists from Scandinavia and Poland. As the work is still in an initial phase, the following text will not discuss all aspects of communication, mobility, and trade in the entire Baltic area, but will focus on a few selected examples.

Bornholm itself is a large archaeological site encompassing the period from the younger Pre-Roman Period to the Viking Age (Fig. 1). Close to Store Frigård are the well-known necropolises of Nørre Sandegård (4.5 km), Store Kannikegård (13.5 km) and Slusegård (17.5 km). The presence of so many large burial sites, which are found almost everywhere within the cultivable areas of the island, suggests that Bornholm was quite densely populated in the Iron Age. Store Frigård is also located a short distance (7 km) from the well-known wealth centre "Sorte Muld", which is interpreted as a central temple area with a cult building; its significance is presumed to date back to the Pre-Roman Iron Age and continue into the Late Iron Age[2].

Store Frigård, with its 1256 cremation graves and one inhumation grave, is the largest cremation cemetery on Bornholm and was excavated 1954–1963 by Ole Klindt-Jensen under the auspices of the National Museum[3]. The site has been dated to be in use from the early Iron Age up to the late Roman Period (500 BC–400 AD). It is situated in Østermarie Parish, Eastern Bornholm, and the closest point

1 We would like to thank Arne Jouttijärvi for x-ray analyses and discussions about the identification of the belt parts' form and ornamentation, Michal Grygiel for discussion of elongated belt fittings, and Niels Westergård-Nielsen for experienced input for sailing with small boats on the open sea.

2 F. O. Nielsen, personal information 2019. – cf. also Adamsen *et al.* 2008.

3 Trolle 2021.

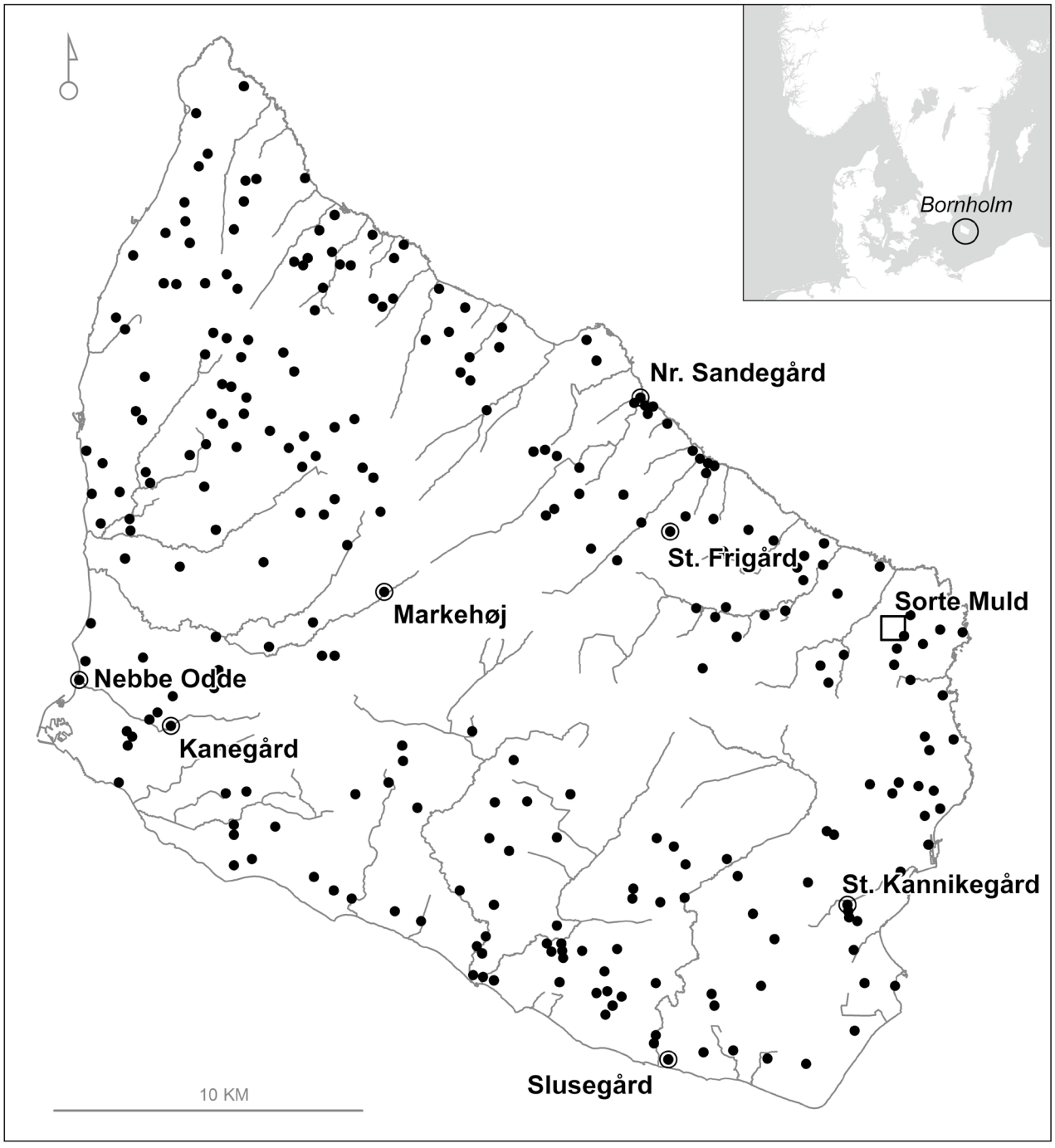

Fig. 1: Location of Bornholm in the Baltic Sea. Map of Bornholm showing the location of sites mentioned in the text and other cemeteries from Early Iron Age. Drawing: A. Pihl and Bornholm Museum.

on the coast is the mouth of Kelse Å, 2.5 km to the northeast[4]. The graves are distributed in three groups in the cemetery, which are centered around three local ridges in an otherwise west- to north-sloping terrain (Fig. 2). The peaks of the three ridges are approximately at 105 meters over sealevel, rising to 1.5 meters relative to the surrounding landscape. The future analysis will confirm whether these groupings reflect chronological, social, or other differentiations.

A total of at least 650 metal findings were recorded in the graves, including at least 213 brooches, 67 belt hooks, 87 knives and as many as 23 swords[5]. The material also comprises razors, tweezers, dress pins, sewing needles, glass and gold beads, shield bosses, spurs, burnt bones and charcoal from the pyre. Pottery is present in approximately 533 graves, with a varying number of vessels in each. Most of the metal artefacts are made of iron, and it is assumed that their metallurgical analysis may present a valuable opportunity to gain an insight into the smithing technologies and traditions of the period, material qualities and the provenance of the iron (local production or imported from Sweden or the continent). Similarly, a larger number of clay vessels are under examination for their provenance through ICP analysis.

Although the analysis of the material from Store Frigård may well answer a large part of the burning questions raised by the project, it is nevertheless beset by some limitations, since excavation and conservation took place more than 50 years ago with other methods and technology. During the conservation process, some items, especially swords, were wrapped in asbestos material and laced with iron wire. For obvious reasons, they cannot be opened, and x-ray examinations yield almost no results. Furthermore, parts of the findings have not been preserved and determination of types and dating is not possible. Despite these difficulties, the project will doubtlessly yield new knowledge about the Baltic Sea area in the coming years.

Iron brooches with a long true spring and a large, cast bronze ornament on the bow

Two graves from the Store Frigård cemetery included fragments of characteristic iron brooches with bronze overlays on the bow. In pit grave 222[6], fragments of a belt hook were found, as well as a circular, hemispherical (hollow) bronze button ornamented with two engraved opposite arches that meet in the middle and form a cross and two thirds of the spring (iron) belonging to the brooch; the button was cast together with a small ball on each side in the direction of the bow (Fig. 3). A small amount of burnt bones was also present in the grave; however, the amount was too small to allow an anthropological analysis. A very similar brooch, along with a belt hook Becker type B1, was found in grave 216 (Fig. 4). However, the corrosion of the bronze hemisphere makes it impossible to determine whether it was originally decorated.

The specific brooches are described[7] as "iron brooches with a long true spring and a large, cast bronze ornament on the bow, first variant". It is characterized by a round-shaped, mostly hemispherical (hollow) bronze appliqué on the iron bow, which ends in more- or less-distinguished plastic overlays towards the head and the foot side. Bronze buttons are placed on the ends of the spring. At least 16 specimens come from Gotland[8]. All local finds are bimetallic specimens, and the round caps on the bow are generally undecorated[9].

The type is also found in a local form on Bornholm, where they occur in large numbers, i.e. at least 13 pieces including the specimens described here[10]. According to Nylén[11], there was probably a parallel development of the brooch type on Bornholm and Gotland. The main distinguishing feature is that the Bornholm type has a lower vaulted, circular, symmetric middle part with a small ball on each side in the direction of the bow. The Bornholm ornaments are also more symmetrical than the Gotland ones and typically consist of circles with "eyes", stars, crosses, and semicircles, which, like the Gotland ones, are some-

4 Topographic and geological conditions of the locality Store Frigård: friendly information from A. Pihl, 2020.

5 Trolle 2021; Trolle in print.

6 Trolle 2021, 126–129 fig. 7–8.

7 Nylén 1955, 404–409.

8 Nylén 1955, 334–346; 404.

9 Cf. Vallhagar, graves 30, 31, 33, 35, 43 (Nylén 1955, 287–289, 292, fig. 160–161; 163; 165; 168–169; 405 fig. 274.

10 Andrzejowski/Maciałowicz 2017, 199–201 fig. 14–15, with older literature.

11 Nylén 1955, 416–417.

Fig. 2: A. Topographic 3D map of Store Frigård and the surrounding landscape. Layout: A. Pihl. B. Plan of the cemetery. Layout: A. Pihl.

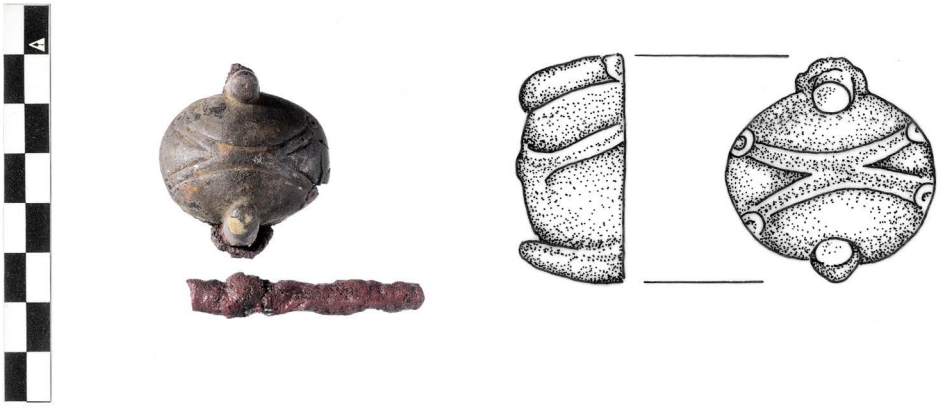

Fig. 3: Store Frigård, grave 222. Brooch (fragment), copper alloy and iron. Photo: R. Fortuna. Drawing: A. Kuzioła.

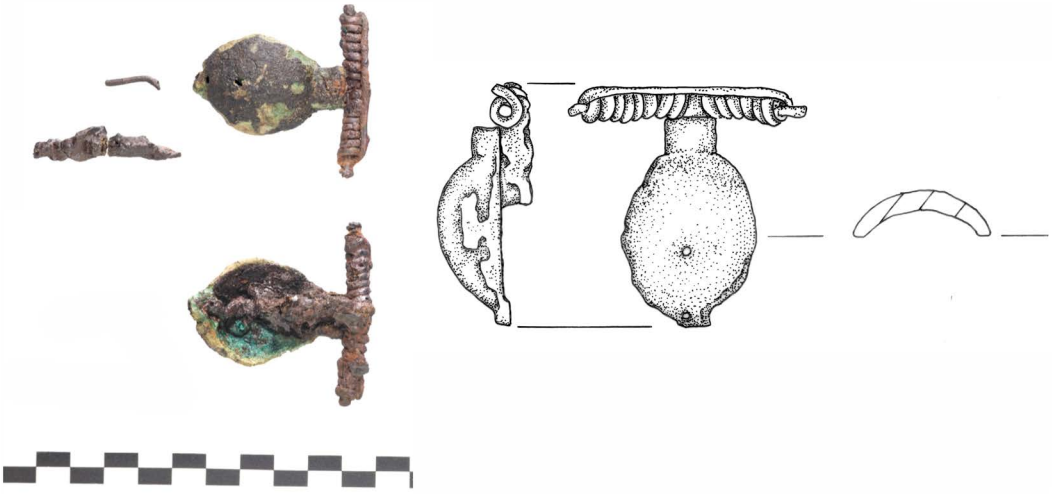

Fig. 4: Store Frigård, grave 216. Brooch (fragment), copper alloy and iron. Photo: R. Fortuna. Drawing: A. Kuzioła.

times engraved and so far, without enamel[12]. Such brooches are also referred to as Bornholm type[13].

Two similar, decorated specimens[14] come from Vester Kærby, Funen, DK and from a grave from Tjärby, Halland, S. However, they differ somewhat in their construction; moreover, the specimen from Funen has a hinge construction and is made entirely of bronze. They should therefore be treated as derivatives or closely-related forms, and not necessarily as imports from Bornholm or Gotland.

Another group of finds has been recorded south of the Baltic coast[15]. The six specimens published so far are mostly loose finds ("from the Livec/Bug River"; Kobylarnia, Międzychód distr.; vicinity of Ujście nad Notecią, Piła distr.; locality unknown), and are usually preserved only fragmentarily. Only two specimens come from archaeological excavations: one loose find from a settlement in Perkowo, Inowrocław distr., and another from Żukowice, Głogów distr., grave 52. The ornamentation of the circular appliqué comprises customary engraved or recessed stylized motifs of the letter X or a plus ("+") sign, sometimes filled with red enamel (vicinity of Ujście nad Notecią and locality unknown). In the case of brooches made entirely of copper alloy, described as a Kobylarnia variant of the Bornholm type, it is postulated that their production is local, obviously based strictly on northern originals. The location of the workshop or workshops, however, remains an open question.

Brooches from Żukowice and Perkovo are bimetallic: iron specimens, with a round applique made of copper alloy on the bow. Connected to this group is one specimen preserved practically whole (Fig. 5) from the cultural layer at the Malbork-Wielbark cemetery (2019/Ob. 1)[16], and two specimens from grave 18 from a previously-unpublished cemetery in Parpary[17], Malbork distr., less than 4 km from the necropolis at Malbork-Wielbark. It can be assumed that

12 Nylén 1955, 408–409.

13 Andrzejowski/Maciałowcz 2017, 198–205; 231–232.

14 Andrzejowski/Maciałowcz 2017, 202 fig. 16, with older literature.

15 Andrzejowski/Maciałowicz 2017, 198–205 fig. 13–18; Grygiel 2018, 120–127 fig. 58,1–2.

16 Łuczkiewicz/Kuzioła 2024, 76–78; 88 fig. 3.

17 Friendly information of Waldemar Jaszczyński, Malbork Castle Museum, to whom we extend our sincere thanks.

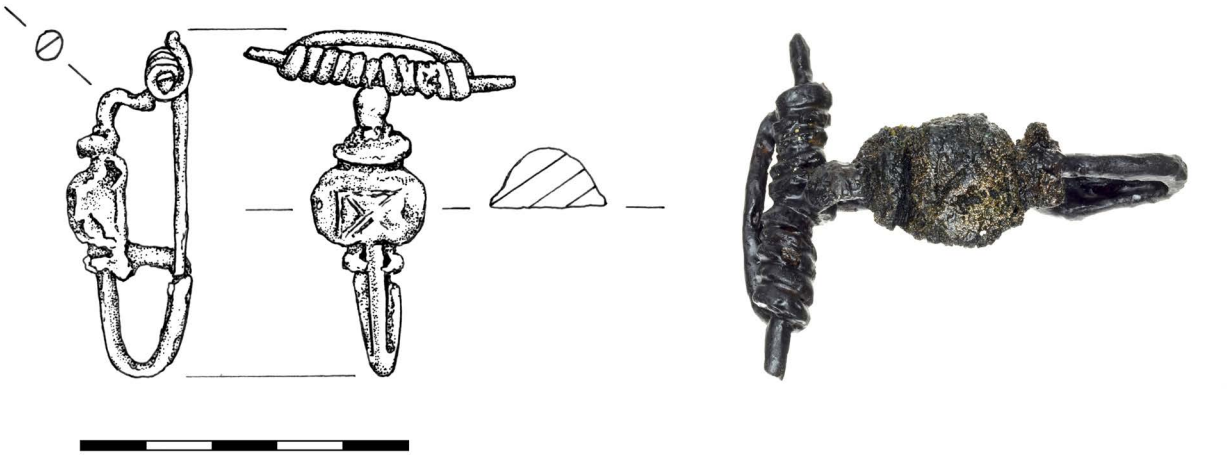

Fig. 5: Malbork-Wielbark (PL), distr. Malbork, 2019/Ob. 1 (cultural layer). Brooch, copper alloy and iron. Photo: J. Strobin. Drawing: A. Kuzioła.

this group of artefacts, recently defined as the Nørre Sandegård variant[18], are imports from Bornholm.

Of key importance for dating, and not only concerning finds from Polish lands, is the sensational grave 18 from Parpary (burial of a mature-aged woman). The inventory (Fig. 6) included a bipartite iron belt hook and a total of five brooches. Two specimens (brooches 1–2) were of the described Bornholm type, with bronze appliques and engraved decorations. Another (brooch 3) was a fragmentarily-preserved iron brooch (*T-Fibel? Kugelfibel?*) with a wire bow and of middle La Tène construction, with a very long spring and upper chord; bronze nodules were preserved at the ends of the spring equipped with an axle.

The other two (brooches 4–5) were small (less than 5 cm long) iron *Stufenfibeln* with long springs equipped with axles, and a bow which was raised in the front part; their morphological features classify them as Type I according to Grygiel[19] but their length (> 3 cm) suggests Type II. In the typology of Bokiniec[20] they correspond to type St-IIa, which is characterized by a trapezoidal bow and long spring. *Stufenfibeln*, in all their multiplicity of variants, can be classified as the guiding forms of the older section of the younger Pre-Roman period[21], which would correspond to the Lt C2 phase in the chronology of the celtic area. This applies to the entire zone of occurrence of these brooches, covering the Jastorf circle, the Baltic zone, areas of northern Poland, as well as the area of the Poieneşti-Lucaşeuca culture[22]. Such dating establishes the chronology of the Parpary grave and confirms the postulated chronological position of the Bornholm or Gotland-type brooches.

Regardless of the secondary stylistic differences between the defined variants, the described brooches serve as an excellent example of cultural unification in the Baltic zone and the long-distance connections (Fig. 7). The Bornholm and the Gotlandic specimens are most certainly partly contemporaneous. In Scandinavia, the type is dated to the oldest part of the younger Pre-Roman Iron Age, essentially earlier than the triangular Kostrzewski type K brooches[23], although in Vallhagar, grave 43[24] was found to house a pair of brooches with round appliques, together with a bronze Scandinavian derivative of brooch type K. The Nørre Sandegård cemetery (Bornholm) includes brooches with a large bronze appliques; these mark the later part of phase 1 of the necropolis and perhaps the beginning of phase 2[25], which corresponds roughly to the younger stage of phase IIA and the oldest part of phase IIB on Jutland[26]. Regarding the chronological systematics south of the Baltic coast, the period of use of the brooches in question appears to be the younger section of phase A1 and the older horizon of phase A2[27]; this is most likely demonstrated by the presence of short variants of Kostrzewski iron brooches A (A–II) in grave 52 from Żukowice[28].

The analyzed group of brooches were intended for women. In the inventories on Bornholm, they mostly occur

18 Andrzejowski,/Maciałowicz 2017, 202.

19 Grygiel 2018, 101–108 fig. 52,1–7.

20 Bokiniec 2008, 27–31 list 3.

21 Bokiniec 2008, 26–28; Iarmulschi 2016, 484; Grygiel 2018, 108–115, with earlier literature,

22 E.g., Bokiniec 2008, 27–31; Grygiel 2018, 101–115, with older literature; Becker 1990, fig. 29,1; 34,100; 45,491/1–2; Babeş 1993; Babeş/Iarmulschi 2020.

23 Nylén 1955, 374–375, 39 fig. 273, 411. 417.

24 Nylén 1955, 217–218, 292 Fig. 169.

25 Becker 1990, 80; Trolle 2021, 129.

26 Martens 1996, 235–237 fig. 13–14.

27 Andrzejowski/Maciałowicz 2017, 204.

28 Grygiel 2018, 120–122; 126.

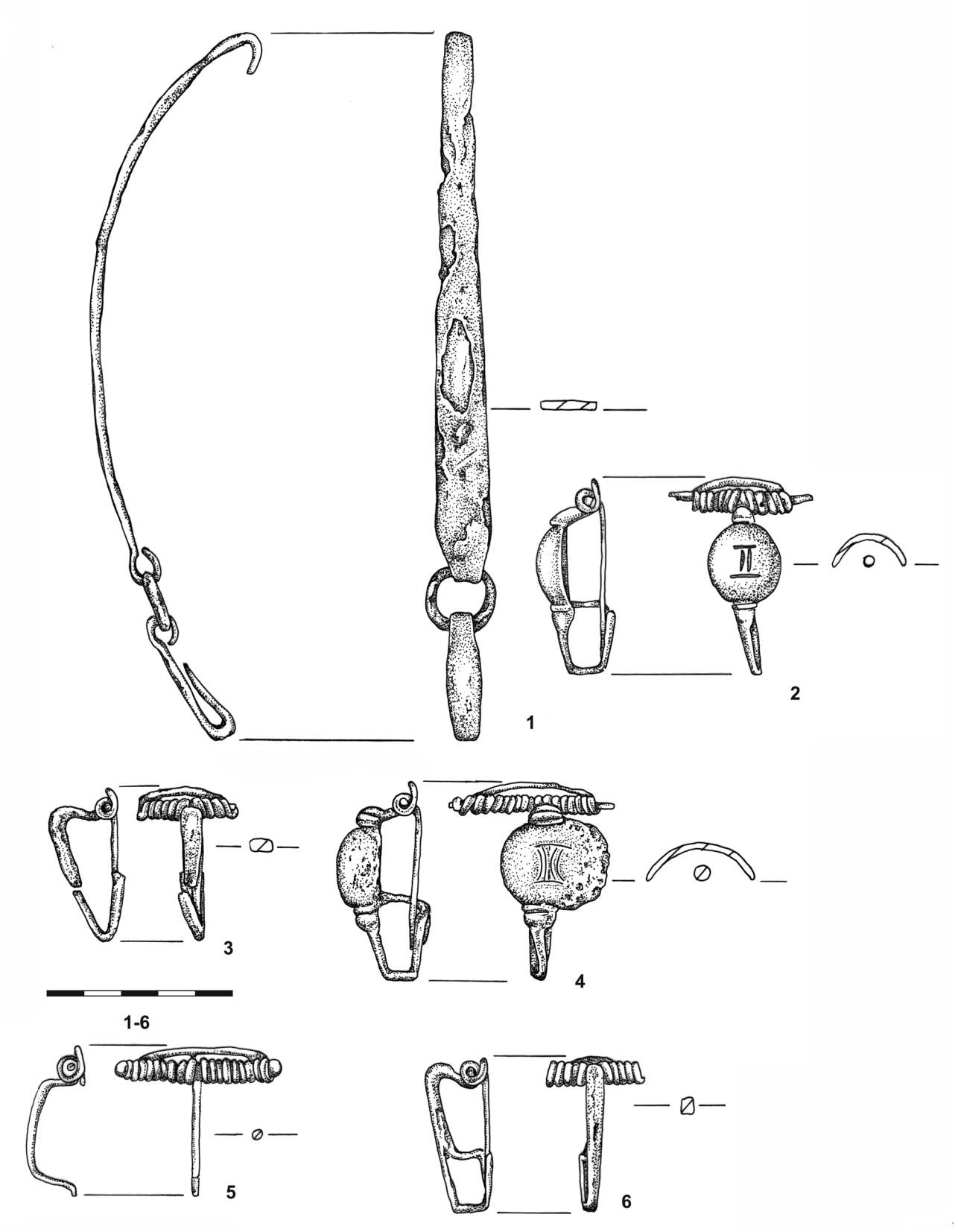

Fig. 6: Parpary (PL), distr. Malbork, grave 18. 1, 3, 5–6: iron; 2,4: copper alloy and iron. Drawing: A. Kuzioła.

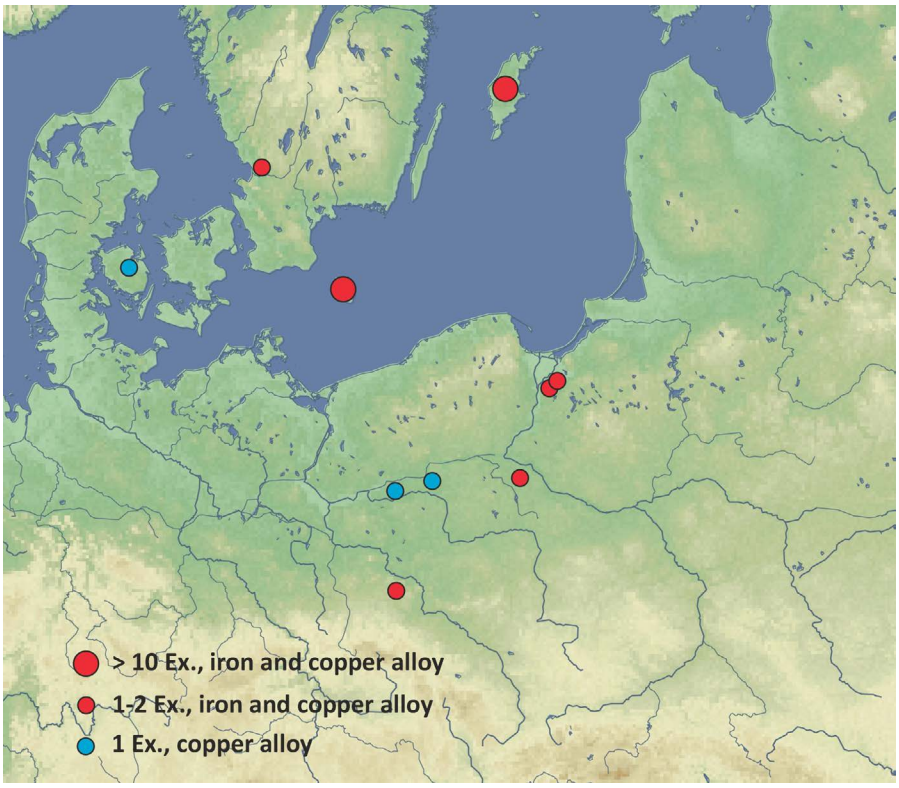

Fig. 7: Distribution map of brooches with long true spring and a large, cast bronze ornament on the bow (type Gotland, Bornholm, variant Kobylarnia and variant Nørre Sandegård). After: Andrzejowski/Maciałowicz 2017, 295 fig. 18 (with additions). Layout: P. Łuczkiewicz.

singly: they were only found as a pair in Kanegård, grave A.22[29]. The belt hook from the grave at Store Frigård may suggest a female burial. Pairs of brooches were more commonplace on Gotland, but this could just as well be solely a peculiarity of the cemetery at Vallhagar: a pair was found in grave 30, but this was defined anthropologically as the burial site of an adult male. Pairs were also found in grave 33, where an adult woman was probably buried, and grave 35, where an adult was buried. Grave 31 revealed two brooches, although the site was the double burial of an adult woman and perhaps a second person, as did grave 43, although here a third brooch additionally appeared[30]. So far, no single burial with weapons has been recorded in the entire area of occurrence.

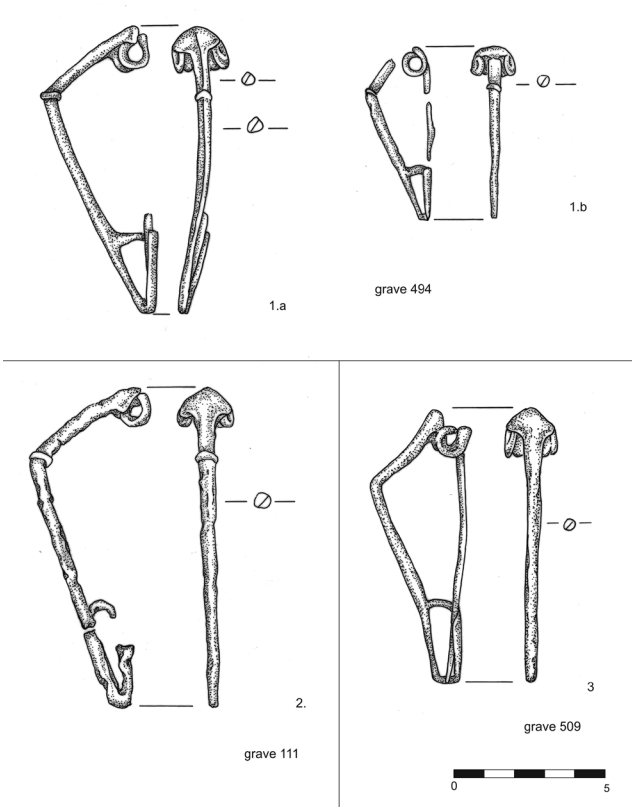

Fig. 8: Store Frigård, brooches of type K (selection). 1–3: iron. Drawing: A. Kuzioła.

29 Vedel 1870, 22; 83 Pl. 8,9; 1886, 81; 312 fig. 20; 1897, VII fig. 24.
30 Nylén 1955, 204–211; 217–218; 287 fig. 160; 288 fig. 161, 289; fig. 163; fig. 165, 292 fig. 169.

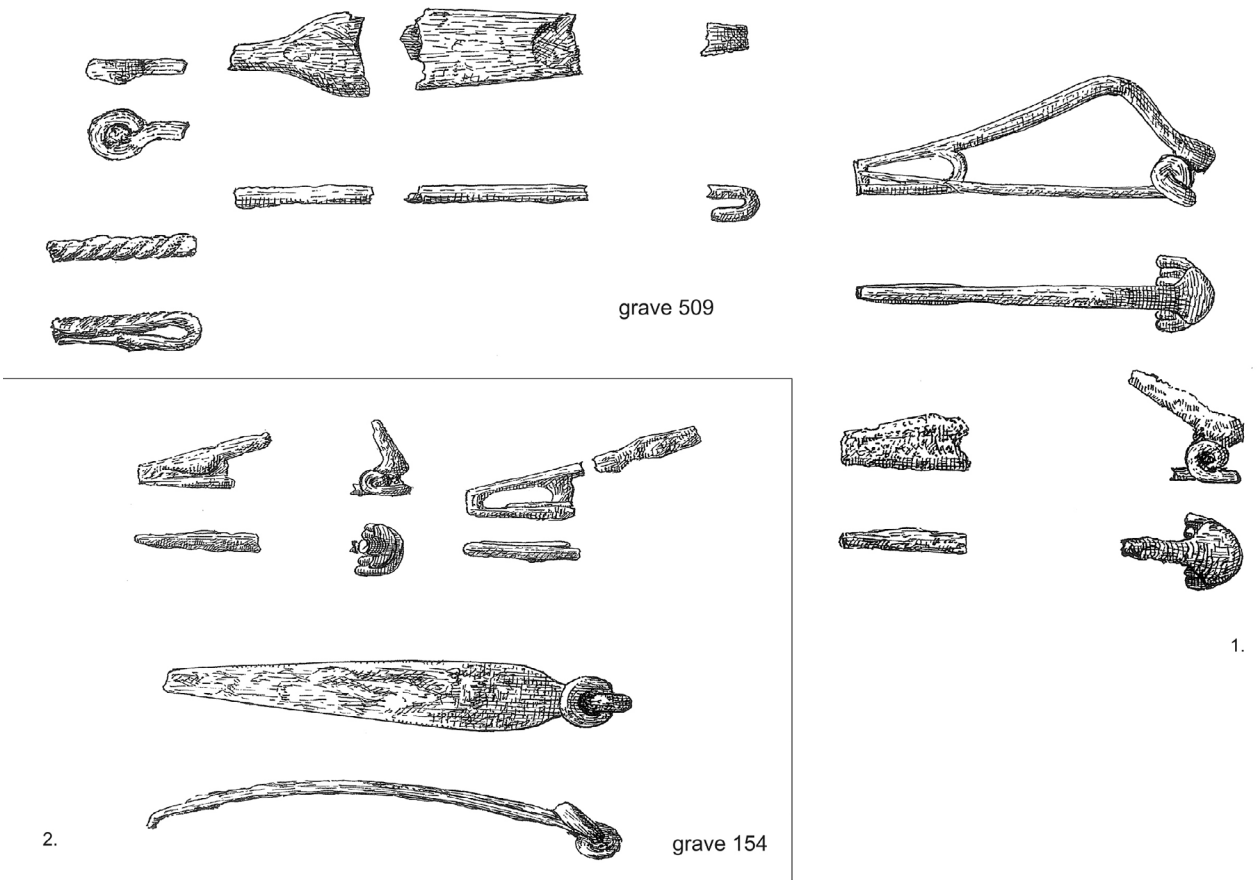

Fig. 9: Store Frigård, graves with type K brooches (selection). 1–2: iron. Drawing: H. Ørsnes.

Kostrzewski type K brooches

Among the finds from the Store Frigård site is a homogeneous collection of 35 Kostrzewski K-type brooches, with a triangular bow[31] and a small fold over spring (Fig. 8–9). All of them were made of iron. Although Store Frigård is a very large cemetery, comparable to other large sites on Bornholm and in the entire Baltic zone, it is rare to find such a large number of brooches with a triangular bow. Indeed, they have not been found in such large numbers in any other site from Bornholm, even in Nørre Sandegård, from where at least 25 are known[32]; furthermore, similar number have not been recorded in Jutland, Sweden, or Gotland, e.g. Vogn[33], from where there are four specimens, Kyrkbacken[34], Bo gård[35], Vallhagar[36]. This is also true for cemeteries in the Gulf of Gdańsk and on the lower Vistula zone, e.g. Grudziądz-Rządz, Pruszcz Gdański, site 10, Rumia, Brzyno[37]. Only one such brooch was recorded at the large cemetery of Malbork-Wielbark[38].

In Store Frigård, only a small number of K-type brooches (10 pieces) were preserved in their entirety, making it possible to determine their original size and analyze morphological and typological details. The collection was dominated by large, long specimens with a more or less wire-like or bar-shaped, massive bow; they were usually close to triangular in cross-section, with rings usually located in its central part. Typologically, they can be assigned to variant K–I ac-

31 Kostrzewski 1919, 34–36 fig. 21, 267 list 16. – The poor state of preservation and conservation of the artifacts makes it difficult and sometimes impossible to determine the exact shape of the section and the original shape of the ring on the bow.

32 Becker 1990, 175–193 fig. 29–47.

33 Bech 1980, 76–77, fig. 3a–b, 4; Martens 1994, 63 fig. 12,1b.

34 Sahlström/Gejvall 1948, 35–36 fig. 39; 38–40 fig. 44, 48; 44 fig. 55; 47–48 fig. 61; 54 fig. 72; 62–63 fig. 82; 72–73 fig. 94.

35 Sjöberg 1987, 277.

36 Nylén 1955, 206–219 fig. 155–170.

37 Grudziądz-Rządz: Kurzyńska 2020; Pruszcz Gdański, site 10: Pietrzak 1997; Rumia: Pietrzak 1987; Brzyno: Strobin 2022.

38 Unpublished, excavations by J. Kleemann and P. Łuczkiewicz.

cording to E. Bokiniec or variant I according to Nylén[39]. On Gotland, such brooches were made of both bronze and iron. They are also considerably larger, and their ornamentation is much more modest than that of the smaller brooches identified as variant II.

Classic triangular brooches from Scandinavia are generally 7–8 cm in length. Examples include the Gotland finds from Vallhagar (grave 17), where two brooches of 7.2 and 8.5 cm in length were found, and from Nickarve, where a 7 cm long brooch was found in grave 26[40]. A long brooch with a triangular bow was also found in Western Sweden (Kyrkbacken, graves 139 [7.7 cm] and 170 [preserved length 8.7 cm])[41], on Öland, e.g. grave 10 from Övre Ålebäck (7.3 cm)[42], in Jutland, e.g. Kraghede, grave 69 (7.2 cm)[43] and on Bornholm (e.g. Nørre Sandegård, graves 18 [9 cm], 115 [9.2 cm] and 456 [11.6 cm and 11.8 cm])[44]. Short specimens of K-type brooches were found in Sønder Badsbjerg, DK, grave b (5.8 cm)[45]; Store Darum, DK grave 1 (5.6 cm)[46]; Vogn, DK, graves 12 (6 cm) and 21[47] or Kyrkbacken, S, grave 85 (barely 4.7 cm)[48].

Brooches from northern Poland vary greatly in size and are represented by both long and short specimens. The specimen from Pruszcz Gdański, site 10, grave 77[49], measures as much as 10.5 cm and the brooch from Grudziądz-Rzadz/Rondsen, grave 303[50] is even larger at 11 cm. Much shorter brooches were identified at Pruszcz Gdański, site 10, grave 42[51], with a length of 5.9 cm and at Grudziądz-Rzadz/Rondsen, grave 636[52], with a length of 5,5 cm. In general, the mean length of the specimens from the zone in question is about 6.5 cm.

Hence, the fully-preserved specimens from Store Frigård definitely stand out in size: these massive brooches range from 9 cm and 10.5 cm in length (graves 111, 415, 494, 509 and a specimen from grave 467, preserved in three fragments). Only four shorter brooches have been recovered, from graves 231, 336, 494 and 492, the latter of which should be described as a transitional form between the K and M types. The local "gigantism" of these brooches could be attributed to the thicker garments needed in a windy and cold climate, or it may be a local peculiarity of K-brooch manufacture, referring to specimens from Gotland or Öland or Sweden. Among the Store Frigård brooches, some N-type specimens also stand out in size: specimens from graves 66, 102 and 115 are more than 6 cm in length, i.e. greater than the mean size in the entire zone of occurrence.

The large K-type brooches from Store Frigård do not appear to be associated with a particular sex, they were (which also applies to short specimens) typically the only items found in the burials. However, belt hooks accompanied the brooches in three cases (graves 154, 214, 509), a rather feminine attribute. In graves 154 and 509, two type-K brooches were found as pairs.

Interestingly, "baroque" variants of K-type brooches[53] were conspicuously absent from both Store Frigård and throughout Bornholm, despite being known in relatively large numbers from Scandinavia (e.g. Hedegård, DK, grave A840/1086[54]; Vorbasse, DK, grave 19[55]; Nordbyhaugen, N[56]; Ula, N[57]. These specimens, often made of bronze, present massive bows, with some being slightly curved and thus resembling *geschweifte* brooches, and with an elaborate plastic decoration on the bow or other parts. Their absence may indicate a local peculiarity in the manufacture of triangular brooches, distinguishing Store Frigård from Öland or Gotland or Jutland. It seems that the spectrum of brooches type K from Store Frigård, despite the large number of very large specimens, refers more to the developmental sequence on the southern Baltic coasts. This would be an indication of intensive contacts with this zone. The opposite argument, however, is the general lack of M-type brooches in this cemetery, replaced by the typologically later Kostrzewski N type. This indicates that the Kostrzewski K type was in use for somewhat longer than is seen in cemeteries on the southern Baltic coasts. This corresponds with the image typical of the Baltic zone and southern Scandinavia, where early *geschweifte* brooches (Kostrzewski type M) are generally quite rare, while the triangular K-type often remain in use for quite a long time, i.e. up to the A3 phase[58]. It is noteworthy that the bronze-made, banded derivatives of the K variant survive even longer, even up to the B1 phase[59].

39 Bokiniec 2008, 39–41; Nylén 1955, 429–431 fig. 280,1.
40 Nylén 1955, 104–105 fig. 190,5; 307.
41 Sahlström/Gejvall 1948, 62–63 fig. 82; 72–73 fig. 94.
42 Hagberg/Stjenquist/Rasch 1991, 450–455.
43 Martens 1992, 118; 129 Pl. 5,d; 1994, 60 fig. 9,2.
44 Becker 1990, 176 fig. 30,18.2; 181 fig. 35,115.1; 189 fig. 43,456.2–4.
45 Martens 1994, 60 fig. 9,5; Jørgensen 1968, 73 fig. 17,3; 86.
46 Jørgensen 1968, 73 fig. 17,5; 88.
47 Bech 1975, footnote 1; fig. 83; 1980, 76 fig. 3a; Martens 1994, 63 fig. 12,1.
48 Sahlström, Gejvall 1948, 47–48 fig. 61.
49 Pietrzak 1997, 20 Pl. XXII, 77.
50 Kurzyńska 2020, 115–116; 435 Pl. 63,10; 437 Pl. 65,2.
51 Pietrzak 1997, 16 Pl. IC,42.
52 Kurzyńska 2020, 165; 436 Pl. 64,7.
53 Cf. Bockius, Łuczkiewicz 2004, 32–36 fig. 6b,20–24.
54 Madsen 1999, 74 fig. 18,1.
55 Hvass 1985, 85; 87 fig. 68b.
56 Bjorn 1926, 14–15.
57 Nybruget/Martens 1997, 82 fig. 5c; 84 fig. 6b.
58 E.g. Bockius/Łuczkiewicz 2004, 41–42; Martens 1996, 131; 1997, 88.
59 Martens 2021, 109–111.

The Scandinavian belts

The furnishing of pit grave 94[60] from Store Frigård included (Fig. 10A) fragmentarily preserved iron fittings, badly damaged by corrosion and the funeral pyre fire: among others, a ribbon ring with two ribbon/band shaped attachment links; fragments of one or more smaller rings decorated with an ornament of embossed/punched circles; almost half of a stronger ring with a square cross-section, which has been enclosed by an eye, at least 1.3 cm wide, which has continued in a straight course (a bar), decorated with very fine ornamentation of angular, transverse and longitudinal furrows; a 2 cm long fragment of a twisted iron rod with a square cross-section; fragments of two elongated tubular, U-shaped fittings decorated with transverse furrows, both with a flat rivet at one end, about 1.1 cm wide, preserved length of at least 14–15 cm each, but in the old archives the pieces are described as being 20 cm long each and curved. A small vessel, a blue glass bead and a fragmentarily-preserved iron brooch with a foot missing was also found in the grave. The presence of a Kostrzewski variant N-b or rather N-c iron brooch[61] dates the grave to the end of the younger Pre-Roman and early Roman period (A3/B1 – B1a, i.e. the middle or late Augustus period).

Without a doubt, some of the finds from this grave are fittings from "Scandinavian belts"[62]. The presence of a decorated eye enclosing a ring finds excellent parallels on Gotland[63]. The two elongated fittings may also be part of belt equipment: they each consist of two parts, a front piece and a back piece, which are riveted together at one end or perhaps at both ends (Fig. 10A, 1). The shank of the front piece is tubular, U-shaped, and ornamented with transverse grooves – a small piece at a time in a die. The "upper/front" end of the front piece is flattened, and ornamented with two grooves and a band of circles above/in front of the rivet. The back piece is flat and apparently without ornamentation. The front piece and the back piece have been fastened with at least one rivet and presumably a strap between them. The construction corresponds to the two better-preserved, but slightly more massive and shorter, fittings from grave 77. The transverse plastic ornamentation of the tubular, U-shaped fittings from the described grave find excellent parallels in the fragmentarily-preserved, elongated objects from graves 14 and 75 from Ekehögen, Sweden, in the Göteborg area[64]; these are, however, fragments of bronze neck rings and not elements of belts. Both graves have also been dated slightly earlier, i.e. to the Lt D1 phase, i.e. the last decades of the 2nd century BC and the beginning of the 1st century BC, based on the presence of classical triangular Kostrzewski K-type brooches[65].

Pit grave 409 revealed two fragments of two iron fittings with a rivet on the end, an iron tweezer, an iron spring of a brooch and an undetermined flat, smaller iron fragment (Fig. 11). The anthropological analysis of the few bones present has not yet been completed. The degree of corrosion and "conservative" preservation typical of the 1950s and 1960s, has complicated the analysis of the iron specimens, and X-ray examination is needed to determine the function of the fittings. The first fitting (Fig. 11, 2) consists of two parts: a front, roughly square plate, while transitions into a slightly narrower plate, at the end of which is a large, flat, round rivet. In cross-section it can be seen both plates are curved and double folded. The front plate with the rivet has a bent ring or tongue at the opposite end. The back plate, most likely a square, has a cut-out in the front in the middle, where the front plate fits. A round axle passes through this cut-out and ring/tongue to form a hinge. Structurally, this resembles a Becker 1b-type belt fitting[66]; indeed, the X-ray analysis indicates that the hinge axles, with concave heads, continue beyond the sides of the plate.

The front part of this item very much resembles a type 2b belt fitting according to Becker. The difference, however, is the absence of a large, perpendicular ring at the back, which in type 2b fittings should connect to another large and massive ring. Instead, the hinged design of the movable part (with an axle) and the shape of the back plate resemble Becker type 1b fittings. The plate on the back of the fitting from grave 409 from Store Frigård, however, is much smaller than those of a typical type 1b belt fitting, and is designed to the size of the front fitting. It can be assumed that the analyzed item is a fitting from a Scandinavian-type belt. It does not correspond exactly to any of the types distinguished by Becker, being a hybrid of elements similar to types 2b (front part) and 1b (back part).

The second fitting from grave 409, with a large rivet on the end (Fig. 11, 1) is most likely also a part of belt equipment. The rivet head is significantly larger than that on the first piece, and may have originally been so, even though a small part has broken off. The plate may have had the same width as the first piece; but this is obscured by corrosion.

60 The few identified bones have not yet been subjected to anthropological analysis.

61 Kostrzewski 1919, 37–40 fig. 24; Völling 1994, 198–207 fig. 25–27 Tab. 11–12; Bockius/Łuczkiewicz 2004, 60–67 fig. 10, Tab. 6–7.

62 Becker 1992, 15–18 fig. 7–8.

63 Nylén 1955, 461 fig. 288,3.

64 Cullberg 1973a, 19–20; 31; 91 fig. 55–56; 63; 92 fig. 69–71; 93 fig. 73; 95 fig. 101; Cullberg 1973b, 166.

65 Cullberg 1973b, 164.

66 Becker 1992, 17 fig. 7; cf. Nylén 1955, 477 fig. 297,4.

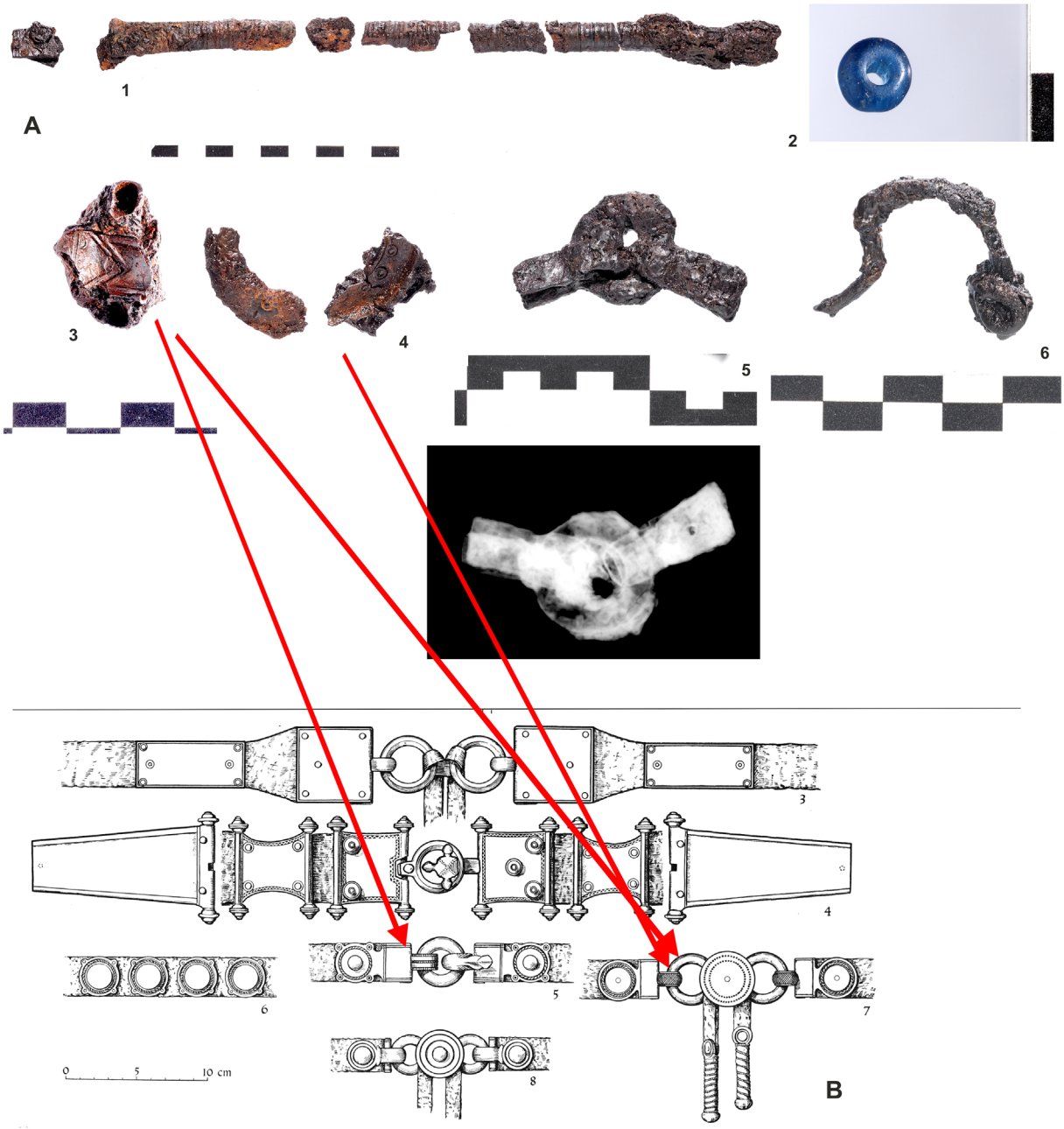

Fig. 10: A. Store Frigård, grave 94. 1, 3–6: iron; 2: glass. Photo: R. Fortuna. X-ray: N. Pasajlic. B. Belts from Gotland (after Nylén 1955).

In fact, this piece may be broken from the first piece with the hinge, so that there are two pieces, each with a rivet in the opposite end mounted on one or two separate straps of leather or textile and connected by a hinge. A very similar belt end was identified in Ekehögen, S, grave 41[67]; the piece was also made of iron, with a rivet in one end and a cut-out in the middle of the other to serve as a hinge. Cullberg mentions that a similar specimen has been found in the Horn cemetery, Västergötland and that the type is missing from Gotland. Both the piece from Horn and the piece from Ekehögen are dated to the Late Pre-Roman Iron Age[68]. Grave 41 includes a MLT-brooch Kostrzewski G-type of bronze and an iron Kostrzewski K-type brooch among other things[69].

67 Cullberg 1973a, 25–26; 93 fig. 74; 166; 1980, 46 fig. 3.

68 Cullberg 1973b, 103–107.

69 Cullberg 1973a, 25–26; 91 figs. 61–62.

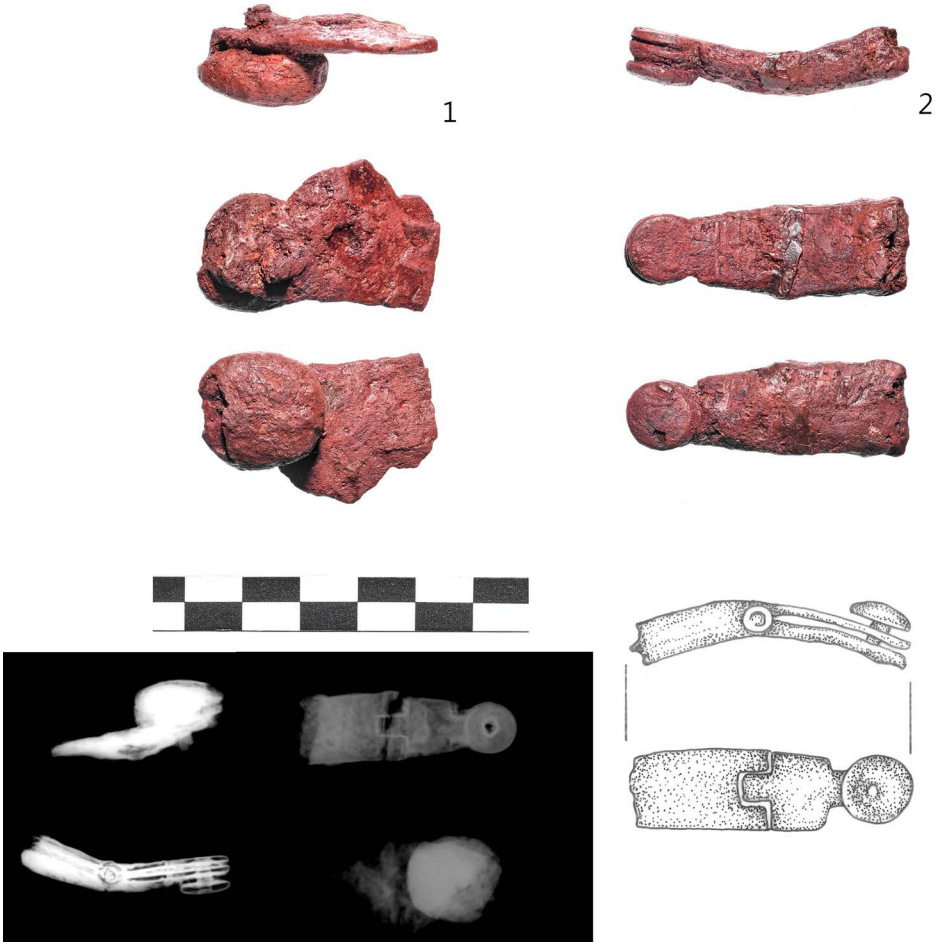

Fig. 11: Store Frigård, grave 409. Iron belt fittings. Photo: R. Fortuna. X-ray: A. Jouttijärvi. Drawing: A. Kuzioła.

Perhaps it is in western Sweden, then, that one should look for the prototypes for the Bornholm fitting analyzed here.

Various types of bronze or iron belt equipment, are found at varying intensity throughout the Baltic zone (Fig. 12), including on Bornholm[70], although they are mainly characteristic of Östergötland and Västergötland in Sweden[71] and Öland[72] and Gotland[73], where they appear most frequently. They range as far north as Norway[74], and occasionally appear also in Jutland[75], the Danish islands[76] northern Germany[77], the Bay of Danzig and in the lower Vistula region[78].

70 Cf. Nylén 1955, 488–499; Becker 1992, 15–26 fig. 7–15.

71 Oxenstierna 1945, 79–82; Sahlström/Gejvall 1948, 39 fig. 65; 87–88 fig. 113–114.

72 Sjöberg 1987, 260; 270–271; 274–277; Hagberg/Stjernquist/Rasch 1991, 182 fig. 20; 254 fig, 45–47; 413 fig. 22–25; Rasch 1997, 55–57; 69.

73 Nylén 1955, 452–499.

74 Nybruget/Martens 1997, 77–84.

75 Lønhøjvej, grave 187 (twisted strap end mounting of type A); Torsmark (strap end mounting of type D); Vogn, graves 54 (fitting of type x and twisted strap end mounting of type A, a belt ring with undetermined attachment), 55 (the same fitting and strap, belt ring with fitting of type 5b) and 81 (type A and indeterminate buckle bracket): Becker 1992, 20–21 fig. 10.

76 Zealand, Store Grandløse, grave B (two massive bronze rings with fragments of band-shaped fittings): Liversage 1980, 32–34 fig. 15g–m, 72–73. Eventually Funen: Lundehøj, grave 6: Albrectsen 1954, 26; 101; Pl. 20c. Albrectsen refers to similar belt rings depicted in Almgren/Nerman 1923, Pl. 5, fig. 54–60, which Becker 1992 describes as a Gotland form, type 2a and 2b.

77 Twisted strap end mounting of Becker's type A – stray find from Harsefeld (Wegewitz 1937, Pl. 27; Becker 1992, 19–20).

78 Pruszcz Gdański, site 10, grave 170A and site 7, grave 21; Nowy Targ, graves 146, 148, 149, 228; Grudziądz-Rząd/Rondsen, grave 22 (B13): Stąporek 2007, 200–205 fig. 1–5; Żukczyn, site 1, grave 70 (unpublished, friendly information of M. Pietrzak, Archaeological Museum Gdańsk). The best analogy for this fitting is Törnbotten, Öland, S, grave 64 (Rasch 1997, 55 fig. 5,a), so it should be referred to as type 1a of Becker.

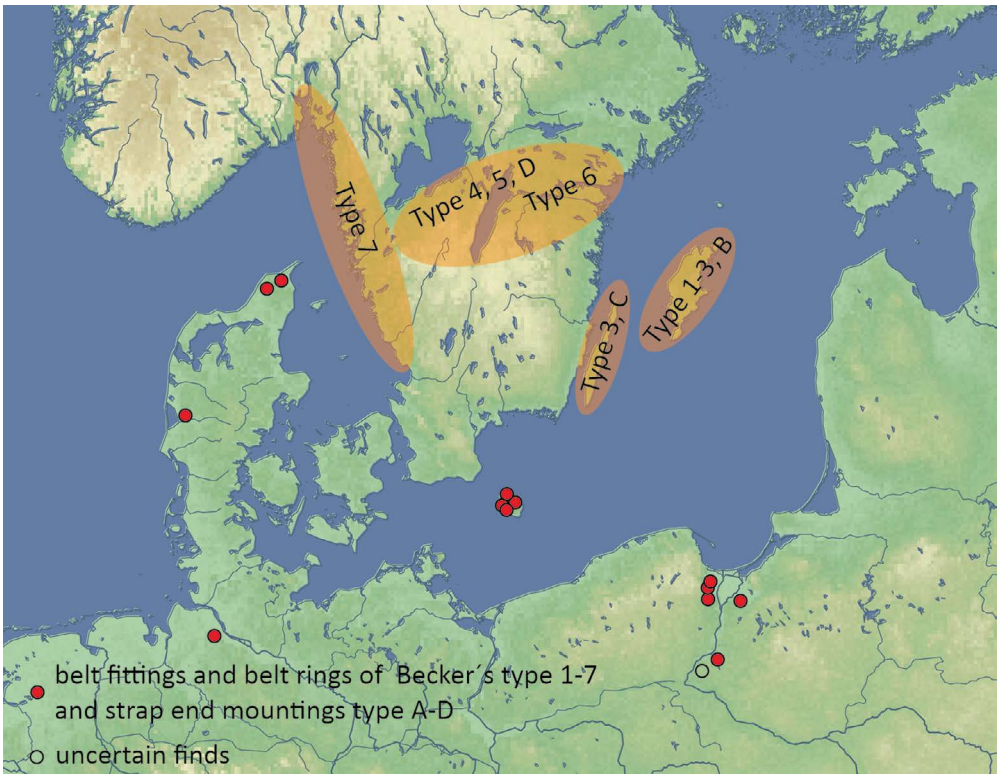

Fig. 12: Metal belt suits in the Baltic and Scandinavian zone. Layout: P. Łuczkiewicz.

An analysis of the spread of the various typological variants[79] indicates that belt fittings and rings types 1–3 are characteristic mainly of Gotland, type 5 of Västergötland, and type 6 of Östergötland; strap end mountings type B is a form from Gotland, C from Öland, type D is from Västergötland, also found in Östergötland.

The state of preservation of the belt equipment from grave 94 makes it difficult to accurately assign it to specific types according to Becker; however, the massive ring with an ornamented eye is reminiscent of type 2a/2b, typical of Gotland[80]. The angular, transverse and longitudinal ornamentation of the eye is very similar to that observed on belt equipment from Vallby grave 8, Tomase, Vidunge and Träkumla, illustrated by Nylén[81] – although the piece from Store Frigård displays the negative, internal print of the ornamentation. A ring with two band-shaped fittings reminiscent of the one from grave 94 was found in Bläsnungs, graves 102, 135 and Vallbys, grave 6[82]. Also was a small ring with point ornamentation recovered from Gullgårda, grave inv. 25109, Vallhagar, grave 13 as well as loose finds from Tomase, Tjängdarve, Vidunge, Sojvide and an unknown location[83]. The long fittings have no exact parallels in form in the Gotland material.

The excavation of pit grave 77 from Store Frigård revealed[84] (Fig. 13) iron fittings, a bow knife, an iron sewing needle, a small fragment of a *geschweifte*-type iron brooch (Kostrzewski N or O), i.e. a spring with a lower chord and fragment of a bow, and a Slusegård type 1 spherical gold bead, variant a[85]. The presence of this brooch dates the pit to the final phase of the younger Pre-Roman Period or the beginning of Roman Period. Such beads may appear at the end of the younger Pre-Roman Period, but mainly occur in phases B1 and B2. The grave would have to be dated to phase B1 of the Roman period, although a slightly earlier chronology cannot be clearly ruled out.

The set of iron fittings is composed of three different parts. The first part consists of a belt ring, decorated on the edges with a punched ornament and caught in band-like, riveted fittings which are also decorated on the edges. The

79 Becker 1992, 16–20 fig. 7–8.
80 Becker 1992, 17 fig. 7.
81 Nylén 1955, 256 fig. 102; 461 fig. 288,3; 466 fig. 290,3.5.
82 Nylén 1955, 244 fig. 73,9; 248 fig. 85,1; 254 fig. 99,9.
83 Nylén 1955, 270 fig. 130; 280–281 fig. 149–150; 461–474 fig. 288, 289; 290; 292; 293; 296.
84 The anthropological analysis of the few bones has not yet been performed.
85 Rasmussen 2010, 236–237 Fig. 26.

Fig. 13: Store Frigård, grave 77. 1–5: iron; 6: gold. Photo: R. Fortuna. X-ray: N. Pasajlic.

second consists of the majority of a fitting (9.5 cm long and 1 cm wide) and two fragments of a similar one; these fragments are double-folded iron bands that can be attached with a rivet in between- and is presumably a strap – bend slightly and have the rivet head at the front/upper end of the shank. The best-preserved piece has an eye-shaped hole at the bent end, through which a ring passes. All the fittings are decorated with longitudinal ribbing on the eye and diagonal ribbing on the shank, with an imitation of the beaded filigree known from bronze or silver objects. This decoration was most likely created using a punching or striking technique. The third part comprises fragmentary-preserved, small rivets. All the fittings serve as Scandinavian-style belt fittings. The ring resembles a Gotland belt ring[86]. The long fittings have no exact parallels in form, but the oblique beaded filigree is very similar to the ornamentation ("Perlrändern") of a belt link and strap end from Gotland[87] (Fig. 10B).

Few "Scandinavian-type" belts have been found on Bornholm, with barely four complexes identified so far[88]: Simblegård, stray find (belt ring type 5a), grave 7/1895

86 Cf. Nylén 1955, 461 fig. 288,1.5.
87 Nylén 1955, 465–66, fig. 290,1; 294,2.
88 Becker 1992, 24–25 fig. 12–16.

(twisted strap end mounting of type A); Blanchs Hotel, grave *cy* (belt ring type 4 and twisted strap end mounting of type A); Kanegård, grave C 31 (belt ring similar to type 7). While the connections from Gotland seem certain in the case of grave 94 from Store Frigård, it is difficult to conclusively determine the provenience of the fittings from graves 409 and 77, and it is possible that they may have been manufactured locally. This also applies to the other finds from Bornholm, although the belt ring from Simblegård may originate from Västergötland, mainland Sweden.

These belts with metal elements are traditionally described as a female attribute[89], and this has generally been confirmed by anthropological analyses, albeit only a few[90]. Some examples include graves 211 and 214 from Kyrkbacken[91], S, graves 8, 9, 20 from Bo gård, Öland[92], S and numerous inventories from Gotland[93]: Prästhagen, grave 7, Gullgårda, Vallhagar, grave 92, 9 (double burial – male and female), 23, 42 (two women?). The remains of both a man and a woman were also contained in grave 228 from Nowy Targ, northern Poland, where type 2a belt fittings were found[94].

While the spread of belts outside the home area could reflect the mobility of the women, burials with weapons have also been noted in Lønhøjvej, grave 187[95], in Jutland (type A twisted strap end mounting) and three graves from northern Poland. Grave 170A from Pruszcz Gdański, site 10 has also been anthropologically defined as a male burial site, with a shield boss similar to type B.5, a lance point and fragment of brooch of middle La Tène construction[96]. The bronze decorated belt fittings and ring and the strap end mounting do not resemble any of the types described by Becker. A shield boss and lance point were found in Żukczyn, site 1, grave 70[97], along with a type 1a iron belt fitting. Grave 22 (B13) from Grudziądz-Rząd/Rondsen[98] included among other things an iron strap end mounting similar to type C, or possibly D, and a double-edged sword, lance point, shield boss with a spike (type B.7), U-shaped mountings of a shield-edge and fragments of two iron brooches (Kostrzewski var. M/N).

The oldest belts with metal elements appear in the same horizon as the type-K triangular brooches, i.e. in phase B of the local chronology on Gotland, corresponding roughly to phase 2 on Bornholm[99]. The atypical fittings from grave 170A, Pruszcz Gdański mentioned above are synchronized precisely with the horizon of the type-K brooches, as indicated by the brooch and the shield boss. In Bo gård, Öland, a bronze type-K brooch was noted in grave 8 together with a type-A twisted strap end mounting, and a Becker's type 1b belt fitting was found in grave 20 with a type-K brooch[100].

However, triangular brooches in the north underwent an independent morphological development (the so-called "Scandinavian Baroque") and enjoyed much longer use compared to those in the south. As such, it is difficult to synchronize dating across the entire zone of occurrence. A pair of derivates of triangular brooches were identified in Store Dal, grave B, Østfold, N, with a belt fitting resembling Becker's type 2 and a type 5a belt ring[101]; these indicate late dating within the younger Pre-Roman Period. A type-A twisted strap end mounting and Becker's type 4 belt ring from Hals Store, Buskerud, N, must be dated to the transitional phase between the Pre-Roman Iron Age and the Roman Period on the basis of a bronze, cast, band-shaped type-K brooch[102].

The "scandinavian belts" occur mainly in the youngest part of the younger Pre-Roman Period. The belt ring from Nowy Targ, grave 148 occurred together with an iron brooch similar to Kostrzewski var. I[103]. The presence of shield boss B.7 and *geschweifte* brooches from Grudziądz-Rząd/Rondsen, grave 22 allow the grave to be unambiguously dated to the A3 phase of the chronology south of the Baltic coast; also, fragments of two bronze brooches of late La Tène construction were found in grave 228 from Nowy Targ. Grave 9 from Bo gård included a type 5 belt ring and a pair of bronze brooches: a band-shaped specimen (var. N-b) and a specific brooch (var. N), with ornamented rings on

89 Becker 1992, 16; 18; 20.

90 However, Prästhagen, Gotland, S, grave 10 (Nylén 1955, 74, 253 fig. 97) was identified as a burial most likely of a male. Bear-claws from Nystu, grave 8 (Nylen 1955, 37–38; 240–241 fig. 65–66) are also more likely an attribute of male/warrior graves (Schönfelder 1994).

91 Sahlström/Gejvall 1948, 87–88 fig. 113–114 Tabl. II.

92 Sjöberg 1987, 241–242; 267; 275; 277.

93 Nylén 1955, 73; 117; 132; 182–185; 196–198; 215–217; 252 fig. 95; 270 fig. 130; 272 fig. 134; 277–279 fig. 145–147; 285 fig. 165; 291 fig. 167.

94 Fudzińska/Fudziński 2013, 69–70; 371 Pl. XXXIII.

95 Becker 1992, 20 footnote 9.

96 Pietrzak 1997, 31; 159–160 Pl. LXI–LXII; Stąporek 1997, 202 Fig. 3.

97 Unpublished, informal data from M. Pietrzak, Archaeological Museum Gdańsk.

98 Kurzyńska 2020, 64–65; 392–393 Pl. 20–21; 453 Pl. 81;11; 454 Pl. 82; 27; 484–485 Pl. 112–113; 560 Pl. 188,1.7, with older literature.

99 Nylén 1955, 399 Fig. 273; Becker 1992, 15–18.

100 Sjöberg 1987, 241–242; 274; 277.

101 Nybruget/Martens 1997, 82–83 fig. 5b.

102 Nybruget/Martens 1997, 83–85 fig. 6a; Martens 2021, 97–99 fig. 2, 109–111.

103 Fudzińska/Fudziński 2013, 49–50; 358 Pl. XX; Kostrzewski 1919, 23–24 fig. 9. – However, classification as var. D (Kostrzewski 1919, 19–20 fig. 4) cannot be excluded, which would date the grave earlier than the horizon of triangular brooches.

the bow[104]. This inventory is linked to the transitional phase between the Pre-Roman Iron Age and the Roman Period, or to phase B1a of the Roman Period. The same is true for the brooch from Store Frigård, grave 94. Northern European belts with metal elements thus survive until the Era of Augustus or even later.

Gåtebo, Öland, grave 55c[105], with its type C strap end mounting and early eye-brooch is indicative of phase B1. A rich grave from Store Grandløse[106], Zealand, must be dated to late period B1, with two belt rings comparable to the Gotland ones in shape and ornamentation, together with bronze pendants and three silver brooches (two specimens of type A.75 and a late variant of *Tierkopffibel*[107]). Although the Scandinavian belts are used over a relatively long period, the diversity in their design cannot be attributed to chronological conditions.

Local patterns: brooches type Slusegård 7c

Local trends in fashion and dress habits are also found among the population using Store Frigård. An example of such a strictly local pattern from the Roman Period might be the Slusegård 7c type brooches which are popular on Bornholm but rather unheard of elsewhere[108]. At Store Frigård, eleven specimens of this type have been found in seven graves (Fig. 14). They are iron brooches with a single-jointed crossbow construction, wide band-shaped bow/head, low-profile disk on bow, flat bow and wide foot with a roof-shaped cross-section. They have 8, 10 or 12 spring windings. The length of the brooches is 5.7–6.2 cm.

Although all brooches were presumably ornamented, it is only visible on some of them due to surface corrosion. Even so, five specimens have retained their ornamentation on the bow, in the form of bands of bead rows in the middle and along the edge of the upper part of the bow. On six of the brooches, two grooves are seen across the end of the foot. In addition, a single specimen has an angle/triangle on the foot just above the transverse grooves. Another has one or two parallel grooves along the edge of the foot. On one specimen a furrow can be identified above the disk on the bow, and another one below. These ornamental elements on the type 7c brooches are all well known in the Early Roman Iron Age environment[109].

This brooch type is not described by Almgren[110]. However, they can be treated either as a specific variant of early Almgren group II spring covered brooches, or a stylistic hybrid of these brooches and Almgren group I brooches (A.10–14). The younger group I brooches tend to have a wider foot, and sometimes also bow. Even so, they have the same crossbow design for the spring and its chord. A specific example from grave 520 (Fig. 14, 2) resembles a stylistic hybrid between the A II brooches and Slusegård type 7c. A couple of similar iron brooches have been found at Nørre Sandegård in grave 449[111]. Th. Völling mentions that these brooches might be a domestic imitation of continental eye brooches, but also mistakenly describes them as being made of bronze[112].

Assuming that Slusegård type 7c is a variant of the early A II brooches or a hybrid between A II and A I supports the dating in the middle and younger part of phase B1. The forms A. 10–14 are typical for stage B1[113]. In grave 69 from Store Frigård, Slusegård type 7c brooches have been found together with at least one copy of an A II/26 or Slusegård type 8b and the remains of another type A II/Slusegård type 8 iron brooch[114]. This brooch is ornamented with "*Tremolierstich*" on the catch plate, which have been mentioned[115] as characteristic of the younger forms from group A II (A 28–30). These brooches are usually dated to phase B2, but can apparently occur as early as the B1/B2 transition[116]. Graves 32 and 84 can be dated based on the co-occurrence of most likely type A IV/77 or Slusegård type 10b brooches[117]. Other objects in the graves (iron sewing needles, knives, pottery) do not warrant precise dating. The type 7c findings from Slusegård are dated to the transition between phase B1 and B2 or early phase B2[118].

A total of 14 type 7c brooches have been found so far in Bornholm. In addition to the 11 from Store Frigård, there are two from Slusegård and at least one from Store Kannikegård[119]. Moreover, four type 7d brooches have been

104 Sjöberg 1987, 241; 275.
105 Sjöberg 1987, 260.
106 Liversage 1980, 33–34 fig. 15.
107 Demetz 1993, 71 fig. 3.
108 Trolle in print; Lind 2010, 105–107 fig. 10.
109 See e.g. Cosack 1979, Pl. 8–17; Leube 1998, 56.
110 Almgren 1923.
111 Becker 1990, 188 fig. 449,1,4 and the National Museum's report archive.
112 Völling 2005, 68.
113 Grasselt 1998, 37.
114 Trolle in print, tab. 1 and catalog.
115 E.g. Cosack 1979, 30; Leube 1998, 57.
116 Leube 1998, 59; Schuster 2018, 30.
117 Lind 2010, 116–123 Fig. 20–23. – In Slusegård grave 197, one type 10b specimen was found with two Slusegård type 7c brooches (Klindt-Jensen 1978, 75).
118 Lind 2010, 107.
119 Voigt 1964, 198; 199 fig. 113,f; 211.

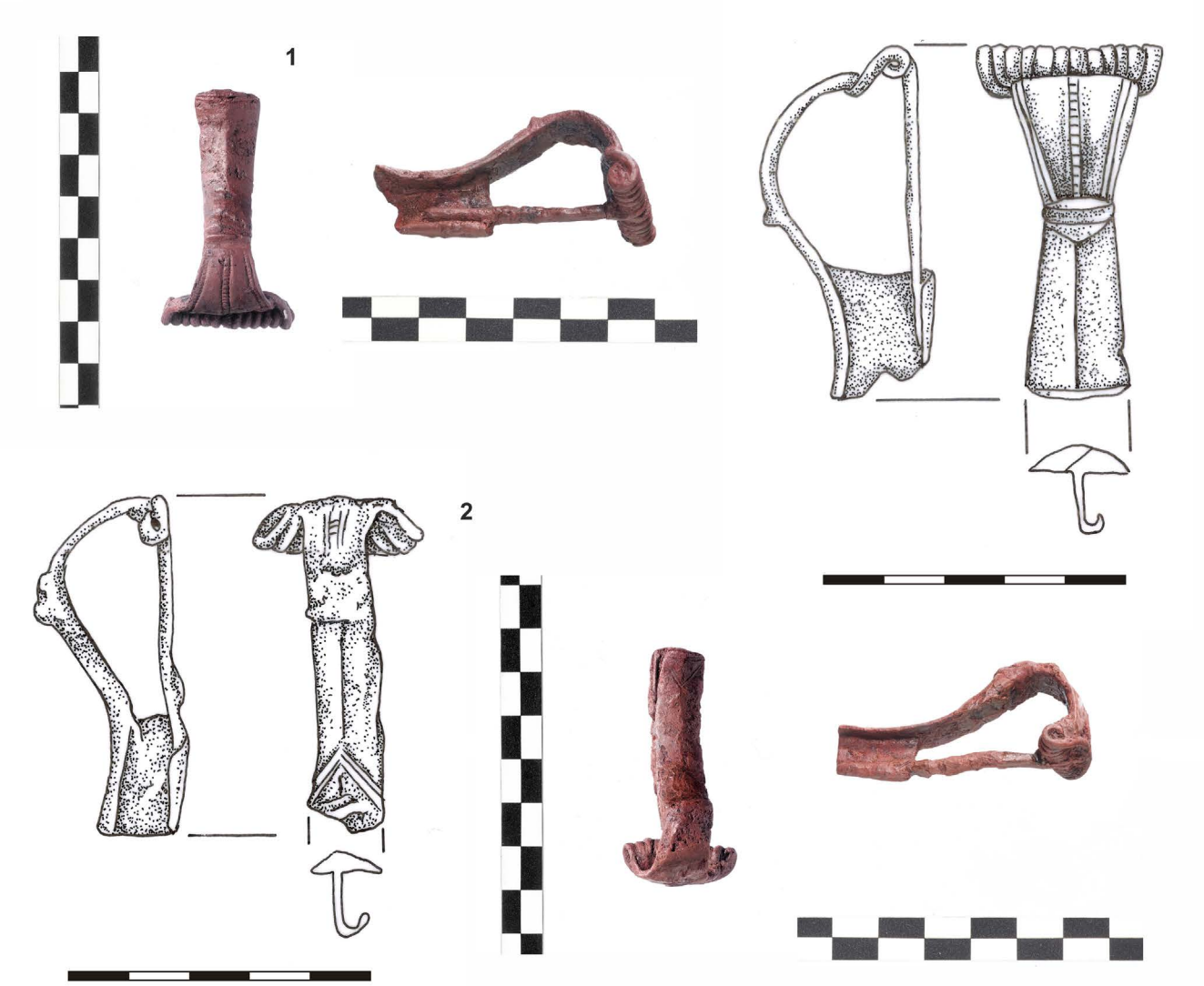

Fig. 14: Store Frigård, brooches type Slusegård 7c (selection). 1–2: iron. 1: grave 495; 2: grave 520. Photo: R. Fortuna. Drawing: A. Kuzioła.

obtained from Slusegård and one type 7c or 7d from Store Kannikegård[120]. So far, no Slusegård type 7c brooches have been registered outside Bornholm. Thus, it is a local product, which is unlikely to have any connection with the workshop group for the iron brooches with band-shaped bows on Funen and Lolland[121].

Four of the seven graves from Store Frigård contain objects which have assessed as women's equipment in other contexts. These include sewing needles, beads and knives of Slusegård type 1. Four of the graves contain two Slusegård type 7c brooches; they were most likely worn as a pair, on the shoulders. In three graves, three brooches have been identified. In two of these graves, the third brooch is a strongly profiled specimen which may have been worn on the chest between the two others. Hence, 7c type brooches are certainly an attribute of a woman's clothing.

Theoretical aspects

The Baltic Sea, the Skagerak and Kattegat do not constitute a large sea basin. Theoretically, maritime contact should not pose great problems and the mutual distances between the various zones (Southern Norway, the Jutland Peninsula, mainland Sweden – Västergötland and Östergötland, Bornholm, Öland, Gotland, the southern coasts) are not insurmountable[122].

120 Lind 2010, 107.
121 Cosack 1979, 24; Grasselt 1998, 30.
122 A recent paper examines this problem regarding the Roman and Migration Periods in great detail: Kontny 2023.

The tradition of maritime activity dates back to the Bronze Age. Numerous rock carvings of ships with a horizontal keel-extension and inward-turning stem are known from Denmark, Norway, Sweden, and of course Bornholm[123]. Sometimes a crew of up to a dozen is schematically depicted. The details of the construction of these boats, however, remain unknown; this is also true of rock carvings depicting different variants of ships of different sizes with slightly-curved keel-extensions and stems, similar to the Hjortspring boat: these have been dated to the early Pre-Roman Iron Age[124].

The wide spread of rock engravings indicates that such boats were used mainly in the Western Baltic Sea, Kattegat, Skagerak, and Norwegian coasts[125]. So far, however, no rock-iconographic evidence or finds of original ships from the younger Pre-Roman period have been recorded. One of the few exceptions may be the fragmentarily-preserved plank boat from Hampnäs, S (ca. 220 BC) and the equally poorly preserved boat remains from Haugvik, N; the latter has been dated very broadly from the Late Bronze Age to the late Pre-Roman period by ^{14}C[126]. The tradition of stone engravings persisted for a very long time, as indicated by depictions of large paddleboats from Gotland, such as those from Bro, Sandra and Stenkyrka, dating to between 400–600 AD[127].

Of course, numerous dugout canoes are already known from the Bronze Age to the Roman Period in the analyzed zone. However, they are not suitable for sailing on open water[128], being suited at most to inland waters (rivers and lakes) or near the coast itself. Crumlin-Pedersen distinguished two types of dugout canoes based on boat finds in graves in the Slusegård cemetery dating to the Roman period[129]; some were even fitted with ribs inside for greater strength. Both type 1 (about three meters long, relatively wide, designed for one or two people) and type 2 (about five meters long, narrower, able to accommodate up to and including four people) were unstable under light load. In addition, with a heavy load, due to the very low height of the remaining freeboard, they could be swamped by any large wave. Although they could probably sail on coastal waters in good weather, their main function had to be inland water transportation, as their load capacity likely ranged from about 60 kg to even 250 kg, depending on the number of paddlers.

A number of well-documented finds include wrecks or parts of boats or ships from bogs in Jutland (from Illerup, Vimose, Ejsbøl and especially Nydam) dating from the Middle and Late Roman periods[130]. All these boats are large rowboats, and significantly, all lack sails: these probably appear in the north only between 500 and 800 AD[131]. The reconstruction of boat B from Nydam indicates that it was fully seaworthy for the Baltic or North Sea, and with a crew of about 40 men[132] and an adequate supply of provisions, could make long trips.

There are very few sources for the younger Pre-Roman Period and the early stage of the Roman Period; however, one key example is the famous bog find of Hjortspring Mose dating from the early Pre-Roman Period (Fig. 15), where a plank-boat 19 m long and up to 2.07 m wide was found on the island of Als in Sønderjylland[133]. The remains were dated to around 350 BC by ^{14}C, and it has been proposed that the crew comprised 23 man, including 20 paddlers[134]. Sea trials conducted on a full-size reconstruction named Tilia Alsie found that the boat was eminently suitable for open water and had very good maneuverability. With a crew of 22 men (20 paddlers) she could cruise at speeds of up to 7.6 knots, but of course only for a short time, depending on the strength of the paddlers. The cruising speed was about 4.7 knots and required at least 18 paddlers, each moving a converted weight of about 140–160 kg. In a day, the boat could cover a distance up to 56 nautical miles (nm), assuming good weather[135]. However, the boat was more of a warship than a merchant ship, as it was more suitable for transporting a team of warriors than goods[136].

Perhaps such boats sailed the Baltic Sea in the younger Pre-Roman Period and in early Roman Period. The positioning of Bornholm in the Baltic made it an important location in inter-regional communication and mobility between

123 C*cf.* e.g. Bengtsson 2015.

124 Crumlin-Pedersen/Trakadas 2003.

125 Kaul 2003b, 187–207; Bockius 2013, 285–290.

126 Bockius 2013, 223–227 fig. 3–4.

127 Heidemann Lutz 2010, 55 fig. 12, with older literature.

128 Heidemann Lutz 2010, 54; Bockius 2013, 285–290.

129 Crumlin-Pedersen 1995, 88; See also Heidemann Lutz 2010, 56–60 fig. 14, with earlier literature; Kontny 2023, 106–107; 109.

130 E.g. von Carnap-Bornheim 1998, 22–25; Gøthche 2013, 194 table 1, 199; 213; Bockius 2013.

131 However, there are also contrary hypotheses that the introduction of the sail in the North occurred already in the Bronze Age (Bengtsson 2015).

132 Bockius 2013, 238–239: calculations as to the weight, displacement and stability of the boat indicate that the crew, including additional persons, personal equipment and supplies, could not have numbered more than 32 people (including 30 rowers).

133 Crumlin-Pedersen/Trakadas 2003.

134 Kaul 2003a, 173–175; 178–179.

135 At the equinox at the end of March, there are 12 hours of daylight a day, which increases until the end of June and falls to 12 hours at the end of September. 12 hours of sailing at a speed of 4.7 knots gives 56 nm.

136 Vinner 2003, 103–118; Bockius 2013, 242–246.

Fig. 15: The Hjortspring boat (Tilia Alsie). Photo: A. Kuzioła (27.09.2023).

the Scandinavian Peninsula and the southern Baltic coasts (Fig. 16)[137], where it could be used as a starting point or as a "pit-stop" for longer cruises. However, the island is located in an area of the Baltic where unfavorable weather conditions are quite common. When leaving the protection of the coast, it was likely that the crew strove to reach the next coast as quickly and optimally as possible. Sailing on the open sea requires vessels that could withstand such conditions and perhaps more numerous crew. At least a basic knowledge of navigation without a compass and land surveying was necessary, otherwise one had to rely on chance, and regular voyages to a specific destination would have been impossible[138].

Before the compass there were many means of keeping the direction (course) at sea, the most obvious being the sun and its movement during the day. Such navigation gives even modern seafarers a relatively precise sense of direction, and to this end, the Vikings had developed the sun stone to act as a compass. At night, however, the stars and the moon are the best guides. Most likely the ancient navigators had a deep understanding in the movement of the moon and stars, and in particular, the immobile North Star. Navigators have always experienced problems when the sky is overcast. In such cases, the direction of the wind and the waves can be used by good navigators to get a sense of direction in the open sea. However, problems arise when approaching a coast without any lights in a dark night without the moon, when it may not be possible to make out the contours of the coast and determine the distance to the coast; one solution was depth sounding using a line with a stone at the end. In Scandinavia, however, the summer period was especially good for navigation because of the light during the night.

There is a frequent view in the literature[139] that the primary method of navigation when travelling across the open sea was the so-called 'night skip' ("Nachtsprung"). Briefly, the wind picks up at daybreak, and dies down again at sunset; as such, the wind is calmer at night, and hence the waves too. Therefore, the prudent sailor set out on a route on a starry night. By observing the fixed position of the polar star, it was possible to always sail in a specific direction. However, practice shows that the North Star is difficult to navigate in the Baltic Sea because it is situated much more vertically than in southern seas, in the Mediterranean for example, but it can be done. It is likely that other star constellations were also used, as their movement would have been most likely known. Theoretically, night skipping was perhaps preferable as a navigation method for shorter distances (e.g. to cross straits) when the weather was windy, and the trip

137 An example of early contact between the Baltic zone and the south (Polish coast) could be the gold-foil glass beads type TM 387, found on the southern Baltic coast, Baltic islands, southern Scandinavia and Jutland. The earliest finds, dated to the end of the younger Pre-Roman Period or the turn of the Pre-Roman and Roman Period, come from Bornholm (at least seven graves from the Slusegård cemetery). The earliest finds from the beginning of the Roman Period, on the other hand, are from the Wielbark culture zone and Jutland (Kokowski 2019, 84–92; fig. 83; Pl. 1).– It can be assumed that already in the early Roman period, there was a network of connections between Zeeland – Bornholm – northern Poland, as well as between Zeeland and Skåne (Björk 2022, 52–53; fig. 19).

138 Heidemann Lutz 2010, 46, 49–52.– Cf. also the comments of R. Bockius (2013, 239–240) regarding the naval invasions of Jutland in the third century AD and the means of sailing through the Skagerak, Kattegat and along the Jutland coast.

139 E.g. von Carnap-Bornheim 1998, 26; Heidemann Lutz 2010, 49–52, following older literature.

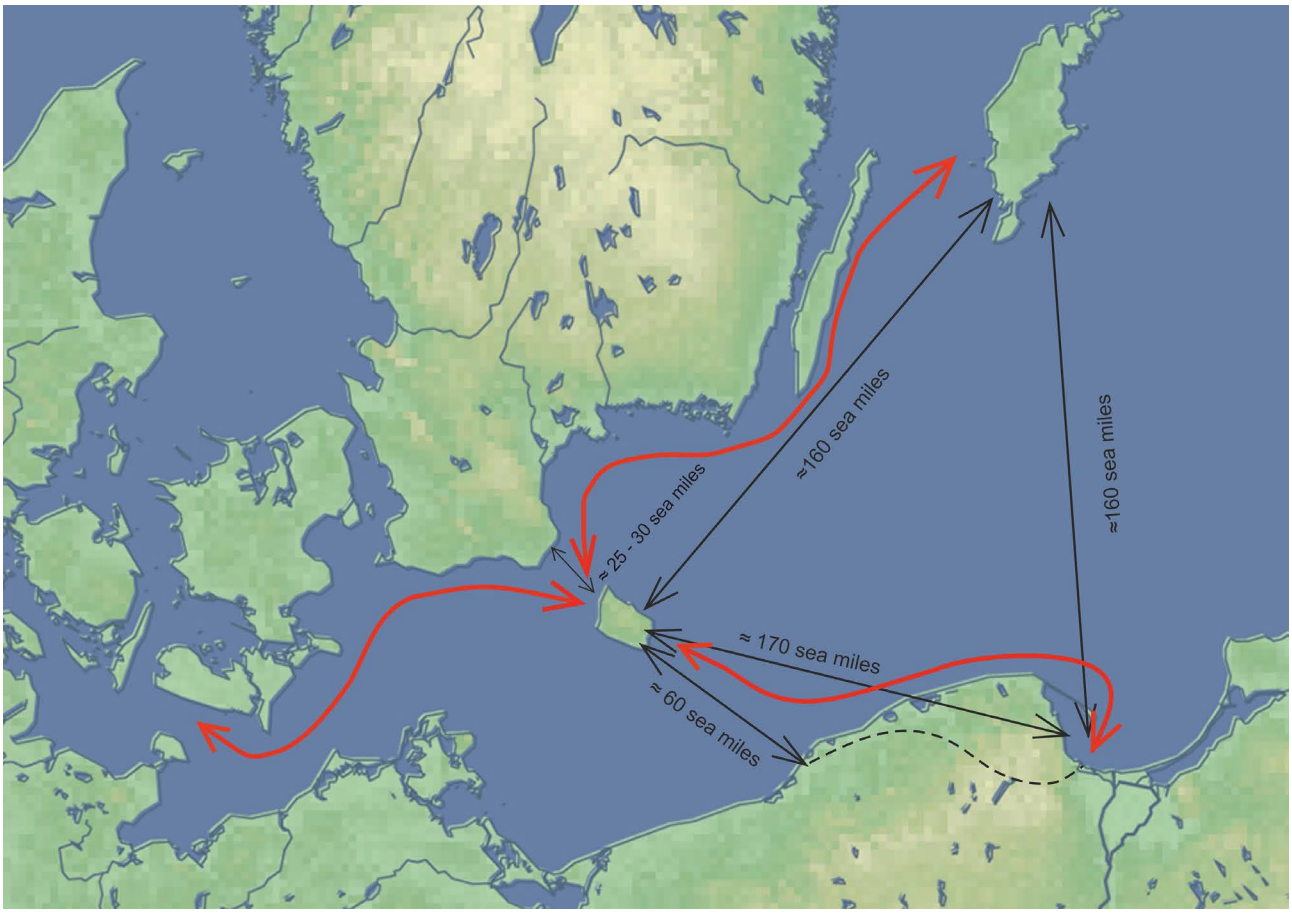

Fig. 16: Location of Bornholm, possible sea routes in the Baltic and distances (in a straight line). Layout: A. Kuzioła.

could not be postponed. The sailors could take advantage of the relatively lower wind and calmer sea at night.

With a boat paddled by a well-trained crew, it was possible to cover a distance of between 40 and 55 nm in a long day depending on weather conditions. This would easily have allowed a crew to cover the distance between the Swedish coast (*Schonen*) and Bornholm, which is only 20 nm, where the distance is shortest. In clear weather, Bornholm can be seen from the most south-eastern point in Scania and vice versa. Sailing from another place in Scania in a low boat like in the Iron Age, Bornholm – with its highest point Rytterknægten hill (162 m above sea level) – can be observed at a distance of at least 22 nm (TT – personal experience). A much longer journey, but also possible, would be the route from Nexø to Mielno or Kołobrzeg in central Pomerania, Poland: a journey of 56 nm. In this case, here Góra Chełmska (Chelmska Mountain) near Koszalin (137 meters above sea level) would serve as a suitable navigational point, visible after already having sailed about 30 nm[140]. The route from Gotland to Bornholm, despite the much longer distance (about 160 nm in a direct line), also seems quite feasible. In this case, the easiest way would be to sail to Öland and then stick to the Öland coast and then Sweden. Such a voyage, however, would require much more time and, above all, crew effort, and numerous pit-stops would be needed. This route, however, is reflected in archaeological materials, for example, in the Scandinavian belt fittings discussed here.

A direct trip from Gotland to the Gulf of Gdańsk would be much more difficult. The problem here is the long distance, some 160 nm, and the lack of stopping facilities along the way. Perhaps imports from Gotland made their way to the Vistula estuary region by a circuitous route, via the "reloading station" at Bornholm. However, Scandinavian or Baltic imports from the younger Pre-Roman period are accumulated almost exclusively in the lower Vistula region, and there are only few traces, if any, in Central Pomerania. The direct route from Bornholm to the Gulf of Gdańsk is longer, about 170 nm, and just as difficult, unless the captain chooses to sail to Central Pomerania in one jump, and then all the way along the coast.

140 Heidemann Lutz 2010, 49–52.

Such voyages could be made much more quickly and with less resources when under sail. However, this begs the much debated question of when the sail was introduced in the Baltic Sea. Was it introduced in the late Iron Age/Viking period, i.e. the 7th or 8th century AD, or much earlier, even in the Bronze Age? The Bronze Age rock art (1800–500 BC) in Southern Scandinavia contains imagery of boats with attributes that can be interpreted as masts and sails[141]. However, experience with the boat from Hjortspring indicates that such boats are very poorly steerable under sail and move much better with paddles (interviews with members of The Hjortspring Guild in September 2023); this was probably advantageous for coastal purposes.

Of course, it is possible that even in the early Iron Age, sea-going boats employing primarily sail power were in use in the Nordic region, and rock carvings might support this. Sails were a technology well known among the Romans, and before them the Greeks. However, the few finds of boat remains in the north is quite disproportionate to the extent of sea contacts and transport that must have taken place. It is possible that simple sails may have had some supportive role in Iron Age boat propulsion, but the finds preserved so far show no traces of masts, nor even some sort of lightweight, foldable structure.

Irrespective of the issue of propulsion, it should be assumed that there have been specialists who were skilled meteorologists/navigators and could read weather, wind, and natural phenomena. Experience in this field has been passed down from generation to generation. In general, it is reasonable to assume that meteorological and navigational competences was much more widespread than today, on both land and sea.

It is most likely that most sailing took place in the summer as the winter would have been windier and more dangerous[142]. As it is difficult for a paddled boat to sail against the wind and the waves, the prevailing winds in the different seasons would have played a large role in sea transport, as in historical times and today; indeed, Denmark's Meteorological Institute still makes calculations about the extra costs in time and fuel for a given wind force and direction.

To travel on the open sea, there was a need for watercraft that could do so while also providing the capacity, albeit limited, to transport a certain amount of goods and commodities. Such vessels would not have been "transport ships" *per se* with a strictly commercial function, because there is no evidence or even indications of regular (profit-oriented) trade in the Baltic zone, at least during the younger Pre-Roman Period. Even the relatively large Nydam-type boats were unlikely to have been transporters, but were used primarily for military purposes and travel[143]. Such expeditions required organization, crew recruitment, perhaps as many as 30 people, and for a boat to be built: this would have required considerable means and a sufficiently high social status. Such activities had to have a specific purpose, be it economic or prestigious, and were certainly not random activities.

The spread of Scandinavian belts, as well as, for example, a specific cast K-type brooches with a strap-like bail in southern Norway, which was most likely obtained from a single workshop located somewhere in Västergötland, Sweden, has been attributed to exogamy[144]. For example, a complete costume found with a woman in Hals Store, Norway, included a set of ornaments produced in Västergötland (a cast K-type brooch and complete belt), indicating that she must have come from there. The grave inventory indicates a higher, but certainly not elite social status. Hence, the lady is believed to have been in an exogamous marriage with a local "Norwegian"; such long-distance exogamy is as a rule, intended to create some sort of political or military alliance, or for some other benefit. However, this alliance would not have been at such a high level as, for example, that suggested by the equipment of a lady from Dühren in southern Germany (grave from the Lt C2 phase), who came from some aristocratic family from the southern side of the Alps[145]. Another example is presented by a woman buried in the aforementioned grave from Parpary in northern Poland, who was most likely a migrant from the Baltic zone, and maybe not one who entered into marriage by her own will. The set of five brooches attributes her to the "well-to-do middle class." Thus, such finds are not necessarily evidence of a Scandinavian or Baltic elite from the younger Pre-Roman Iron Age (and the early Roman period) building a network of supra-regional alliances[146], also involving the southern Baltic coast and the Gulf of Gdańsk region, but rather a trace of some singular event.

Nor were supra-regional contacts limited to the female world. Scandinavian type "female" belts have also been

141 Bengtsson 2015, especially 132–165; 229–243.

142 Cf. the publication of wind directions and wind strength around Bornholm in the seasons of spring, summer, autumn and winter, in the period 1985–2004 (Theilgaard 2006).

143 Cf. Kontny 2023, 122–123

144 E.g. Becker 1992, 32–35; Martens 2021, 111–113. – Cf. also, for example, the comments of A. Maciałowicz (2015) regarding exogamy as one of the possibilities for contacts in the Celto-Germanic zone.

145 Bockius/Łuczkiewicz 2004, 26; 117, earlier literature there.

146 In this sense, Martens (2021, 111–113) regarding the contacts of the Västergotland power elite with the Oslo fjord zone, Vendsyssel, Bornholm and Öland.

found in a few graves with weapons, outside the main spreading zone, thus belonging to the male world. Throughout the southern zone of Scandinavia and the Baltic Sea, including the southern (Polish) coasts of the Baltic Sea, one can also see a significant unification of weaponry patterns in the younger Pre-Roman Period[147]. The presence of foreign artefacts in a cultural zone or geographic region does not necessarily reflect an influx of foreign people, but only extensive contacts of the local population, obviously based on mobility. The influx of foreign goods, exchange and trade mechanisms, based on individual or small group mobility, do not necessarily follow the same patterns as migration. Imported artifacts are also in no way linked solely to the graves of those identified as foreign and are often found in the graves of local persons.

Although migration may be a fact, it is not possible to precisely determine its scale[148]. However, it is possible to supplement archaeological evidence with data from other fields of science. An excellent example is the results of isotopic studies[149] of prehistoric populations living on the island of Öland[150]. A sample of 109 graves from the Iron Age and Viking Age (500 BC–1050 AD) was found to include a very large percentage (43 %) of people of non-local origin; these were most likely migrants from Gotland, the province of Mälaren in Sweden, from Skåne, from the islands of Zealand and Lolland in eastern Denmark, and from the southern part of Bornholm. The percentage of foreigners doubled from 30–32 % in the early period (500 BC–400 AD, n = 71) to 68 % in the late period (up to 1050 AD, n = 38). Undoubtedly, this was influenced by the extensive network of contacts in the Viking Age and advances in shipbuilding and navigation.

In theory, mobility should primarily affect young men aged 20–30[151]. Women and children are most often described as indirect migrants, accompanying men, although a good reason for migration may also be exogamy. What is striking, however, is the unequal distribution of the local and non-local groups with regard to sex for the two mentioned periods. Although both periods have the same overall ratio of women to men, the proportion of women in the *non-local* group increases greatly in the late period, and practically all anthropologically-defined women of this era are foreign. Of course, the data for Öland cannot be extrapolated to the entire described zone in the younger Pre-Roman Period and early Roman Period. However, these findings do indicate that the societies of the time were highly mobile, and exogamy may have partially driven the spread of foreign patterns and objects. Among women, mobility took place at various social levels, not limited to the elite, as indicated by the wide range of grave goods also noted in the isotope study.

Conclusions

As can be seen from the archaeological material from the cemetery of Store Frigård, the Iron Age (late Pre-Roman and Early Roman Period) communities of Bornholm, actively participated in cultural developments in the Baltic region. The mobility, contact and trade in this part of the Baltic Sea, including Southern Scandinavia and the southern Baltic coast, was a fact of life for the Iron Age society of the time.

Although the material presented herein is both supra-regional (e.g. “Iron brooches with long true spring and a large, cast bronze ornament on the bow”, the Kostrzewski type-K triangular brooches or the “Scandinavian belts”) and local (brooches of type Slusegård 7c), it only represents a small part of the items present in more than 1,200 graves from the analysed cemetery: many groups of artefacts, such as belt hooks or weapons, are not discussed here. Cultural exchange, and the reception and transformation of foreign patterns, took place very quickly, without any retardation noticeable by archaeological methods. Some categories of ornaments and parts of clothing were also locally processed and adapted to local tastes and needs; this is indicated, for example, by the exceptionally large number of very large triangular brooches, much rarer in other cultural and geographical zones, or local variants of “Scandinavian belts”. The cultural trends and artefacts present in Bornholm were exported across the entire Baltic region, even to its southern coasts, most likely accompanying their male and female owners, particularly the latter. The finds of bimetallic brooches from Malbork-Wielbark and Parpary are excellent examples of this.

Bornholm, by virtue of its geographical location as “the island in the middle”, was predestined to be an interchange for all exchange and trade in the Baltic area. All these processes continued into the early Roman Period (phase B1), it seems, with even greater intensity, although some regionalisms are evident throughout, as indicated by the Slusegård 7c brooches on Bornholm, while are absent from other zones.

147 Łuczkiewicz 2015.

148 One is tempted here to cite E. Nylén (1992): “migrations in macro and micro format”.

149 Bioarchaeology and isotopic analysis – methodological background and application in archaeology of mobility and migration: Gregoricka 2021.

150 Wilhelmson/Ahlström 2015, 31–43; Wilhelmson/Douglas Price 2017, 183–184; 189–192; Wilhelmson 2017, especially 328–330; Tabl. 5.

151 Unwilling migrations can be assumed in the case of captives or slaves.

Our analysis of the sailing conditions in the Baltic Sea suggests that voyages generally took place in smaller, rowed or paddled boats that could carry smaller quantities of goods. People has sailed most likely in the summer due to the better weather conditions, milder waves and the greater visibility of the sky and the destination, allowing better navigation. There is no indication of a regular, i.e. profit-oriented, trade in the Baltic area in 'transport ships' with a strictly commercial function.

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