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BETWEEN THE FALCHION AND THE SWORD: A SIDE ARMS SPECIMEN FROM THE NAVAL MUSEUM IN GDYNIA

Abstract: This paper discusses a falchion of unknown provenance kept in the Naval Museum in Gdynia. It is an example of a side arms characterised by both its hilt, specific to so-called ‘Moravian’ falchions and, most importantly, its double-edged sword blade bearing a mark in the form of a circle with an inscribed cross and the letter ‘S’. Based on typological and chronological analysis, the artefact can be dated to the second half of the 15th century.


Keywords: falchion, sword, Poland, Middle Ages, 15th century, Naval Museum in Gdynia

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Introduction

Representing the work of highly skilled artisans, medieval weapons (especially well-preserved specimens) are doubtless some of the most valuable exhibits in many museums. Collections of old weapons are sometimes also kept in institutions with a research profile unrelated to medieval weaponry. One such example is a collection housed in the Naval Museum in Gdynia. Although this museum primarily stores objects associated with the Polish Navy, military techniques and weapons used by Polish naval forces in the 19th–21st centuries, its archives also include a collection of side arms and defensive armament from the late Middle Ages and the early modern period, such as falchions, daggers, rapiers, and helmets: a medieval kettle hat, modern burgonet helmets, and so-called ‘Pappenheimer helmets.’ This paper discusses one unique exhibit from this collection, a rather well-preserved falchion of the so-called ‘Moravian’ type.¹

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Description of the artefact and its state of preservation

Although the falchion (inventory no. MMW/BU/46) is incomplete, its state of preservation can be described at least as good. Its single-edged blade is missing the point. It has a 12 mm wide fuller running the full length of the blade, which originally was a sword-type, i.e., double-edged blade (Fig. 1). The hilt is complete – it has a tang with a pommel, a crossguard, and a “Werhnagel” (Fig. 2).

The surviving total length of the weapon is 753 mm, of which 465 mm constitutes the length of the blade and 288 mm is the hilt. The maximum width of the blade, which tapers towards the point, is 60 mm, 5 mm thick at the forte, and around 2.5 mm thick where the point was broken off. The tang of the hilt is almost rectangular – its maximum width is 33 mm at the pommel and 31 mm at the beginning of the blade. On one side it is completely flat, while on the other side it has a narrow, irregular groove that runs along the entire length of the tang with the dimensions of 165x13 mm (Fig. 2). It is commonly assumed that this manner of forming the tang facilitated punching holes for rivets.² The discussed specimen has five such holes, unevenly

² Marek 2008, 47; Ławrynowicz and Rychter 2012, 257; Žák-ovský 2014, 259-260, Figs. 212-214.





Fig. 1. Falchion, Naval Museum in Gdynia. A general view and the close-up of the hilt. Photo K. Skóra.

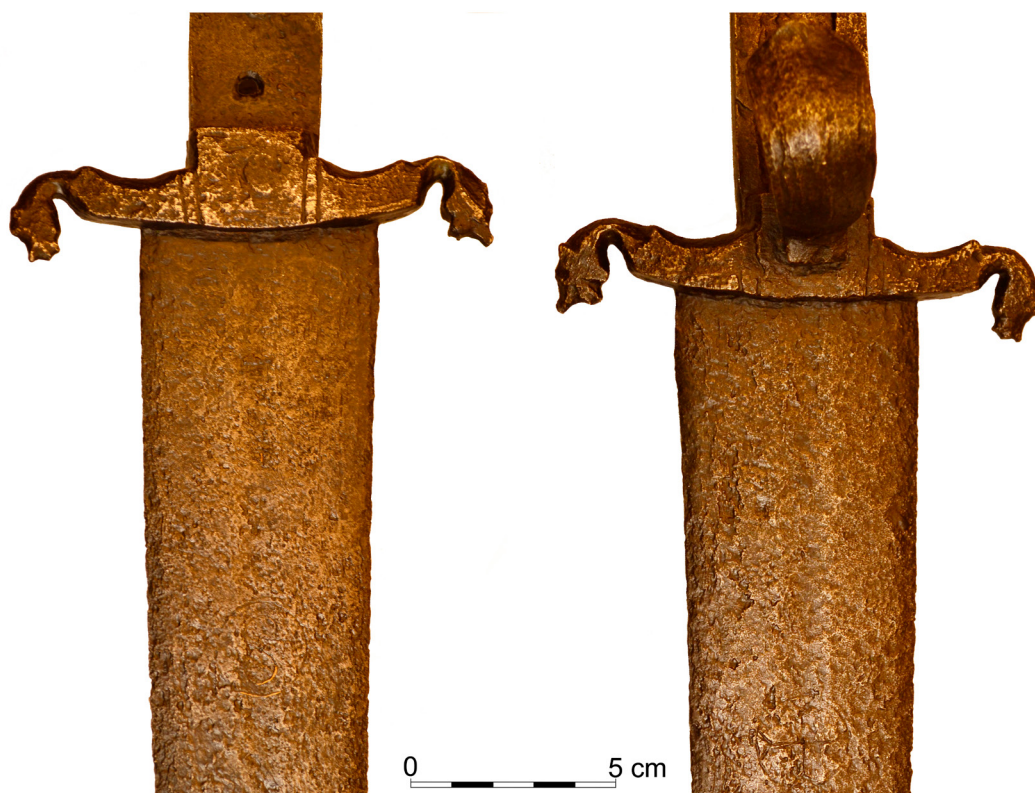


Fig. 2. Falchion, Naval Museum in Gdynia. The crossguard and the “Werhnagel”. Photo K. Skóra.

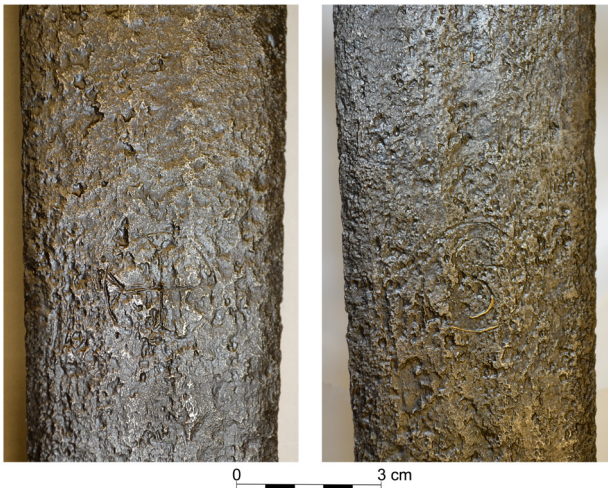


Fig. 3. Falchion, Naval Museum in Gdynia.
Markings on the blade. Photo K. Skóra.

distributed, with diameters that range between 4.5 and 6 mm. Unfortunately, none of the rivets have survived. The pommel is quite massive and its form is a reference to type E pommels identified by Lech Marek.³ At the same time, it is rather high – 103 mm. It is 30 mm wide at the tang and 55 mm wide in its top part, with a maximum thickness of 15 mm at the base and 7 mm at the top (Fig. 1). Along its entire length, it has a hole so the pommel could slip over the tang. There are no visible traces of flattening the tang in the form of a rivet.

The falchion discussed in this paper is also characterised by the elaborate elements of the hilt. Its key part constitutes a relatively long – 120 mm – crossguard with decorative tips pointing downwards. The width of the crossguard varies from 20 mm wide near the pommel to 8 mm wide at the tips, while its height varies between 15 and 13 mm near the pommel and at the tips, respectively. The next characteristic element of the hilt is the “Werhnagel” in the form of a leaf-shaped plate bent at a straight angle, 42 mm high, 12-14 mm wide at the base, 27 mm wide at the top, 4 to 6 mm thick. Its mount goes through the tang, thus stabilising the connection with the blade. The surviving falchion weighs 1223 grams.

The falchion has markings on both surfaces of the blade. On one side it is marked with a circle and an inscribed cross with arms of equal length and forked ends. On the other side it has a circular field containing a horizontally elongated letter ‘S’ with short bars on both ends. This second mark still shows traces of an inlay made of a yellow metal.⁴ The diameter of both decorative fields is approximately 22 mm. Halfway

between the circle with the inscribed letter ‘S’ and the crossguard there are visible remains of another sign – of which only two short lines filled with a non-ferrous metal, several millimetres long, have survived (Fig. 3).

Typological and chronological analysis of finds

The blade of the discussed artefact belongs to the sword type, namely, it is double-edged, with a single fuller on both sides (Fig. 1). The fuller has been preserved on the entire surviving length of the falchion; however, it is not certain if it originally extended all the way to the point. Furthermore, we do not know whether the shape of the point was symmetrical or asymmetrical. The incompleteness of the blade prevents its detailed classification. However, it definitely represents a specimen with a flat, lenticular cross-section with a single fuller. The closest references to the discussed weapon are types XIIIa and XVIa according to R. E. Oakeshott.⁵

Late medieval double-edged falchions have been the subject of interest of Polish weapon experts for many years. The first published artefact with such features was a specimen from the village of Poręba Wielka, Limanowa District, with a large pommel with four openwork rosettes and a ‘boat-shaped’ crossguard. That weapon is rather large, with a total length of 106 cm, of which 76 cm is the length of the blade. Based on the dimensions of the hilt, its grip can be classified as two-handed. The fuller extends to half of the blade’s length. In the case, it was assumed that the specimen from Poręba Wielka originally had a sword blade (perhaps damaged) that was adapted to make the falchion. According to Marian Głosek, this falchion should be classified as type XVIa in R.E. Oakeshott’s typology, which gained the most popularity in the second half of the 14th century and the beginning 15th century, while in contrast the falchion from Poręba Wielka is dated to the turn of the 15th and 16th centuries.⁶

It is probable that a damaged sword was used to make the falchion that is currently kept in the Museum of Warmia and Masuria in Olsztyn as well. At the forte, its blade is formed as a single-edged blade, while nearer the point it has (most probably from the original sword) a double-edged cross-section. In addition, its hilt has clear sword-like features – a symmetrical tang (in which, however, holes were punched to attach scales) and a straight cross-shaped crossguard. The entire weapon, which was made rather shoddily, indicates a simple blacksmith’s job. The modifications were probably made in the second half of the 15th century using

³ Marek 2008, 63-64.

⁴ A chemical analysis has not been performed.

⁵ Oakeshott 1997, 42, 63.

⁶ Głosek 1992, 35-37, Figs. 1 and 2; Glinianowicz 2005, 156, Table X:2.



Fig. 4. A combat using falchions with high pommels. *Codex Wallerstein*, c. 1470, fol. 30v and 31v. After Vodička 2020, 111, 113.

for that purpose a blade that belonged to type XVII according to R.E. Oakeshott.⁷

Another double-edged falchion is the specimen from the village of Kruzy, Olsztyn District, which belongs to the collection of the Museum of Warmia and Masuria in Olsztyn and is stored in the Museum of Masuria in Szczytno. It has a broad double-edged blade with a fuller on both sides that runs down to a visibly asymmetrical point. The hilt has a cup-like pommel and an atypical, bow-shaped crossguard bent downwards. Most probably, it can be dated to the second half of the 15th century.⁸

A well-preserved falchion with a high pommel representing type E comes from Wrocław-Widawa. Based on the features of the blade, i.e., a double fuller, its closest reference would be type XXI according to Marian Głosek. The blade also bears its maker's marks in the form of shields or hearts on the flat of the blade.⁹

Another specimen known from the village of Zborów near Kalisz is characterised by a short, straight crossguard with a “Werhnagel” and a high pommel. An unidentified mark inscribed in a round field made with non-ferrous metal has survived on its blade.¹⁰

An almost identical artefact is stored in the Polish Army Museum in Warsaw, while the mark on its blade is most probably a Passau wolf.¹¹ Its provenance is not known. According to Lech Marek, the two specimens

described above (from Wrocław-Widawa, and Zborów), do not bear any evidence of repairs or transformations of older sword blades, which means that these falchions were from the beginning made as a double-edged weapon.¹² We will return to this notion later.

High, trapezoidal pommels were classified by Lech Marek as type E and by Petr Žákovský as type F.¹³ Such pommels characterise the specimens that come from Gorzów Śląski (Olesno District), The Princes Czartoryski Museum, branch National Museum in Kraków and the environs of the town of Warta (Sieradz District), while only a pommel of this kind was found in the relics of the tower castle in Witków (Żagań District). These artefacts are dated to the 15th century or possibly the second half of the 16th century,¹⁴ whereas Petr Žákovský dates the weapons with diverse forms of high, asymmetrical pommels from Czechia (including Moravia) to the second half of the 15th century.¹⁵

The evolution of high, asymmetrical pommels was strictly associated with the efforts to improve the functionality of falchions in combat. Elements formed in this manner provided a better counterweight to the increasingly longer blade and offered a better grip, preventing the weapon from slipping out of the swordsman's hand.¹⁶ These adjustments are confirmed by numerous treaties, that were illustrated with pictures, from the second half of the 15th century, in which swordsmen use long, massive falchions with high pommels, presenting a broad array of thrusts and guards (Fig. 4).

⁷ Betiuk et al. 2011, 55-57, Fig. 1-8; Žákovský 2014, 251, Fig. 201: f.

⁸ Martyka 2014.

⁹ Marek 2006, 198, 203, no. 18, Fig. 6:a and b; Marek 2008, 45-46, 58-59, 157, cat. no. 27, Figs. 63:a-b, 64:a-c.

¹⁰ Teske 2003; Marek 2008, 46, 63-64, Fig. 41: a, f; Žákovský 2014, 250, Fig. 201: b-c.

¹¹ Marek 2008, 45-46, 58, Fig. 41:b and e. Furthermore, there is one more falchion with a double-edged point – a specimen from Henryków-Szprotawa, Żagań District, see Michalak 2019, 104, cat. no. 45, Table 47 – there older literature.

¹² Marek 2008, 46.

¹³ Marek 2008, 63-64; Žákovský 2014, 304-307, 313-315, 286.

¹⁴ Żygulski Jr. 1975, 140, Fig. 24; Marek 2006, 197, Fig. 5:a; Marek 2008, 57-58, 64, fig. 61:a-c; Marek and Michalak 2008, 453, Figs. 3, 4:a-d and 5:b; Ławrynowicz and Rychter 2012, 253-258, fig. 1-11.

¹⁵ Žákovský 2014, 304-307, 313-315, Figs. 257, 260, 266-267.

¹⁶ More on this subject Marek 2008, 57, 59;

The high pommels of the 'Moravian' type falchions were often coupled with the characteristic 'boat-shaped' crossguards. The crossguard of the falchion from Gdynia resembles most closely variant 4d according to Petr Žákovský's classification. It is characterised by a bulkier form and usually have distinctive features being the tips of the crossguards bearing resemblance to animal heads – primarily a calf/bull, a ram or a dragon.¹⁷ Among such specimens (variants 4d) from the territory of Poland is included a crossguard from the manor farm associated with the knightly seat in Suchynia, Krašník District, which functioned from the mid-14th century until the beginning of the second half of the 15th century; the above-mentioned falchion piece can be probably linked to its latest phase of operation.¹⁸ More examples of this crossguard variant are known from the territory of Czechia. These include primarily the fully-preserved falchion from Mohelnice near Šumperk.¹⁹ Furthermore, such crossguards are known from, among others, the relics of the knightly tower castle in Mstěnice (dated to the second half of the 15th century) and Kozlov castle, Třebíč District (dated to the second half of the 15th century).²⁰ In the territory of Slovakia two such elements were found in the area of the castle in Devín near Bratislava and one element was found in the Hungarian castle Visegrád on the bank of the Danube.²¹

Polish collections of weapons also include falchions with boat-shaped crossguards that differ from the discussed exhibit from Gdynia, such as the already mentioned specimens from Gorzów Śląski, Poręba Wielka, and the Polish Army Museum in Warsaw²² or the more recent find from Kostrzyn nad Odrą, Gorzów Wielkopolski District.²³

The additional protection for the hand in the falchion from Gdynia constitutes the "Werhnagel" mounted in the structure of the crossguard. It is a rather rare form which Petr Žákovský described as 'tongue-shaped', allocating it to varieties t_{10} and t_{10a} . It is characterised by a bend towards the tang (at different angles, depending on the artefact) and etching on its surface. In the territory of Poland, this variety is only represented by the

weapon described and a sabre of the Hungarian type from the 15th/16th century kept in the Castle Museum in Pszczyna.²⁴ However, this guard is visibly bulkier (closer to variety t_{10a}) and has different proportions than that of the falchion from Gdynia. In Czechia, such elements or crossguards have only been found in Moravia – elements found in the well in the village of Okřešice (Třebíč District), elements from the lost village of Skřipov (Břeclav District), and unprovenanced specimens housed in the museums in Brno and Olomouc. Furthermore, loose guards (unattached to the crossguard itself) were discovered in a forest near Kobeřice (Třebíč District) and in the lost village of Mstěnice (also in Třebíč District). These unattached guards are dated to the second half of the 15th century and the beginning of the 16th century.²⁵ From Hungary come primarily many early sabres with guards in this form, including those from the collection of weapons of the National Museum in Budapest.²⁶ Thus, the Hungarian origin of this type of crossguard elements is very probable.

Another matter is the marking depicted on the blade of the falchion from the collection of the Naval Museum in Gdynia. The majority of analogies to those marks come from blades of swords. One exception, however, is the falchion from Zborów, which bears on its blade a difficult to decipher mark inscribed in a round field. Only one other specimen, kept in the National Museum in Wrocław, has the letter 'S' inscribed in a circle punched on the tang.²⁷ In all other cases, markings – both of the letter 'S' and of a cross with forked arms – are placed on the flats of blades. In Polish collections, such specimens are housed in the Łowicz Museum (type XIIIa, I₁, 1b from the 14th century.) and the Nysa Museum (type XIIIa, I₁, 1 from the 13th/14th century). The latter sword, in particular, is very well preserved. According to legend, it was used to behead Duke Nicholas II of Opole in 1497. In both cases, these signs are believed to be either the marks of sword-making centres or the beginnings of devotional inscriptions.²⁸ This thesis may be confirmed by a sword from Husiná (Rimavská Sobota District) which on one side has a mark in the form of a cross in the central field and the letter 'S' in two fields on either side, and on the other

¹⁷ Michna 1997, 261; Žákovský 2012, 700-702, Fig. 7:a-g; Žákovský 2014, 353-354, Fig. 309: a-i.

¹⁸ Florek 2006, 213, 215, Fig. 1:5; Marek 2008, Figs. 62:f; Žákovský 2012, 701, Fig. 7:g.

¹⁹ Michna 1997, 260, Fig. 1:3; Žákovský 2012, 701, Figs. 7a, 19:c, 21:a; Žákovský 2014, 353, Fig. 309:a, cat. no. 99.

²⁰ Nekuda 1985, 141, Figs. 196:d, 197:g; Nekuda and Ustohal 2003, 224, Fig. 1:6; Žákovský 2012, 701, Figs. 7b-c, 24:e-f; Žákovský 2014, Fig. 309: b-c, cat. nos. 79, 111.

²¹ Žákovský 2012, 701, Fig. 7:e-f; Žákovský 2014, 353-354, Figs. 300:c and 309: e-f.

²² Głosek 1992; Marek 2006, 197, Fig. 5:a; Marek 2008, 57, Fig. 61:a-b; Žákovský 2012, 699-700, Fig. 6:a, c.

²³ Michalak and Socha 2019, 143-145, Figs. 2 and 3:1-4.

²⁴ Marek 2008, Fig. 37:a-b.

²⁵ Nekuda 1985, 143, Fig. 198:f, 199:f; Žákovský 2014, 441-446, tab. 60, Fig. 380: a-e, 386, cat. no. 60, 119, 144, 181, 222.

²⁶ E.g.: Szendrei 1898, 189-190, Fig. on p. 177, no. 512, 557; Kalmár 1971, 71, Fig. 124; Kovacs 2010, 73, Fig. 25.

²⁷ The blade of this sword bears a sign in the form of a Latin cross. It is associated with an unspecified German workshop, Głosek 1984, 49, 171, cat. no. 413, Tab. I:413.

²⁸ Głosek and Nadolski 1970, 43, cat. No 43, Table XII:37; Głosek 1973, 71; Głosek 1984, 160, 166, cat. nos. 280, 358, Tabl. XIII:280, XV:358; Marek 2008, 71, Fig. 86:b-d.



Fig. 5. Cutlery workshop. Balthasar Behem Codex, around 1505, after Ameisenowa 1961, Fig. 37.

side of the sword, there is the inscription ‘MVSEUMDNVS’ written in majuscule. That specimen (type XI?, D?, 1) is dated by A. Ruttkay and M. Aleksić to the 13th century, but M. Głosek believes that it was created later – in the first half of the 14th century.²⁹ In the case of another specimen from Slovakia, retrieved from the river Hron near the village of Kálna (Levice District) ‘S’ signs and a forked cross in a round field are accompanied by the inscriptions ‘RHAP’ and ‘VDGN’ (?) and a small cross and a heart, respectively. The Kálna sword (type XVIa, K, 5) is dated to the first half of the 14th century.³⁰ Marks in the form of a circle with the letter ‘S’ are also found in the combination with the inscription ‘SOSMENR-SOS’ on the blade of a 13th-century sword (type XII, A, 1) from Wolkow in Mecklenburg-Vorpommern, while on the other side of the blade there is a tendril ornament.³¹ Just signs, without inscriptions, are also

²⁹ Ruttkay 1975, 145, Fig. 13:3; Ruttkay 1976, 283; Głosek 1984, 117, 138, cat. no. 9, Tab. III:9; Aleksić 2007, 144, cat. no. 8.

³⁰ Ruttkay 1975, 148, Fig. 13:4; Ruttkay 1976, Fig. 26:a-b, 27:a-b, 28:7a-7b, 29:6a-6b; Głosek 1984, 117, 138, cat. no. 11, Tab. III:11; Aleksić 2007, 144, cat. no. 10, Pl. 1:4. The letters on the blade are relatively badly preserved, which raises reasonable concerns whether they were deciphered correctly.

³¹ Schoknecht 1969; Głosek 1984, 111-112, cat. no. 174, Fig. X:174. The inscription was interpreted as *Salvator Omnipotens Salvator Magnificus Eterne Noster Rex Salvator Omnipotens Salvator*. A similar sequence (SOS and OSO) is also found on the blade of the sword from Hořtice, Kroměříž District, see Hošek et al. 2019, 108-109, cat. no. 61, Pl. XVIII:61.

present on the blades of swords kept in museums in Slovakia (Šariš Museum, Bardějov), Czech Republic (e.g. Regional Museum Praha-východ, Nymburk Museum of Local Lore, Museum of the City of Brno, Broumov Museum, National Museum, Prague, Hluboká Castle and Švihov Castle), Hungary (National Museum, Budapest) and Germany (Regional Museum Demmin and Rüst-kammer, Dresden). It is also worth mentioning that the latter sword from Dresden, in addition to a cross, bears a sign representing a silhouette of a wolf.³² Such correlation is also found in the case of swords from the castle in Engelsberk (Zlín district) and the museum in Broumov.³³ In the literature on this subject, researchers have tried to associate the sign of a forked cross in a circle with Italian sword-making workshops, but Marian Głosek rightly claims that these signs should without a doubt be linked to various production centres. At the same time, he accepts the possibility that weapons signed in this manner were also produced in the Polish lands.³⁴

Summary

The presence of the above-mentioned markings in the form of the cross with forked arms on the blade of the falchion from the collection of the Naval Museum in Gdynia is predominantly evidence that it was manufactured in a renowned sword-making production centre, because, as in the case of double-edged falchions from Zborów or the Polish Army Museum in Warsaw,³⁵ we do not see any evidence or modification of the weapon or repairs to it, such as, for instance, the evidence of alteration recorded on the artefact from the Museum of Warmia and Masuria in Olsztyn.³⁶ Specimens from Zborów and the Polish Army Museum also have markings made with a non-ferrous metal. The mark in the form of the letter ‘S’ in a circle and the remains of a small cross (?) a few centimetres away from it, both visible on the opposite flat of the falchion discussed in this paper, may be the evidence that originally there was also an inscription (perhaps an invocation) or other markings. Symbols in the form of a forked cross can be found on swords as early as the 13th century and continue to occur up to the end of the 15th century.³⁷ Thus, the falchion from the collection of the Naval Museum in Gdynia has all

³² Głosek 1984, 55, cat. nos. 34, 76, 94, 208, 211, 483, 484, 486, Figs. IV: 34, V: 76, VI:94, XII: 208, 211, XIX: 483, 483, 486; Hošek et al. 2019, 10, 39, 52, 147, 282, 285, 297, Pl. XVII-XXI.

³³ Hošek et al. 2019, 101, cat. no. 52, 285, Pl. XVII:52, XXI:285.

³⁴ Głosek 1973, 127-128; Głosek 1984, 55-56 – there older literature.

³⁵ See Marek 2008, 46.

³⁶ See Betiuk et al.

³⁷ See e.g. Głosek 1984, 55; Hošek et al. 2019, cat. nos. 52, 285, 297.

the features that allow us to date it to the second half of the 15th century. The possibility that double-edged falchions were also manufactured by sword-making workshops is evidenced by the written records that tell of the competition and disputes between swordsmiths and cutlers. The attempted solutions of such disputes were resolutions adopted in, *inter alia*, Krakow in 1358 and 1536, Poznań in 1495, and Paris in 1486. These conflicts became particularly heated at the end of the 15th century, when sword makers started to lose their share of the market due to the growing popularity of the sabre among the Polish armed forces, which – being a single-edged weapon – was also produced by cutlers. As a result of their protests, resolutions passed by the Krakow council in 1503 and 1505 allowed the swordsmiths to produce *alle messer, tilecz, korden, multhan und schebeln aldt und neue phegen und poliren*. Jan Szymczak believes that the division of specialisations between the two professions came down to the production of long and double-edged weapons by the swordsmiths, and shorter and single-edged weapons by cutlers. However, over time, sword makers monopolised the manufacturing of all bladed weapons, while cutlers were permitted to make only kitchen knives³⁸ (Fig. 5).

The question of how the discussed artefact may have found its way to the collection of the Naval Museum in Gdynia is a difficult one to answer. Of course, we cannot rule out the possibility that it was discovered in Pomerania and therefore may be associated with battles fought in this area, in particular military actions with the participation of mercenaries from the Kingdom of Bohemia (predominantly Silesians and Moravians). There are two options to consider: the military raid of the ‘Sirotci’ (‘orphans’) on the lands of the Teutonic Order in Neumark and Prussia in 1433, and the battles associated with the Thirteen Years’ War fought between the Kingdom of Poland and the Teutonic Order in the

years 1454–1466. The first possibility can be dismissed because of the dating of the discussed weapon. The second option seems more probable. In this context, of particular importance are the intensive military actions conducted by the mercenary forces led by Piotr Dunin against the army of Fritz Raveneck and Kaspar Nostyc, culminating with the Battle of Świecino in 1462 and the later combats near Gdańsk (Danzig). The discussed falchion could have been lost in one of these skirmishes.³⁹ Being a loose find, it may have been taken to the local museum storage. After the end of WWII, the Polish Central Museum Archives of Artistic Collections (*Polska Centralna Zbiornica Muzealna Zbiorów Artystycznych*) operated in Gdańsk-Oliwa and Sopot for the Gdańsk Voivodeship. It was a public administrative institution established in 1945 by the Voivodeship Administrative Office in Gdańsk on the orders of the Ministry of Culture and Art and the Head Directorate for Museums and the Protection of Monuments. Its aim was to collect artefacts of artistic value from the territory of the Gdańsk voivodeship. It had its main headquarters in Sopot (24 Abrahama St.) and in Gdańsk-Oliwa in the abbey granary at the site of the former Cistercian monastery (12 Opacka St.). It is worth noting that from 1928 the abbey was the seat of the ‘Oliwa museum,’ the National Regional Museum of the History of Gdańsk (*Staatliches Landesmuseum für Danziger Geschichte*), in which during the war the German Office for Heritage Protection had stored artefacts evacuated from Gdańsk. The museum stores in the two above-mentioned locations (Sopot and Oliwa) also housed artefacts collected from the nearby administrative districts.⁴⁰ Therefore, it is possible that the falchion that is currently kept in the Naval Museum comes from the area of Gdańsk or, more broadly, the Gdańsk Pomerania region (Pomerelia).

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³⁸ Szymczak 1989, 49-53; Szymczak 1990, 262-263; Szymczak 2017, 98-100.

³⁹ E.g. Biskup 1967, 622-628 et al.; Nowakowski 2005, 226-227, Fig. 156.

⁴⁰ See Kamińska 2018, 114; Kamińska 2019, 257.

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