POLISH ACADEMY OF ARTS AND SCIENCES

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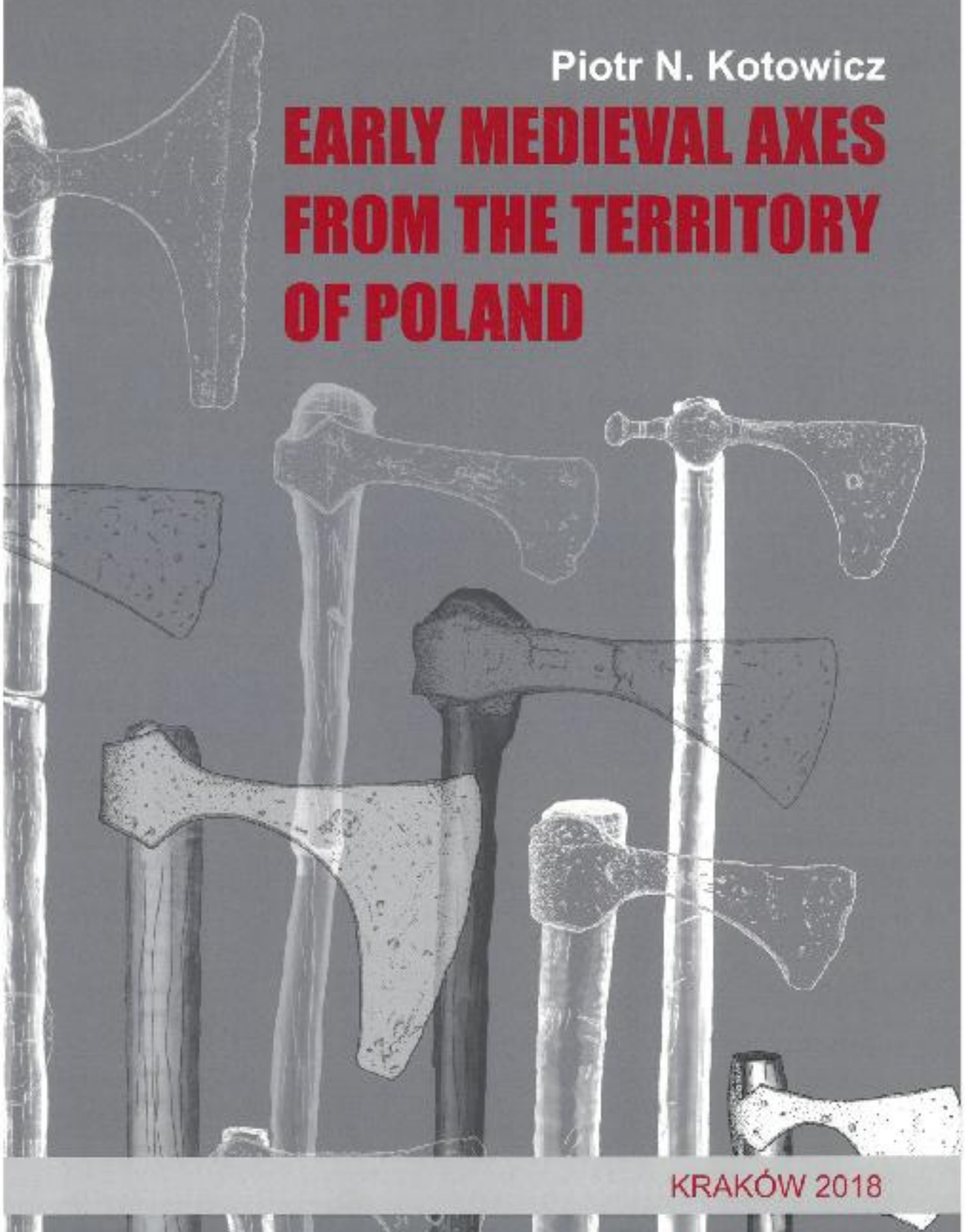
EARLY MEDIEVAL AXES FROM THE TERRITORY OF POLAND



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1. Introduction

The subject of this book are early medieval axes from the territory of Poland. The primary basis for the analysis was the assemblage of 891 axes and axe heads (**Fig. 1**)[1], whose catalogue was recently published in a separate monograph[2] (Kotowicz 2014). The discussion is supplemented with the presentation of a modest collection of the available written and iconographic sources.

This book is an abbreviated version of my doctoral dissertation devoted to the mentioned issues. It would not be possible without the help and kindness of many people. First of all, I would like to express my utmost gratitude to my Doctoral Supervisor Professor Michał Parczewski, whose immense experience and valuable comments allowed this book to take its present shape. I could also always count on friendly advice from my colleagues Arkadiusz Michalak, Ph.D and Grzegorz Żabiński, Ph.D. Furthermore, I am particularly grateful to Professor Jacek Poleski, who made the publication of the book within the 'Moravia Magna' series possible and Director of Historical Museum in Sanok, Mr Wiesław Banach, who subsidised the translation of this book into English. Last but not least, I cannot forget about my loved ones: my mother Halina, my wife Iwona and son Przemysław, as without their encouragement and understanding this book would never have been written.

1.1. Territorial and chronological scope of the study

The timeframe of this study encompasses the Early Middle Ages, that is to say a time span which in the territory of Poland closes within a relatively long period from the 5th/6th century until the mid-13th century. Its beginnings are associated with the Slavic expansion to the territory of Poland at the turn of the 5th and 6th centuries (cf. recently Parczewski 2000, 416; 2011, 97; Szymański 2000, 357). It followed through the development of a geographically extensive and initially homogenous unit known to archaeologists as the Prague culture (early Slavic phase: 6th-7th centuries) (Parczewski 1988; 2002), within which smaller tribal organisms later crystallised (tribal phase: 8th-10th centuries) (cf. e.g. Parczewski 1991, 36-38; Jaworski 2005a, 301-313; Buko 2005, 81-89). Another important stage came with the rise and development of the early Piast monarchy (from the first half of 10th to mid-12th century – cf. Kara 2009), which fell as a result of internal fragmentation after Duke Bolesław III had divided the country between his sons. The upper chronological limit is marked by a date of around 1250, in archaeological literature accepted as the beginning of the Late Medieval Period. Though conventional, the date is connected with a series of important events, the most influential of which was the first Mongol invasion of Poland (1241). It also coincides with the start of intensive urbanisation processes, which in Central Europe were connected with German colonisation and which brought about changes in many aspects of material culture, including for example pottery (cf. e.g. Dzieduszycki 1998; Poleski 2004, 9). The 13th century also saw huge changes in weaponry (Nowakowski 1998), which affected axes as well. In the following

[1] Catalogue and full set of plates with representations of all avalaible axes and axe heads are on the attached CD-ROM.

[2] Between the completion of the catalogue (June 2011) and its publication (2014) as well as between 2014 and 2017 several dozen new finds emerged (cf. Ligoda, Podgórska-Czopek 2011, cat. 83.5; Okoński 2011, 124; *Czerwień...*2012, 187, Pl. II.8:1-4, II.9:1-4; Kolenda, Chrzan 2012, 287-288, 295, Fig. 12:7, 14:5-5a; Pawlak 2013, 258-260, Fig. 21:4, 55:1a-b, 59:1; Wrzesiński 2013, 35, note 1; Janowski 2014, 37, cat. 54; Kaźmierczak 2014, 244-249, Fig. 6.118:b, 6.119:a-e, 6.120:a; Poleski 2014, Fig. 90, cat. 40; Stasiak, Grygiel 2014a, 185, 198, Fig. 111:3, 121:2-2a; Stasiak, Grygiel 2014b, 480, Fig. 284:11-11a; Andrałojć 2015, 83-86, 87, 89, Fig. 9, Pl. 14:a; Kara 2015, 187-191, Fig. 9.4; Bajka, Florek, Kotowicz 2016; Chudziak, Kaźmierczak, Niegowski 2016, 37-38, 72, 90, 110-111, 140, 151, Fig. 19:a-c,e, 56:c, 74:a-e, 95:a-f, 144:j, 160:h,j; Kotowicz, Miechowicz 2016; Wołoszyn et al. 2017, 38-39). I also realised that I had omitted a few specimens already known in literature (Paulsen 1939, 48, Abb. 20:5; 1956a, 63, Abb. 24:e; Domański 1983, 79; Abramów 2010, 139-141, Fig. 6:3; Pydyn 2010, 32, Fig. 8:c) and artefacts preserved in Polish collections (cf. Haftka, Wadyl 2015, 158-159, Fig. 2:f; Brzostowicz 2016, 31). All these finds could not be fully exploited in the analysis due to technical reasons.

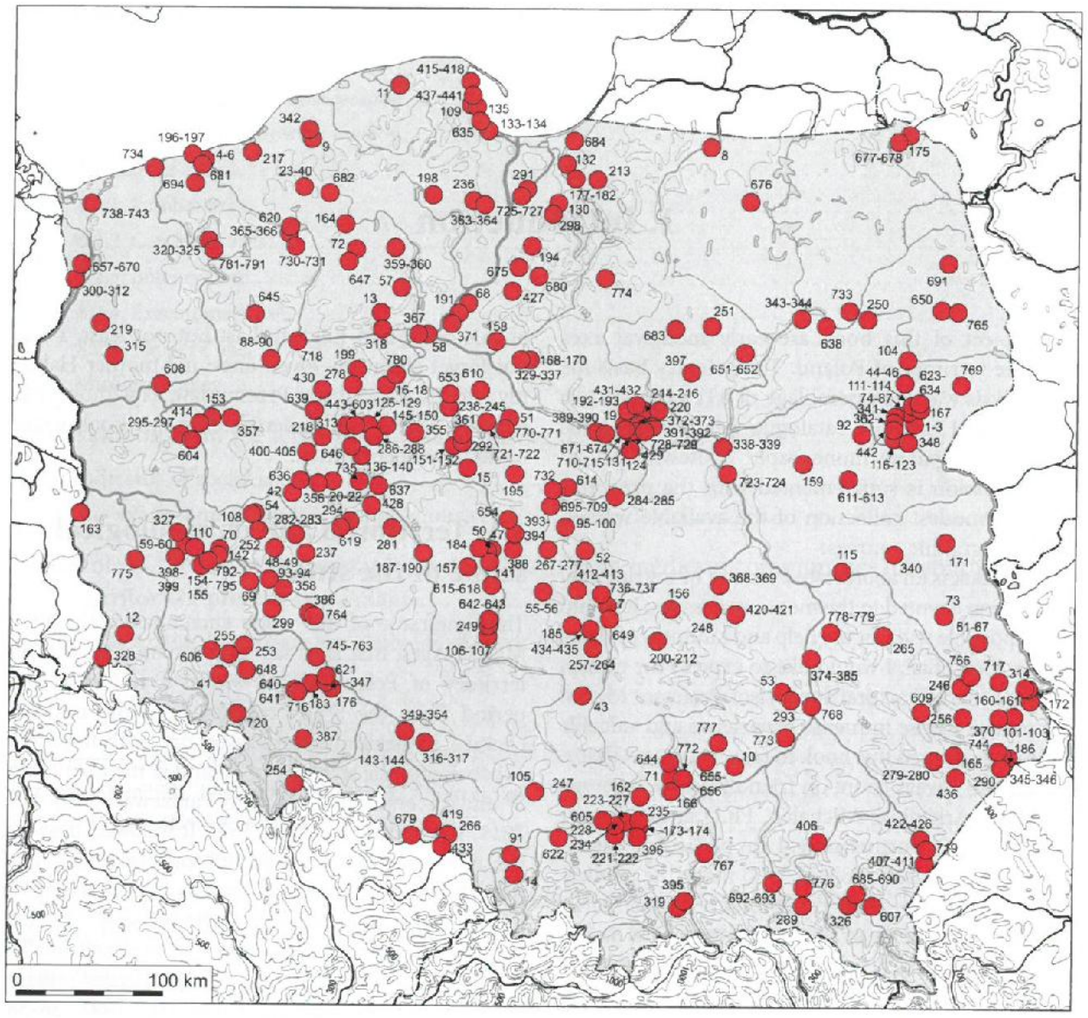


Fig. 1. Distribution of the finds of Early Medieval axes and axe heads in Poland.

centuries they represent forms completely different than before (cf. Głosek 1996).

The artefacts included in this study originate from the territory within the current political borders of Poland. Such an approach, commonly used (cf. e.g. Hilczerówna 1956; Świętosławski 1990; analogically Głosek 1996, 14), stems from frequent changes of Polish borders between mid-10th and mid-13th century, not to mention the earlier period when relatively loose tribal structures functioned whose territorial ranges are very difficult to reconstruct. For this reason, within the geographical scope of the book one can find territories which early medieval Poland controlled only temporarily (e.g. Pomerania, Silesia, or the area known as Grody Czerwieńskie /Cherven Towns/) as well as those which were never part of it (former East Prussia).

1.2. Brief history of research

The earliest interest in early medieval axes can be traced back to the second half of the 19th and the early 20th century, a period when Poland did not exist on the political map of Europe. This was connected with the growing activity of Polish, German, and Russian amateur archaeologists, and their pioneering excavations at sites, mostly inhumation cemeteries, from the discussed period, first of all in the Podlasie (e.g. Avenarius 1890, 6, 8, Fig. 1-2) and Płock Masovia regions (Tarczyński 1900, 21, 23-24, Pl. II:4,7; 1901, 31; Rutkowski 1906a, 39, 41-42, Pl. I and III-IV; 1906b, 15, Fig. 6; 1906c). When Poland regained independence after WWI, the newly formed Polish archaeological centres initiated much more professional

research on the sites of the highest historical importance (such as Poznań and Gniezno). A considerable part of the territory currently within Polish borders (Silesia, Land of Lubusz, Pomerania, East Prussia) at that time belonged to Germany, where research was carried out with no less intensity. German scholars, especially after Adolf Hitler rose to power, launched a large-scale propaganda action emphasising the role of the Vikings in the formation of Slavic states, in an attempt to justify the German expansion to the east (e.g. Langenheim 1933; 1936; 1939a; Jahnkuhn 1934; Petersen 1936; Jänischen 1938). The approach found its crowning in the famous monograph by P. Paulsen entitled 'Axt und Kreuz bei den Nordgermannen', published in Berlin in 1939 (Paulsen 1939), in which several specimens from the territory of present-day Poland were included. The tendency continued during WWII as well (Langenheim 1941).

Immediately after the war, when Poland regained 'sovereign statehood' as a Soviet satellite, archaeological research received a major boost associated with the approaching 1000th anniversary of the Polish state. In connection with this, excavations were launched or resumed at sites having crucial importance for the formation of the first Piast monarchy, which resulted in the discovery of numerous axes. The explosive growth of the source basis called for synthetic recapitulation of many issues pertaining to the early medieval material culture. In arms and armour research, this gave birth to a monographic study of Polish weaponry of the 10th-12th centuries by A. Nadolski, in which he proposed the first originally Polish typology of early medieval axes and hammer axes from the area occupied by 'Polish tribes', taking into account regional differences but also the contribution of external factors in the evolution of particular types (Nadolski 1954, 38-47; see also Żak 1954). The progress in research opened new opportunities of specialist analyses, in that time mostly metallographic ones. An immense role was played here by J. Piaskowski, who not only popularised research procedures appropriate for iron artefacts (cf. Piaskowski 1957), but also authored many important publications, including analyses of axe heads (e.g. Piaskowski 1959a, 115-118).

After the mid-1960s, the focus of interest shifted towards more and more commonly discovered late medieval weapons, hence the last 25 years of the People's Republic of Poland did not bring any publication on weapons that could equal Nadolski's monograph of 1954. On the other hand, however, this was a period when many early medieval sites were excavated, which resulted in the discovery, among other objects, of axe heads. Axes became an important element of synthetic studies (Zoll-Adamikowa 1966b; 1971; 1979; Żak 1968; Wachowski 1975; 1981; 1983), but there were also papers published in which individual finds were analysed in more detail, usually against a comparative background (Haftka 1971; Sułowska 1977; Zaitz 1988; 1990).

After the fall of communism in 1989, Polish science embarked upon a new path. During the last 29 years, thanks to open-area excavations (e.g. those preceding the construction of motorways) and multi-year projects, the source basis enriched with more than 250 new finds, both axe heads and complete axes (cf. e.g. Tokarski 2000, 78-84, Pl. I-V; Chudziak, Kaźmierczak, Niegowski 2011). Among them was a distinct group of early medieval axes discovered during the exploration of a settlement complex at Ostrów Lednicki (cf. Kotowicz 2013a; Kotowicz, Sankiewicz 2013). The last twenty years also saw a noticeable rise in the number of publications devoted to axes, including both synthetic works and typical source studies (Kara 1991; 1992; Maciukiewicz-Czarnecka 1992; Wachowski 1992; 2001a; Nowakowski 1998; Tokarski 1999; 2000, 78-84, Pl. I-V; Górecki 2001a, 136-142, Fig. 84-87; 2001b, 53-60, Fig. 6-9; Kittel 2002, 178-180; Ławrynowicz, Strzyż 2003, 261-263; Kurasiński 2005a; Tereszczuk 2005, 133, 135, Pl. I; 2007; Kotowicz, Świątek 2006; Woźniak 2006; Drozd, Janowski 2007a; Kulawczuk, Lis 2007; Wrzesiński, Wrzesińska 2007; Borowczak 2008; Góra, Kotowicz 2008-2009; Kotowicz 2008a; 2009; 2011; 2012; 2013a; 2013b; Janowski 2010; Konczewska, Konczewski 2010; Chudziak, Kaźmierczak, Niegowski 2011; Kuczkowski 2011; Świątkiewicz 2011; Wrzesiński 2011; 2013; Kurasiński, Skóra 2012a, 44-49; 2012b, 77-81; Głosek 2014). Furthermore, the enhanced analyses of artefacts were included in several important studies addressing particular regions of early medieval Poland (Poleski 1992, 16-17; Dulinicz 2001, 98; Kordala 2006, 140-141; Dzik 2015a, 234-236). Axes were also addressed in two regional monographs of early medieval weaponry in Poland, published for Western Pomerania (Świątkiewicz 2002, 52-60, Pl. XII-XIV) and Lesser Poland (Strzyż 2006; cf. also Kotowicz, Michalak 2007-2008, 379-382). Apart from studies presenting axe heads themselves, a much greater interest has been shown in recent years for the technology of their manufacture, sometimes analysed already using new methods such as computer tomography for instance (cf. e.g. Ginalski 1997, 235; Klimek, Kurasiński, Skóra 2013, 30-32; Kucypera, Rybka 2013). Another related issue, although only occasionally addressed

or a bearded axe ('brád-æx') (Bosworth, Toller 1898, 119; Hessels 1906, 98).

2.2. Iconographic sources

Early Medieval art abounds in numerous and diversified representations of axes. They appear in sculpture and relief, in frescos, mosaics, illuminations, and in applied art such as for example tapestry. Apart from the artefacts themselves, iconography is the most important source allowing for reconstructing not only axe's shape and length[17] but also its function (cf. e.g. Mann 1957, 65; Hoffmeyer 1966, 111-112; Nicolle 1980, 102; 1999a; 1999b; Wilson 1985, 225; 2004, 225).

Analysing the representations of Early Medieval axes one can distinguish three main thematic groups. The first one, most numerous, are mythological or religious scenes, referring primarily to the events described in the Old and New Testament, but sometimes featuring characters originating from Pagan beliefs as well. The second group are axe representations on pieces of art documenting historic events (Bayeux Tapestry). To a certain degree, one could also include all hagiographic sources in this group (excluding their legendary aspects). The third, perhaps least numerous group are iconographic sources of didactic nature. Here belong, for example, Bestiaries or Calendars.

Axes are represented in iconography in various ways. Usually they are rendered rather schematically, with a straight haft on which an axe head with a narrow or broad blade (depending on the case) is attached, while secondary details are rarely marked (cf. e.g. Skubiszewski 1995, Pl. XII:3). Within such a pattern the axe representations known from the territory of Poland fit perfectly. Only two such iconographic sources are known today, in which five axe representations can be found.

The most quoted monument featuring an axe in the context of the events that took place in what is now Poland are the so-called Gniezno Doors from the Gniezno Cathedral in Greater Poland (cf. La Baume 1942; Nadolski 1954, 36-37; *Drzwi Gnieźnieńskie...* 1956, photo. 65-66; Kazakevičius 1996, 234). These bronze cast doors were probably created by artists from the Mosan circle in the second half of the 12th century (Świechowski 2004, 322), and are decorated with scenes from the life of St Adalbert. Among them, in quarter XIV (**Fig. 3:1**), is the scene of Adalbert's martyrdom during his mission to the Prussians (Nadolski 1954, 36; Karwasińska 1956, 25). In the hand of a pagan Prussian cutting the saint's head off there appears an axe on a short haft (Nadolski 1954, 37) with a very broad, symmetrical blade terminating in a well-pronounced beard with a hook-like protrusion. The details of the socket are rendered quite schematically – one could risk claiming that it was not distinguished or that the butt was crowned with a rather sturdy cap. Small protrusions/steps can also be seen at the transition between the socket and the neck (cf. La Baume 1942, Fig. 12). Thus, it surely cannot be type M in Petersen's classification, as was suggested by V. Kazakevičius (1996, 234; cf. also Kittel 2002, 160, 180, Fig. 3), nor type IV according to A. N. Kirpichnikov, as V. Kulakov argued (Kulakov 1991/1992, 119, Fig. 3:4). It turns out that precise analogies for this artefact are lacking. However, this is not a fantastical representation – the hook-like protrusion on the axe's beard allows us to place the object's origins somewhere in the broadly understood northern part of Eastern Europe (La Baume 1942, 38-39).

Scenes depicting beheading with an axe are extremely rare in Early Medieval iconography. In fact, the only analogy I know about is a representation featuring in 'Psalterium Beatae Elisabeth' dated to 1200-1217, kept in the collection of Museo Archeologico Nazionale di Cividale in Friuli, Italy (Ms CXXXVII, fol. 6r). It shows St. Alphege, bishop of Canterbury, kneeling by the altar and holding in his hands his own, blood-stained skull, while a torturer standing over the bishop keeps on his shoulder an axe provided with a relatively short haft but having an exaggerated, 'penannular' blade (Nicolle 1999a, Fig. 471:d).

Other representations can be found at the wall of a chapel in the Basilica of the Annunciation in Czerwińsk in Masovia. The church is believed to have been built in the first half of the 12th century (Świechowski 1982, 252), but the frescos depicting Old Testament scenes come only from the first half of the 13th century (Mroczko 1972, 36-37, photo. 28; Świechowski 2004, 272), even though some scholars move their chronology to after 1250 (Dutkiewicz 1966, 278-279, Fig. 10-11). The axes in question (four representations), feature in the scene of 'Cutting trees for Noah's Ark' (**Fig. 3:2**). All of them are set on short hafts kept alternatively in one or both hands, and their heads have broad, asymmetric blades with undistinguished beards. The sockets are

[17] However, one should not forget about frequent simplifications resulting either from the lack of knowledge of the authors or from them ignoring the details of axe construction considered unimportant for the artistic message.

Fig. 3. Axes in Early Medieval iconographic sources from Poland: 1 – *Martyrdom of St Adalbert*, Gniezno Doors, Gniezno Cathedral, second half of the 12th century; 2 – *Cutting trees for Noah's Ark*, Basilica of the Annunciation in Czerwińsk, first half of the 13th century. (1 – photo P. N. Kotowicz; 2 – photo D. Szuwalski).

As multi-element artefacts we can also interpret eight of the fragmentarily preserved axe heads. This group includes objects welded from multiple layers of iron (cat. 672) or steel (cat. 197) (Łosiński 1959, 19, 35, Fig. 10:d, 23:a-b; Piaskowski 1967, 379-380, 395, Fig. 7:8), combinations of iron and steel were also recorded (cat. 235, 387; Piaskowski 1962, 19-20, Pl. I:9, II:9, Fig. 1:i, 2:i; 1984, 58-59, Table 4:17, Fig. 5:l), often with the addition of hardening inserts or overlays (cat. 703, 705-706; Piaskowski 1959b, 47, 51, Pl. XI:23-25, Fig. 36:23-25, 37:23-25; 1959c, 106, Fig. 10:a-c), some of which represent traces of blade repairs (Strzyżewski 2007, 527 – as a so-called regenerative overlay).

3.1.3. Carburisation and thermal treatment

Once an axe head had been forged, early medieval blacksmiths applied a range of techniques to give it the desired properties and enhance its utilitarian values. The most common treatments, reflected in the structure of the metal, are cementation, i.e. (proper) carburisation, and thermal processing – quenching and tempering. Sometimes, however, traces of the so-called primary carburisation were recorded (cat. 18, 227) which, according to some researchers, resulted from inaccurate separation of the steel and iron parts of a smelted bloom (Piaskowski 1966-67a, 209-210; 1976, 192).

The process of cementation (i.e. proper carburisation) recorded in the case of a few axe heads (cat. 197, 225, 685; Zbierski 1955, 315; Łosiński 1959, 19, 35; Piaskowski 1962, 19-20; Ginalski 1997, 235; Stępiński 1997, 12), involved the deliberate heating of the metal in contact with carburising substances, in a temperature of about 900-950°C. However, the treatment was not applied to whole objects but only to their working edges, blades in particular (Łosiński 1959, 45; Piaskowski 1981, 186; Gurin 1982, 85; Peets 2003c, 115). Metallographic observations suggest that carburisation was carried out mainly by intentionally heating an object in a smithing hearth (cat. 55; Piaskowski 1959b, 89). The carburisation could be applied to one (cat. 270-271, 273, 275) or both sides (cat. 272) and encompassed blade and sometimes also socket (Piaskowski 1959a, p. 116-117). A procedure applied to one of the axe heads from Lutomiersk (cat. 276; ibid., 116-117) included deep carburisation of the blade followed by decarburisation at some distance from the blade, which was intended to increase the impact resistance. Such a treatment was commonplace in the Early Middle Ages, in Central and Eastern Europe (Gurin 1987, 56, 58; Mihok, Pribulová, Mačala 1995, 183-184; Voznesenskaia 2001, 124, Fig. 2/3212-3113; Peets 2007, 176; Zav'ialov 2005, 119, Fig. 3:9838; Košta, Hošek 2008, 28) as well as for example in South-Eastern Europe (Głowacki, Przygodzka 1973, 287, 289, Pl. XXXII-XXXIII; Mamzer 1978, 233).

The process of thermal treatment, which followed the carburisation, allowed the hardness of the working edges to be greatly increased. It involved heating an object to a temperature of 950-1000°C, and next plunging it into a cooling agent (e.g. oil, water). The object was then taken out of the liquid and the working edge was allowed to heat to a specified temperature (tempering) from the heat preserved in the part which had not been submerged in the cooling substance (Łosiński 1959, 45; Piaskowski 1981, 181; Gurin 1982, 85-87). In the case of two axe heads from Lutomiersk (cat. 271, 275), quenching and subsequent tempering at a relatively high temperature (approx. 680°C) was identified (Piaskowski 1959a, 116-117), while the heads of the axes from Sanok-Biała Góra (cat. 607) and Trepcza (cat. 686) were heated to above 727°C and then dipped in a cooling agent, with the quenching limited to blades only (Ginalski 1997, 235; Stępiński 1997, 20; Biborski, Stępiński, undated). With regard to the artefacts from Cracow-Mogiła (Nowa Huta) (cat. 225), the blade was quenched in an agent marked by poor thermal conductivity (i.e. poorly cooling), perhaps by driving into moist soil. A less likely, although not completely excluded, alternative is that quenching with tempering in a relatively high temperature was also applied here (Piaskowski 1962, 19-20), a treatment known from two other cases (cat. 197, 703; Łosiński 1959, 35; Piaskowski 1959b, 51). The axe head from Piotrowice Polskie-Muszkowice (cat. 387) was probably subjected to typical quenching in water (Piaskowski 1984, 58-59). Traces resulting possibly from thermal treatment were recorded on the hammer axe head from Żmijowiska (cat. 778) (Piaskowski 1990, 267, 270), and in the case of another artefact, from Lutomiersk (cat. 274), a steel, asymmetrical overlay was welded on, and then the edge was rapidly cooled (in the air) (Piaskowski 1959a, 117). In the Early Middle Ages, thermal treatment was commonly applied in making axe heads in various regions (cf. Kolchin 1953, 107-108, 146; Głowacki, Przygodzka 1973, 287, 289, Pl. XXXII-XXXIII; Mamzer 1978, 233; Gurin 1987, 56-59; Mihok, Pribulová, Mačala 1995, 168, 184; Voznesenskaia 2001, 124; Peets 2003c, 113-114).

3.2. Ornamentation techniques and motifs

In certain exceptional cases, already after an axe head was forged, a need emerged to decorate its surface and give it a more individual character. There were several techniques used for axe head decoration in early medieval Europe, and they built on the experiences of previous epochs (Kieferling 1994, 353, Fig. 14). One can distinguish two basic categories here: shaping-decorating and decorating techniques. Both can be further divided in terms of technological processes into hot and cold techniques. Among the former, apart from hot forging and casting, particular attention should be given to cold forging, i.e. hammering. The second category is represented by both hot techniques (e.g. niello, enamel, gilding) and, more popular, cold ones, such as pointillé, engraving, and inlay (Siedlecka 1964, 3; Gradowski 1980).

A wide range of ornamental motifs were used, from geometric ones and inscriptions, to floral, to anthropo- and zoomorphic, to symbolic. The techniques and motifs were used in various combinations, which often produced impressive results. The prestige value of such axe heads must have been high, as they are mentioned, albeit rarely, in written sources. Gold or silver decorated axes appear for example in Icelandic sagas (*Egil's Saga* 38; *Laxdaela saga* 29; see also Paulsen 1939, 15, 138, 222; Oakeshott 1960, 154; Kotowicz 2011, 115; cf. also Grotowski 2011, 313).

3.2.1. Ornamentation techniques

From the territory of Poland we know of a quite significant number of axe and hammer axe heads, namely 91, bearing traces of the application of various ornamentation techniques (Table 2 – see CD ROM; **Fig. 6**). Among the shaping-decorating techniques one should mention hot forging and hammering, and the identified decorating techniques included pointillé, engraving, inlay, incising and punching. With regard to the latter technique, there has been a dispute, as yet unresolved (cf. Chapter 7.3. below), whether the small apertures made using this method were decoration or had some utilitarian purpose.

3.2.1a. Hot forging

An example of the application of hot forging to decorate early medieval axe heads from Poland are small protrusions formed on the lower back part of a differentiated beard (cf. Paulsen 1939, 47-51; 1956a, Fig. 23). They usually have the form of a polygon or semicircle, less often resemble a triangle or are hook-shaped. Sometimes, however, they were given a more decorative shape – a three-leaf palmette or fleur-de-lis, or a 'tongue' (Paulsen 1939, Fig. 20:5-6,8-9, 90; Kivikoski 1973, Pl. 102:881; Kochkurina 1982, Fig. 32:3; Thunmark-Nylén 1995, Fig. 75:15, 222:15). Admittedly, some other explanations of the mentioned protrusions have been proposed, but as they have not been supported with any evidence they cannot be taken seriously. For example, V. Kulakov argued that the protrusions could have been made to catch the axe's beard on the broadside of an enemy ship when boarding it more easily, or to facilitate pulling an enemy down from a horse (Kulakov 1991-1992, 120). However, these assumptions are obviously wrong given the delicate form of the protrusions. Equally unreliable is the hypothesis proposed by K. Aścik, who believed the 'tongues' were made to extend the cutting edge (Aścik 1968, 224).

Similar elements occasionally occurred during the turn of the Roman Period and Early Middle Ages in France, where some axe heads with fan-shaped blades were provided with two protrusions (Hübener 1980, Fig. 25:231, 26:239-240), and they can also be found there later (cf. Colardelle, Verdel 1991, Fig. 25). However, they seem to represent a local, isolated example and have nothing in common (except for the shape) with the artefacts from Northern and Eastern Europe. The latter appeared in the 10th century but were mainly widespread in the 11th-12th centuries (Paulsen 1939, Fig. 20:1,4,6-7, 29:5, 30:3; La Baume 1942, Fig. 13-14; Vilsone 1952, 129, Fig. 46; Voronin 1954, Fig. 86:2-3; Kolchin 1959, Fig. 9:2, 10:2-3; Jaskanis 1962, Pl. XVIII:6; Atgāzis 1964, Fig. 4:3, 6:2, 7:2,4,6; Kivikoski 1973, Pl. 102:881; Tõnisson 1974, Pl. II:1; Kochkurina 1982, 143, Fig. 32:3; Mandel 1986, Pl. X:5; 2003; Makarov, Beliakov 1989, Fig. 2:11; Laskavy 1992, Fig. 2:19, 3:11; Artem'ev 1994, Fig. 2-3; Zaiats 1995, 61, Fig. 39:12; Prishchepa, Nikol'chenko 1996, 104, Fig. 57:2, 66:4; Kazakevičius 1998, Fig. 22, 45; Kviatkovskaia 1998, photo 32:1, Fig. 35:4; Kudriashov, Bashen'kin 1999, Fig. 4:14; Gintautaitė-Butėnienė, Butėnas 2002, Fig. 16:3; Kulakov 2004, Fig. 85:1; Andrzejowski et al. 2005, Pl. 6:d, 26:d,g; Peets 2007, Fig. 6:1; Plavinski 2007, Fig. 1:1-2,5, 2:5, 3:1-2,5), and continued into the Late Middle Ages (cf. e.g. Kuncienė 1979, Fig. 15:7; Artem'ev 1994, Fig. 4:3; Ters'kiĭ 2002, Fig. 28:1-2; Birulina, Kuśnierz 2007, Fig. 2).

In this respect, the territory of Poland, from where 20 axe heads with protrusions are known, belongs to the north-eastern cultural circle (cf. Table 2 – see CD ROM). The oldest example with protrusions is

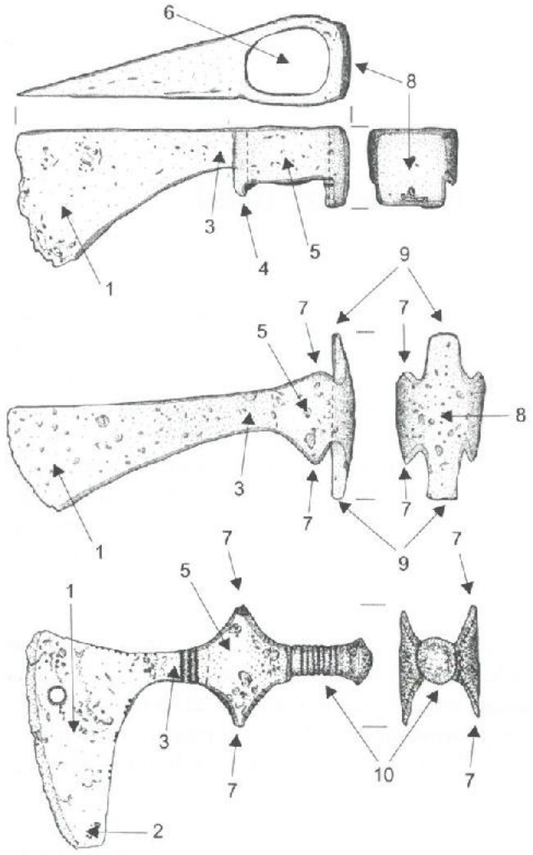


Fig. 8. Axe head construction: 1 – blade; 2 – beard; 3 – neck; 4 – 'spike'; 5 – socket; 6 – haft hole; 7 – lugs; 8 – butt; 9 – cap; 10 – hammer.

Along with classic typologies created in the presented manner there also appeared more developed classifications of an open nature. The first scholar to make such an attempt was A. Bartošková (1986, 5, 7, Fig. 1) who applied a three-tier division of particular types, with the shape of blade as the primary criterion, followed by the differences in sockets and butts. Despite the credit she undoubtedly deserves for having been the first to analyse separately all the three axe head elements that show the largest variation (blade, socket, butt), her attempt cannot be deemed satisfactory as it lacked internal coherence. The allegedly corresponding subtypes and variants in particular typological groups in fact do not fit each other and can actually be seen only as an improvised attempt at material segregation. A number of doubts can be raised as well with respect to other, similar typological propositions (Sharifullin 1985, 36-50, Pl. X; Izmaĭlov 1997, 77-95, Fig. 44-64; Ĭotov 2004, 88-101, Pl. 14; Kochkarov 2008, 64-73, Pl. XXXI-XXXVI).

Before I will move to the presentation of the new classification, a few words need to be said about the nomenclature used here with regard to the analysis of axe heads. It relies first of all on what was proposed by A. Nadolski (1951, Fig. 2a), with some minor supplementations (**Fig. 8**). All the artefacts of our interest are comprised of three main parts: blade, socket, and butt. Blades can take various shapes, but we are usually dealing with two types: without a beard and bearded. However, contrary to Nadolski and other scholars, I apply the term beard to all the specimens in which the blade is cut (flat or arch-like) in the lower part and thus differentiated.[34] Sometimes, also the upper part of the blade is cut in a similar manner (cf. cat. 523). Through the neck, which means the part of the blade which is the narrowest in the lateral view, the blade passes into the socket, which surrounds the hole for attaching the haft. The sockets are often provided with various additional elements, important for determining the typological attribution of the artefact. One should mention here first of all the lugs – triangular projections which served to stabilise the axe head on the haft. In some axes, an additional 'spike' also occurs on the transition between the neck and the socket. The opening in the socket can be round, oval, square, triangular, or, similar to the latter, almond-shaped. The butt[35], that is to say the back side of the axe head, reveals an equally complex construction. Firstly, it can occur in three variants when seen in top view: rounded, flat, and polygonal. Secondly, analogically to the socket, the butt can sometimes feature additional elements reinforcing the grip of the haft, for example the bottom, top, or two-sided cap. Thirdly, the butt can terminate in a differentiated hammer in a variety of shapes, e.g. bottlecap-shaped, button-shaped, or cap-shaped. In such a case we are dealing with the head of a hammer axe.[36]

[34] For A. Nadolski and his continuators the bearded axes also included all the specimens with assymetrical blades extending downwards, whose lower edge met the cutting edge at a right angle.

[35] In the Polish and Czech languages the mentioned term (pol. "obuch") originally meant *non-blade part of an axe or hammer axe* (Brückner 1927, 372), in the Old Polish period it described an axe on a long haft, which often served as a walking stick (cf. Gloger 1958, 273-274).

[36] The terms 'czekan' or 'czakan' (Eng. hammer axe) meaning first of all 'butt', but also 'pick-axe', originate from Hungarian 'csákány', adopted from Turkish 'czakan' (from 'czakmak' – 'to strike', 'to press') (Brückner 1927, 75; Głosek 2007, 143). There also is another, outlying hypothesis deriving the word from the reconstructed Pre-Slavic 'čekati', allegedly meaning to produce a sound 'če', 'ča', 'čak', reminiscent of wood cutting (cf. Borowczak 2008, 10). However, the word 'czekan' most likely did not appear in Polish before the modern period (Bołdyrew 2005, 65).

The basic criterion applied in the new typological system[37] has been the proportion between the width of the blade and length of the axe head, which allowed three main groups (I-III) to be distinguished. In the version presented here this division is as follows:

- group I: axe heads with narrow blades, with the width of blade-to-length proportion of 0.01-0.49 : 1.0;
- group II: axe heads with broad blades, with the width of blade-to-length proportion of 0.50-0.74 : 1.0;
- group III: axe heads with very broad blades, with the width of blade-to-length proportion of 0.75-1.0 and >1.0 : 1.0.

Whenever doubts appear concerning the assignment of an axe head to one of these groups, the following formula should be applied:

$$X = \frac{\text{blade width}}{\text{axe head lenght}}$$

where X is the value of one of the groups.

Additionally, each of the main groups has been divided into sub-groups (A and B) distinguished on the basis of blade symmetricity. The symmetricity (A) or non-symmetricity (B) of a blade has been determined by running through the middle of the neck (as seen in lateral view) a line parallel to its upper and lower edges and extending it further towards the blade, followed by measuring the distance between the line and the upper and lower tip of the blade (**Fig. 9**).

Another step in the classification has been the defining of particular types, distinguished based on the detailed analysis of the axe head's socket in lateral view. The variability of this typological element was used as the basis in many previous classification systems, and it also greatly influences the functional parameters of the axe head. The analysis of the collection allowed 13 types (1-13) to be distinguished, which I tried to arrange from the simplest to the most developed forms. They have been described as follows:

- type 1: axe heads with undifferentiated sockets;
- type 2: axe heads with undifferentiated sockets provided in the lower front part with a 'spike';
- type 3: axe heads with sockets provided with lower lugs;
- type 4: axe heads with sockets provided with upper lugs;
- type 5: axe heads with sockets provided with lugs on both sides;
- type 6: axe heads with sockets rounded on both sides;
- type 7: axe heads with sockets differentiated from below;
- type 8: axe heads with sockets differentiated from below, provided in the lower, front part with a 'spike';
- type 9: axe heads with sockets differentiated from above and provided with lower lugs;
- type 10: axe heads with sockets differentiated from below and provided with upper lugs;
- type 11: axe heads with sockets differentiated from both sides up to the half of the socket width;
- type 12: axe heads with sockets differentiated from both sides;
- type 13: axe heads with sockets differentiated from both sides and provided with 'spikes' on the transition between neck and socket.

At this stage of the analysis, each of the types defined as above has additionally been divided into 36 variants. This were distinguished using the criterion

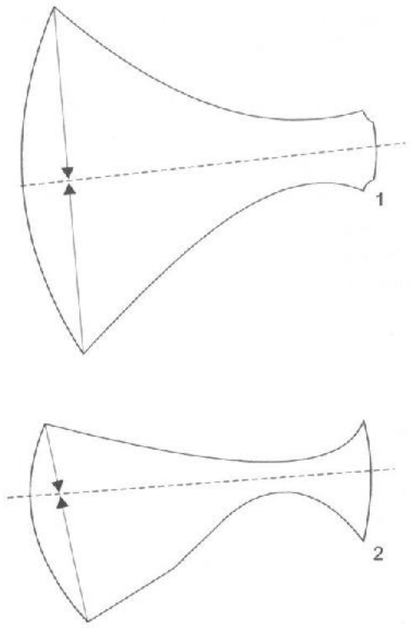
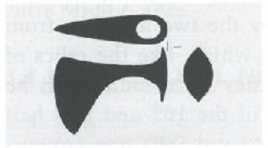


Fig. 9. Division of axe heads with respect to the shape of the blade: 1 – symmetrical blade; 2 – asymmetrical blade.

[37] The system proposed here has been modelled on a classification developed for artefacts from the collection of the Museum of the First Piasts at Lednica (Kotowicz 2013a, 46-74, fotnotes 5-8, Fig. 1).

Analogies are few and occur mostly in the territories near Novgorod the Great (Riabinin 2001, 45, Pl. XXII:7) and in Estonia (Peets 2007, 172, Fig. 7:2) occupied in the 13th-15th century by Finnish tribes. However, the axe head from Pągowiec is clearly older, as indicated by two early medieval clay vessels discovered in the same cemetery (*Radomskie...* 2004, 110). T. Kurasiński suggested narrowing the chronology of the cemetery to the 11th-12th century (cf. Kurasiński 2012, cat. B-138),[40] which in light of current knowledge seems correct. Given the above, nothing can be said about the provenance of the artefact in question.

4.1.6d. Variant IIB.1.19 (Pl. II:4)



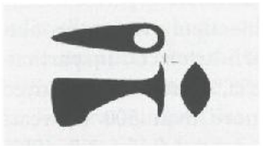
To this variant, distinguished by a broad, asymmetrical blade and a rounded butt provided with a cap on both sides, belong two artefacts whose place of discovery remains unknown (cat. 796, 881).

The discussed axes seem to have appeared only after 1000, a fact again confirmed by the finds from the Baltic region (Atgāzis 1964, 114-115, Fig. 3:2-4; Vaškevičiūtė 2000, Fig. 10:4; 2004, 42, Fig. 23:1), but continue to be used for a long time. This is evidenced by a specimen dated to the second half of the 13th and the 14th century from the already mentioned cemetery at Siksāla in Estonia (Peets 2007, 171, Fig. 12:2 – sub-type Ba) or those from Novgorod the Great in Russia dated to the 13th-15th century (Khoroshev, Sorrokin 1992, Fig. IV.20:22). On the other hand, in Ruthenian principalities the variant in question appeared earlier, which is reflected by an axe head from the Dorohobuzh stronghold in Ukraine, dated to the 12th – first half of the 13th century (Prishchepa, Nikol'chenko 1996, Fig. 58:1).

On the grounds of the quoted analogies one should perhaps agree with the opinion expressed by P. Strzyż (2006, Table V/2), and place both artefacts within broad chronological frameworks spanning from the 11th until the 13th century, although a possibility that they are slightly later cannot be completely ruled out. With all likelihood, they were manufactured by craftsmen from Eastern Europe.

[40] I would like to express my gratitude to my colleague Dr Tomasz Kurasiński from the Centre for Research on Ancient Technologies (Institute of Archaeology and Ethnology of the Polish Academy of Sciences) in Łódź for making the results of his research available.

4.1.7a. Variant IB.1.20 (Pl. II:5)



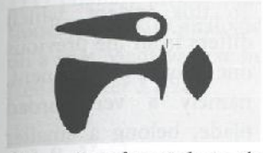
This variant, characterised by a narrow, asymmetrical blade terminating in a beard, and a rounded butt provided with cap on both sides, is represented by seven axe heads (cat. 50, 61, 238, 624, 803, 822 and 882).

The closest parallels can be found beyond eastern borders of Poland, first of all in Latvia (cf. e.g. Gałęzowska 2007, Pl. 4:3) where they date mainly to the 11th-12th century (Atgāzis 1964, Fig. 3:1, 6:4,6), but also in Lithuania in the 11th century (cf. e.g. Simniškytė, Stančikaitė, Kisielienė 2003, 273, Fig. 5:c; Daugnora et al. 2004, 118, Fig. 7), and in Kievan Rus', for example the one from Knazha Gora (Roden' from 'the Primary Chronicle') in the village of Piski in Ukraine (Tereshchenko 2004, 117, Fig. 2:9).

The chronology of the mentioned analogies corresponds well with the dating of the Polish axe heads recovered during archaeological excavations. The oldest one is probably that from grave 70 in the inhumation cemetery at Brzeg in Central Poland (cat. 50) dated to the 11th-12th century (Kufel-Dzierzgowska 1986, 325). From the second half of the 11th century comes a poorly preserved axe head discovered in a residential feature at the Kruszwica stronghold in Kujavia (cat. 238). A much younger one was recovered from inhumation grave 10 at Smolugi in the Podlasie region (cat. 624), which has recently been dated to the second third of the 12th and the 13th century (cf. Dzik 2015a, 139). An artefact from feature 5 on the Chełm settlement in the Lublin region also dates to the latter century (cat. 61; Gołub 2008, 48-49). The above findings allow for a conclusion that the variant in question was used primarily in the 11th-13th centuries, and this is also how we date the axe heads discovered accidentally, two of which were found in Greater Poland (cat. 803, 822, 882).

It is difficult to formulate any binding conclusions with regard to the provenance of the discussed variant. Apart from the Balt territories and Kievan Rus', they were used also in early medieval Poland from the 11th century at the latest. Thus, looking for the core area of the discussed axe heads one should take into account the whole of Central and Eastern Europe.

4.1.7b. Variant IIB.1.20 (Pl. II:6)



This most represented variant within type 1 groups 36 specimens[41] known primarily from inhumation cemeteries (25 pcs) and mainly in the Podlasie region (22 pcs), and is characterised by a broad, asymmetrical bearded blade and a rounded butt with a cap on both sides.

Such axe heads were also popular in Eastern Europe. In the territory of historic Lithuania they occur as early as the 10th century and continue into the first half of the 13th century (cf. Musianowicz 1968, Fig. 6:d; Kazakevičius 1998, 299, Fig. 22; 2000a, Fig. 4:3; Zviaruga 2000a, Fig. 19:18; Zaĭkovskiĭ 2001, 414-415, Fig. 3:2,4-8; Michelbertas 2004, 106, 109, Fig. 58:1, 65:1, 70:1, 71:2; Plavīnskī, Zaĭkoŭskī 2006, Fig. 2:2-3,5-7; Plavīnskī, Duchyts, Shadura 2013, 115, 125, Fig. 8:2). They were particularly common in Latvia between the 11th and 14th centuries (Atgāzis 1964, 114-115, Fig. 7:3; 1997, Fig. 5; also see Paulsen 1939, 71, Fig. 30:1-2; Anteins 1976, Fig. 34:1-2; Caune 1987, Fig. 5:7; Radiņš 2001, 110, Fig. 18:4; Bitner-Wróblewska, Ciglis, Radiņš 2005, 32, 103-104, Pl. I:32, XIV:149,151). Late examples (13th-14th century) are known from Finno-Ugric territories, which is evidenced by an axe head from one of the burials in the Estonian site of Siksäla, found together with two bracteates from the second half of the 13th century and the first half of the 14th century (Peets 2007, 171, Fig. 6:1-3, 12:1 – sub-types Ba, Ba1 and Ba2). However, the variant in question appeared in these territories earlier (Riabinin 2001, 44, Pl. XXI:2). The discussed variant occurred throughout the entire territory of early medieval Ruthenian principalities (cf. e.g. Shtykhov 1975, 57, Fig. 9:2, 29:2; Prishchepa, Nikol'chenko 1996, Fig. 36:1, 58:2; Plavīnskī 2013, 31, Fig. a-c and 32, Fig. a-b), where such axe heads first appeared at the close of the 10th century (Plavīnskī 2013, 30) to become particularly common in the 12th-13th centuries (Kirpichnikov 1966, 37 – sub-type IVA), until they were gradually phased out, perhaps as late as the 14th-15th century (Kviatkovskaia 1989, Fig. 2:9; 1998, 112, 269-270, 273, Fig. 35:1-2, photo 33-34).[42]

[41] Cat. 1-3, 74, 77, 80-81, 83-85, 87, 104, 112, 114-115, 120, 160, 167, 204, 260, 314, 317, 341, 362, 370, 408, 435, 625, 627-628, 634, 678, 714, 717, 733, 772.

[42] I am not fully convinced as to the very late (and thus far isolated) dating of the axe heads from the Venzovščina cemetery in Belarus, which relies primarily on the typological analysis of buckles and fire strikers (!). On the other hand it needs to be mentioned that two graves in that necropolis also yielded coins: a Prague gross of Wenceslaus IV (1378-1414) (grave 12/4) and six denarii of Vytautas (1392-1430) (grave 14/3) (Kviatkovskaia 1998, 272, 274).

The artefacts belonging to the discussed variant appeared even as far as Sarkel-Belaya Vezha on the Volga River, where they were found in what is known as the 'Slavic' layer of the stronghold, dating to the 11th and early 12th century (Sorokin 1959, 158, Fig. 11:6).

In the territory of present-day Poland such artefacts appeared relatively late[43]. Currently, the oldest ones are thought to be the axe heads discovered at Końskie in Lesser Poland (Gąssowski 1952, 168), in grave 48 belonging to an adult male (*maturus* or *senilis*) and dated to the second half of the 11th and early 12th century (cat. 204), and in two burials from the second half of the 11th – first half of the 12th century: at Daniłowo Małe in Podlasie (cat. 104; burial 35 of a man aged *adultus*) and at Turowo in Płock Masovia (cat. 714) (Koperkiewicz, Krasnodębski 2002, 274; Kordala 2006, 84, cat. 108). The proposed chronology is best confirmed by an axe head dated to the early 12th century originating from child burial 31 from the Lubień cemetery in Central Poland (cat. 260), which was accompanied by a silver cross denarius typical of the last quarter of the 11th century (Kurasiński, Skóra 2012a, 172). Based on the typological analysis and the chronology of the cemetery where it was found (cf. Zoll-Adamikowa 1966b, 134), much broader chronological frameworks were proposed for the axe head from Złota in Lesser Poland (cat. 722), spanning the second half of the 11th – 12th century, while the one from Drążgów-Kolonia in the Lublin region (cat. 115) is dated to the 11th-12th centuries (Kokowscy 1997, 285). Also, based on the chronology of the sites, I follow M. Dzik (2015a, 49, 65, 74, 80, 118, 139) in his dating of finds from the Podlasie region: from Baciki Dalsze to the close of the 11th-13th century (cat. 1-3), from Ostrożany (Kamianki) to the close of the 11th-13th century (cat. 362), the majority of axe heads from Czarna Wielka to the close of the 11th-14th century (cat. 74, 77, 80-81, 84-85 and 87), those discovered in four graves (nos. 11, 31, 33 and 84) at Smolugi to the second third of the 12th –13th century (cat. 625, 627-628, 634), axe heads from graves 23 and 44 at Dołubowo (cat. 112, 114) and the one from grave 22 at Niewiarowo-Sochy (cat. 341) to the second quarter of the 12th – mid-13th

[43] Another example of this variant has recently been found in a burial of a man and child discovered in the rampart of the Czermno stronghold, Tomaszów Lubelski district, dated to the mid-13th century (Wołoszyn et al. 2017, 38-39).

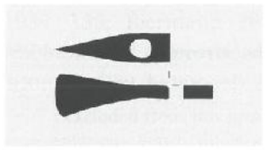
or nomadic (Raddatz 2000, 306; similarly Wołoszyn 2004, 263, footnote 29).

In my opinion, the analysis of this group of artefacts should start from accepting the assumption that all the decorations (and perhaps also the artefacts themselves) were made in one centre, probably in one workshop. The identification of this workshop based on the stylistic analysis of the decoration seems impossible (cf. Biermann 2002, 75), and the analysis of geographical distribution offers little contribution here as well. Two artefacts were discovered in Poland (Gubin and Żagań), two most likely in Austria (Schaunberg and the surroundings of Vienna), another two in southern Russia (Olen'-Kolodezh and the Belgorod region), and single examples come from Lithuania (Masteikiai), the Sambian Peninsula (Mamonovo), and Estonia (Kirumpää). The place of discovery of the remaining three (the swords from the Bargello and Toruń collections and the stirrup from the Moscow Museum) remains unknown. However, if we add to this list the undecorated artefacts being the closest analogies for the objects bearing the representations of aurochs/bulls, we notice their distinct concentration in the northern part of Eastern Europe and its immediate neighbourhood. It is worth adding that this very territory is the core area for axe head variants distinguished by the presence of a cap on both sides of the butt (cf. Malonaitis 2008, passim). One would not find such artefacts in the North Pontic steppes, Lusatia, or Austria, and the same applies to the swords and stirrups mentioned above. Therefore, I partly agree with V. Kulakov in that the artefacts in question were produced in the Balt area, although I reject confining the territory of their origin to the Old Prussian lands. The view (cf. Biermann 2002) that the decoration was executed by a craftsman of North-European origin but on the commission of Golden Horde elites does not seem convincing. It is contradicted by the very forms of the artefacts, characteristic without exception of the Baltic area. The idea that a craftsman could have taken finished objects with him and then adorned them to the taste of his nomadic sponsors appears overly convoluted and simply preposterous. For the same reasons one cannot subscribe to the view (W. Świętosławski) positing that the objects were manufactured in Central Europe and some of them were next taken as a precious booty after the Mongolian invasion of Poland in 1241.

So how exactly did the axe heads discovered at Żagań and Gubin find their way to the territory of Lusatia? Three hypotheses seem very promising in this context. The first one was most fully developed by V. I. Kulakov and K. N. Skvortsov who suggested that these ceremonial axes (as well as the artefacts discovered in Austria), originally belonging to the Old Prussian elite, were war booty brought from one of the 13th-century crusades of European knights against the Baltic tribes. According to the mentioned scholars, the most likely candidate is the second expedition to Sambia led by Ottokar II of Bohemia in the years 1254 and 1255 (Kulakov, Skvortsov 2000, 180-181).

To some extent, the view expressed by W. Świętosławski also refers to the above hypothesis, although he identifies the discussed artefacts as coming from Central Europe, mentioning the Lusatian noble family of von Schenkendorf to whom Gubin belonged. As members of this family are known to have reached Livonia in the Middle Ages, Świętosławski suggests they may have taken the axe with auroch decoration with them to Kirumpää (Świętosławski 2015, 39-40). In light of both the findings presented above and the hypothesis of the Russian researchers, however, the opposite direction of inflow seems more likely for the discussed artefacts. The unpublished hypothesis formulated by A. Michalak,[49] who also addressed the Baltic connections of Lusatian families, also refers to this idea. Apart from the von Schenkendorfs, he mentions the family of Dorota von Talleyrand-Périgord who ruled the Duchy of Żagań. The duchess' father, Peter von Biron, was Duke of Courland and Semigallia, and the duchess herself was born in Courland. Opting for the North-East European provenance of the artefacts in question, the author admits the possibility that the find from Żagań could have been brought to Lusatia as a family souvenir from a visit to Courland in the 19th century, and ended up in the collection kept on the Żagań castle.

4.1.11a. Variant IA.1.27 (Pl. III:5)



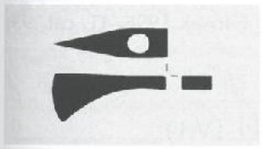
This variant is characterised mainly by a butt which is bar-shaped in top view, and a narrow, symmetrical blade. It includes a single specimen from the former crossing on the San River at Radymno in the Podkarpacie region (cat. 422). The artefact was previously wrongly identified as an axe head (Koperski 1980, 99, cat. 25; Nowakowski 1998, 17, cat. 9), and only recently recognised as the head of a hammer axe (Strzyż 2006, 41-42, Table V/63).

[49] The hypothesis has been formulated in the doctoral dissertation "Transformations of late medieval weaponry at the borderlands between Silesia, Greater Poland, Brandenburg, and Lusatia' of my colleague Arkadiusz Michalak, to whom I am very grateful for making the manuscript available.

Artefacts of this form are extremely rare among the published finds, but their first appearance dates as far back as the Early Iron Age (Îllīns'ka 1961, 31, Fig. 3:1). They appear again among the finds attributed to the Khazars, as evidenced by a specimen from the 'Khazar layer' of the Sarkel stronghold, Russian Federation, dated to the 9th – early 10th century (Sorokin 1959, 142, Fig. 4:2).

Therefore, I believe that the previously accepted dating of this artefact within the 11th-14th centuries (Koperski 1980, 99, cat. 25; Nowakowski 1998, 17, cat. 9; Kotowicz 2004, 39, cat. 140; Strzyż 2006, 41-42, Table V/63) must be rejected. Unless the artefact in question is prehistoric (which is not impossible), it should most likely be dated to around the 9th-10th century and linked with eastern influences. One cannot rule out the possibility that it originates from the same horizon as the sabre in the Magyar type known from Radymno (cf. Świętosławski 2006, 100-105, Fig. 30:B).

4.1.11b. Variant IB.1.27 (Pl. III:6)

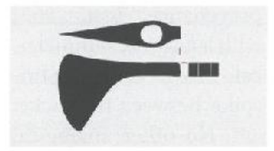


Typologically akin to the previously discussed artefact are another two objects from Lesser Poland, discovered at the settlement site in Igołomia (cat. 174) and in the Zawada Lanckorońska stronghold (cat. 767). The only difference is in that they have narrow but clearly asymmetrical blades.

Analysing the find from Zawada Lanckorońska, J. Poleski advised caution with respect to its early medieval chronology (Poleski 2004, 371). Even though the mentioned author did not quote any serious arguments to justify his doubts, a number of other finds suggests such a possibility should be taken into account. In this context one should bring into focus Scythian artefacts from the Early Iron Age, among which similar shapes are quite popular (cf. Îllīns'ka 1961, 30, Fig. 2:3). The same shape can also be found in the Roman and Migration Periods, as evidenced by the finds from both Western and Southern Europe (Heindel 1992, 28, Fig. 12:b; Gräf, Bonnamour 2003, 67, Fig. 9:1; Bitenc 2009, 320, cat. 83d). In some studies these artefacts are included into the 'francisca' type (cf. Stephenson 2006, Fig. 113). However, as with the previous case, these artefacts find early medieval parallels as well. Examples can be found again in the 'Khazar layer' at Sarkel, where it is dated from the mid-9th to early 10th century (Sorokin 1959, 142, Fig. 4:3), and in a grave from Pegau, Germany, dated to around 1000 (Rempel 1966, 33, 160, cat. 226, Pl. 85D:2).

So what finally can be said about the chronology of the discussed finds form Poland? The dating accepted for the specimen form Igołomia and established as the 12th-13th century (cf. Strzyż 2006, 41, Table V/12) appears definitely too late. Possibly, just as the artefact from Zawada Lanckorońska (ibid., 41, Table V/78), the one from Igołomia should cautiously be linked with the 9th-10th century, unless we opt for its prehistoric provenance. The latter option cannot be ruled out in the case of Zawada Lanckorońska, as the excavations carried out at this site produced numerous artefacts testifying to multi-phase occupation between Bronze Age Period III and V (Bąk 1996; Poleski 2004, 372).

4.1.12. Variant IIB.1.29 (Pl. III:7)



The last variant of type 1 represented among the Polish materials is marked by a broad, asymmetrical blade and a butt provided with an elongated hammer of square section, slightly narrowing towards the end. Its only representative is the artefact from Hamernia in the Lublin region (cat. 165). It was discovered accidentally along with a crossbow bolt and a fire striker. Unfortunately no precise analogies could be found, so that it can only very cautiously be associated with the Middle Ages on the basis of the accompanying artefacts. The lack of similar shapes in the late section of that period (cf. e.g. Głosek 1996) and the presence of analogical forms but with narrower blades in its early part (cf. e.g. Liwoch 2005a, Fig. 18) allow the discussed artefact to be cautiously linked with the Early Middle Ages.

4.1.13. Other

As many as 12 artefacts belonging to type 1 could not be unambiguously assigned to any of the variants. To this group belong first of all objects discovered yet in the 19th or early 20th century which are now lost and known only from publications containing incomplete documentation (cat. 78, 119, 121, 163,