

# HILL-FORTS FROM THE LATE BRONZE AGE AND THE EARLY IRON AGE IN POMERANIA: AN OVERLOOKED PROBLEM

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## Abstract

Although hill-forts from the end of the Bronze Age and the beginning of the Iron Age associated with Lusatian culture appear in vast areas of modern Poland, they are absent in Pomerania beside the Lower Oder region. This scarcity is surprising, especially taking into account the relatively numerous appearances of hill-forts in Greater Poland, the region directly neighbouring Pomerania to the south. On the other hand, investigations conducted in the 1960s and 1970s to verify Pomeranian hill-forts described as originating from the Early Medieval and Medieval periods resulted in the detection of at least a dozen sites with material from the Late Bronze Age and the Early Iron Age.

The aim of this paper is to present the problem of the supposed presence of Lusatian culture hill-forts in the central part of Polish Pomerania. It is highly probable that this kind of settlement played an important role in interregional contacts between eastern and western parts of Pomerania, together with Greater Poland and probably also Nordic Bronze Age zones. In a wider perspective, their role in the course and working of the Amber Road at the end of the Bronze Age should also be taken into account and investigated. It seems that new tools available for archaeologists, like Lidar data, modern geophysics and aerial photography, may provide new openings and new perspectives on research into this case study.

Key words: Central Pomerania, Lusatian culture, Late Bronze Age, Early Iron Age, hill-forts, fortified settlements, trade/exchange routes, archaeological cartography.

DOI: <http://dx.doi.org/10.15181/ab.v24i0.1565>

## Introduction

One of the most interesting subjects connected with the turn of the Late Bronze Age and the Early Iron Age in Middle Europe is the remains of fortified settlements, or hill-forts. From a cultural-historical point of view, they are related to Lusatian culture, which can be distinguished as early as the Middle Bronze Age period, as a result of influence from Urnfield culture. The best-known and model site of this type in Poland is at Biskupin (Gąsawa district, Żnin county), although many of the remaining sites differ greatly in form and size from Biskupin, which is legendary in Polish archaeology. With information about a few dozen 'Lusatian' sites of this type, it is possible, though to some degree arbitrary, to determine the area of their occurrence. This paper will focus on the northern frontier of the area, namely the region between modern eastern (Gdańsk) and western Pomerania (Fig. 1), often referred to as Middle or Central Pomerania (Skrzypek 1995, 55), which seems to be the most accurate term from the point of view of the distribution of the analysed sites.

Foregoing literature (Olczak 1971, 186, Fig. 1; Niesiołowska-Wędzka 1974, Fig.1; Puziuk 2010, 29, Fig.1) states that hill-forts in Pomerania are located only in the area of the Lower Oder, hence in the west-

ern part of the region, and only two hill-forts have been found in the central part (Szczecinek in the Szczecinek district, and Chojnice in the Chojnice district). Even though during verification research conducted in the 1960s and 1970s, material from the turn of the Bronze and the Iron ages was found in more than a dozen sites in Middle Pomerania (Olczak 1971, 185-195, Fig. 1), this subject was inadequately addressed. In the meantime, numerous authors, both in older and modern literature, have described the area as exceptionally important, due to the crossing of routes that joined heavily populated areas of eastern Pomerania, western Pomerania, northern Greater Poland and the broadly defined north, which, from a cultural-historical point of view, should be identified with the Nordic Bronze Age. The aim of this paper is to attempt to shed some light on the question of the northern frontier of the 'Lusatian' zone of fortified settlements. A new analysis of older literature and archaeological cartography, as well as LIDAR data, available for nearly all the sites described here, will be taken into consideration. It will be crucial to identify the supposed function that these sites had in the cultural situation of Pomerania in the period analysed, and the role of the region from the point of view of contemporaneous interregional contacts (Fig. 1).

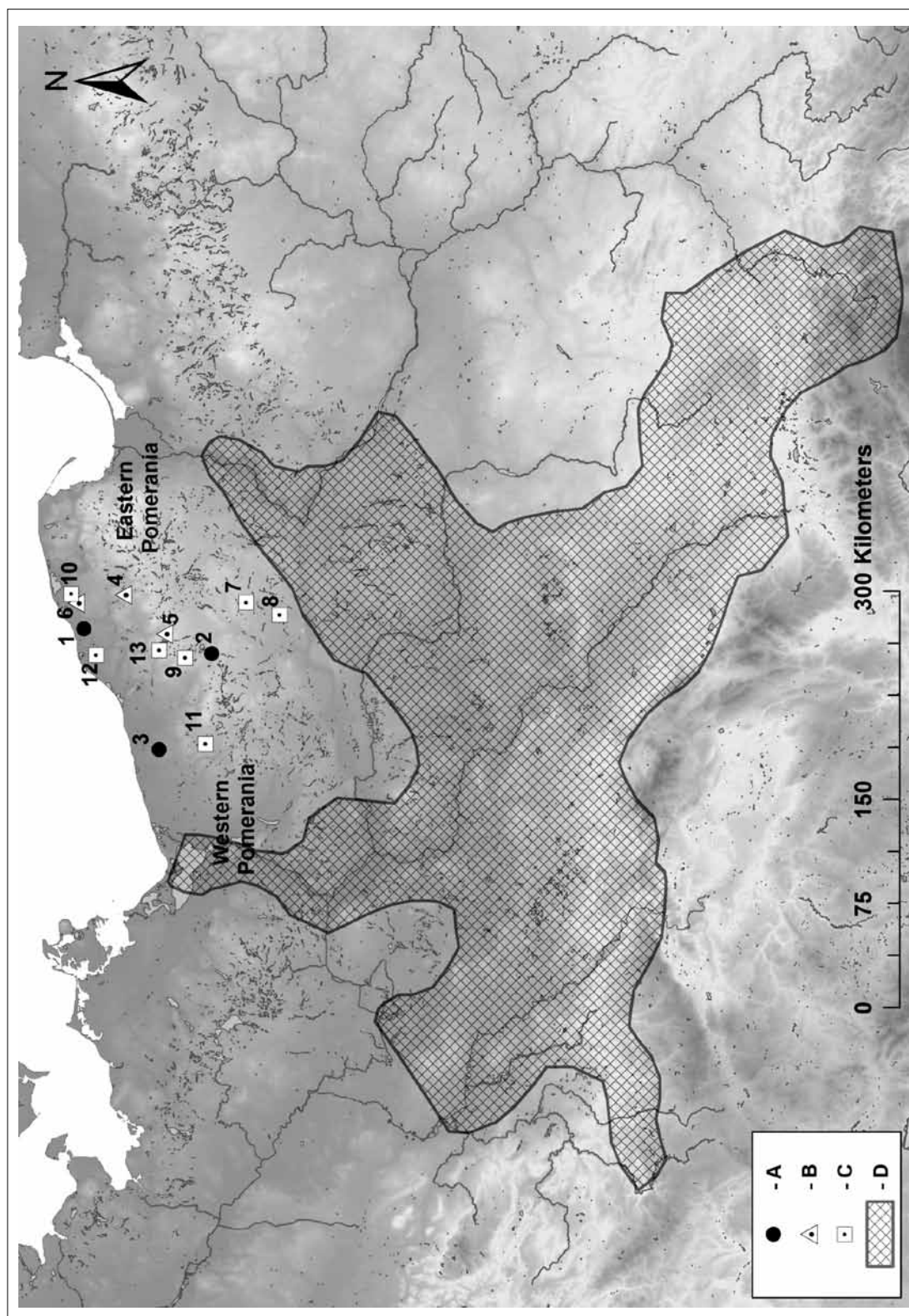


Fig. 1. Hill-forts in Central Pomerania with pottery identified with Lusatian culture. Division according to J. Olczak (1971, 193-194): A - "Lusatian" hillforts", B - Alleged "Lusatian" hillforts (with pottery solely from the Late Bronze/Early Iron Age period), C - Alleged "Lusatian" hillforts (with pottery from the Late Bronze/Early Iron Age and early medieval periods); D - Area of dispersion of hillforts identified with Lusatian culture according to A. Niesiołowska-Wędzka (after: Olczak 1971, 186, ryc.1).

## 'Lusatian' hill-forts during the transition from the Bronze Age to the Iron Age

There is extensive literature on the subject of 'Lusatian' hill-forts. On the other hand, the subject was selectively researched, with many important aspects left out. At present, there is actually only one publication, a monograph by A. Niesiołowska-Wędzka (1974), in which the problem is described relatively comprehensively. Moreover, A. Niesiołowska-Wędzka is also the author of further important publications on the subject (1970, 1976 and 1989). A catalogue with 122 records from 1974 is, generally speaking, still useful. It was later verified, and some sites were removed because their chronology and cultural affiliation were uncertain (Puziuk 2010, 5f.). In the latter case, it should be mentioned that on most hill-fort sites, identified previously as being from the turn of the Bronze and Iron ages, sherds of pottery and metal objects were not found on the ramparts. It is possible then that these sites were established, for example, during the Early Middle Ages (Puziuk 2010, 6; see also: Mierzwiński 1989, 185). What is more, in general, a chronology of this kind of site is based mainly on sherds of pottery, which are very inaccurate in dating. It is therefore often impossible to narrow a chronology of sites to a more precise definition than 'the turn of the Bronze and Iron ages'. The situation becomes even more complicated by 'superimposing' two chronological systems for Pomerania. Chronological borders for the transition from the Bronze Age to the Iron Age in this region correspond with the IV and V bronze periods in the chronology of Oscar Montelius for northern Europe (Nordic Bronze Age), and phases Hallstatt C and Hallstatt D (HaC and HaD) in the system developed for the Hallstatt zone, wherein the HaC phase corresponds with the VI bronze period (Kmieciński ed. 1989, 760f., Plate 9; Czopek 1992, 86, Plate 3; Dąbrowski 2009, 17, Plate 1; Gardawski, Woźniak 1979, .24, Plate 1). Besides, the 'Hallstatt' system is essentially used in Poland for the whole period analysed when it comes to identifying bronze hoards (Blajer 2001). It also has to be mentioned that recent studies concerning the chronological dating of the Hallstatt period (Trachsel 2004, 316ff.), as well as studies of the chronology of artefacts important to eastern Pomerania, like house urns and face urns (Sabatini 2007, 116-122; Kneisel 2012, 486ff.), indicate that the dating of these artefacts should be 'antiquated', especially for the latter phases of the Hallstatt period (Woźniak 2010, 41). Important research by K. Dzięgielewski concerning the synchronisation of climate change connected with the beginning of the sub-Atlantic Age, and the cultural situation in the region (Dzięgielewski 2010, 183ff., 2012, 109-

119) should also be noted. Therefore, the chronological range defined as 'turn of the Bronze and Iron ages' for Pomerania is roughly the period from the first half of the 11th century BC (IV Bronze Period) to the first half of the sixth century BC (the decline of the HaD phase and the early La Tène period). Correlating this set of information with the dating of hill-forts used by Lusatian culture, a general convergence is noticeable (Puziuk 2010, 6), although some hill-forts are connected specifically with the HaC phase (Maciejewski 2016, 67), which narrows the chronology considerably. Generally speaking, these ranges should be treated as estimates.

The role that these fortifications performed for their builders is still unsolved. In Polish literature, the view is often presented that hill-forts were exceptionally important, as they were focal points for a contemporaneous network of settlements (e.g. Bukowski 1971, 155-177). This view probably stems from an intuitive perception that hill-forts, with their ramparts and construction, had a superior position in the local network of settlements, even though, at the same time, the egalitarian character of the contemporaneous community was underlined (Bukowski 1971, 175). Their significance as resting points or places for trading on trade routes was also suggested. The clearest example here is the hill-fort at Komorowo (Kazmierz district, Szamotuły county), described as a 'trading post on the Amber Road' (Malinowski 2006). These sites were also described as local production centres, particularly for metallurgy (Niesiołowska-Wędzka 1974, 162). These assumptions firmly entrenched in literature were based on a poor database, caused by the highly underperforming archaeological exploration of these objects. At the turn of the 1980s and 1990s, this exceptional status of hill-forts from the period discussed was questioned by A. Mierzwiński (1989, 185-207). Even though his criticism was aimed at hill-forts in the Śląsk area, it may be applied to other Polish regions too, including Pomerania. First and foremost, Mierzwiński pointed to the relatively low number of hill-forts compared to the broad area of Śląsk. Furthermore, he observed that they were mostly on the edges of known inhabited areas, which, according to Mierzwiński, undermines their role as central settlements for the local community. Mierzwiński states that, apart from the ramparts, these sites do not differ greatly from other open settlements, although their location on the borders of inhabited areas suggests that they were occasionally used as a refuge by the local population (Mierzwiński 1989, 189). Also, it seems that, according to spatial analysis conducted for western Pomerania, the hill-forts were not located centrally in inhabited regions, but contemporaneous burial sites were situated in this manner

(Krajewski 2007, 38). It should also be noted that a comprehensive study was recently published about the meaning of metal hoards in the context of networks of settlements for the period discussed here (Maciejewski 2016). The author also devotes attention to the defensive aspect of settlements, but in the context of the research conducted, concepts treating these sites as places for trade or production centres were rejected (Maciejewski 2016, 67). All in all, it seems that nowadays there are numerous premises undermining the theories from older literature that hill-forts played an exceptional role in networks of settlements.

An interesting concept of the changes in networks of settlements in the Polish area which is integrally connected with 'Lusatian' hill-forts was presented in the 1970s by J. Ostoja-Zagórski (1976, 39-73). According to Ostoja-Zagórski, during the Hallstatt period, hill-forts appeared in some areas as the effect of intensified settlement processes which took place at that time. This led to overpopulation, exploitation and devastation of local ecological niches, which in turn resulted in changes in the social structure, and the break-up of larger groups into smaller more mobile ones. Climate change at the beginning of the sub-Atlantic age escalated the crisis even further. This model was created on the basis of the Pałuki region and neighbouring areas (Greater Poland and the Kuyavia region), and thus places where 'Biskupin type' hill-forts were present. This may be a convincing theory to some degree for Pałuki, but an attempt to use it for Pomerania, as Ostoja-Zagórski proposed in one of his later works (Ostoj-Zagórski 1982), may cause objections. A. Mierzwiński pointed out (1992, 130) that this concept, apart from being a not entirely convincing attempt at basing the deduction on a model view of the process of settling, is just another interpretation making hill-forts from the turn of the metal ages the central points of settlement patterns. In the case of Pomerania, these attempts would be very unfortunate, because the data on hill-forts in this area is very poor. J. Ostoja-Zagórski distinguished 24 sites of this type in Pomerania (Ostoj-Zagórski 1982, 19, Table 1). It can be presumed then that these were mostly sites described by J. Olczak (1971, 185-195), which were known only from very limited archaeological verification (see the next part). Creating an interpretation for hill-fort settlements, and settlements in general, based on a highly incomplete database, seems to be incorrect.

As a summary of this part, it should be underlined that the presence of hill-forts should not be treated as one-dimensional, as has already been stated by A. Niesiołowska-Wędzka (1974, 171f.). They had different forms, and, it may be presumed, different designs. It seems that the view presented in older literature that

hill-forts had a superior position in the local network of settlements is definitely exaggerated. These sites stood out naturally because of the fortifications, but other than that, they were a regular and not necessarily superior part of contemporaneous settlement.

### Hill-forts from the turn of the Bronze Age and the Iron Age in Middle Pomerania: history and the state of research

While the state of research for 'Lusatian' hill-forts is in a relatively poor condition, the situation for sites of this type for Middle Pomerania is in an even worse state. Even though there is some information on them in the older literature (see Olczak 1971, 185f.), most modern data comes from a research project initiated over 50 years ago by two archaeologists from Poznań.

In the 1960s, J. Olczak and K. Siuchniński, both from the Department of Archaeology at Adam Mickiewicz University in Poznań, started a vast programme of verification concerning the remains of hill-fort settlements in Middle Pomerania (Olczak 1971, 187). This project was carried out for areas of the then Koszalin and Słupsk voivodeships, at the same time that Kołobrzeg county (part of the Koszalin voivodeship) was researched in the same way by W. Łosiński from the Institute of Archaeology of Greater Poland and Pomerania at the National Academy of Sciences in Poznań (Olczak 1971, 187). Using precise methodology (Olczak, Siuchniński 1967, 53ff.) with 300 supposed hill-forts (mainly on the basis of contemporaneous literature), around 200 were confirmed. As a result, an array of monographs with source material were published (Olczak, Siuchniński 1966, 1968, 1970, 1985, 1989; Lachowicz, et al. 1977; Łosiński, et al. 1971), as well as syntheses (Siuchniński 1974, 189-214; Olczak, Siuchniński 1976, 111-152).

It was discovered that most of the verified sites contained Early Medieval material; in some of them Late Medieval material was found. However, a number of sites contained material identified by the authors of the project with Lusatian culture, and some were found together with Early Medieval material (Olczak 1971, 187). Finally, from the whole pool of verified hill-forts, 'Lusatian' material was noted in 39 cases. They were divided by the authors on the basis of schemes of co-occurrence for material from the turn of the metal ages and Early Medieval material (Olczak 1971, 189-190). Four hypothetical model situations were distinguished (Fig. 2: a) a 'Lusatian' hill-fort served as the basis for a Medieval one with its defensive constructions; b) an early Medieval hill-fort was placed on a site where

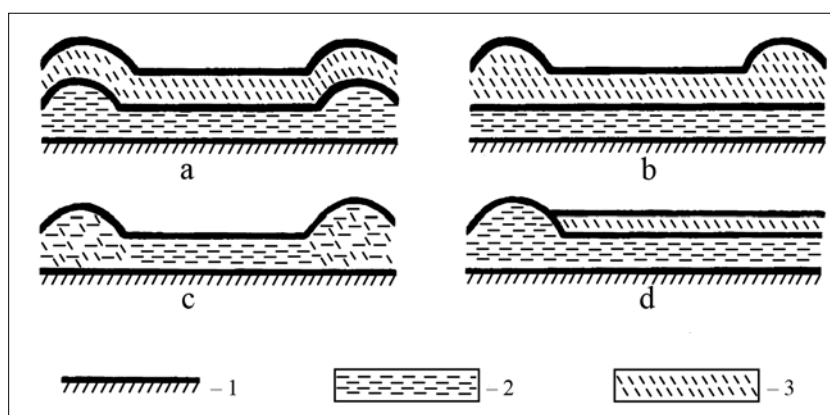


Fig. 2. Scheme of co-occurrence of material from the Late Bronze/Early Iron Age and the Early Medieval period: 1 natural surface; 2 Lusatian culture material; 3 Early Medieval material (after Olczak 1971, 190, Ryc.3).

previously an open settlement of Lusatian culture had existed; c) an Early Medieval hill-fort was constructed with earth from a site where an open settlement of Lusatian culture had previously existed; d) an Early Medieval open settlement was founded in the place of an earlier 'Lusatian' hill-fort. On further analysis, sites from groups c) and b) were described as the least likely when it comes to finding a hill-fort from the turn of the Bronze and Iron ages. On the other hand, some sites from groups a) and d) were described as probably 'Lusatian' hill-forts. It should be noted, though, that to determine the chronology of a hill-fort unequivocally, at least one excavation through a rampart should be conducted; very few sites analysed here were checked in this way. That means that the concept of J. Olczak and K. Siuchniński is based on still unverified premises (Olczak 1971, 192). Anyway, of the 39 hill-forts on which material identified with the turn of the Bronze and Iron ages was found, only three may be described as 'Lusatian' hill-forts. Another three were chosen by both authors as probably 'Lusatian' hill-forts, on which only material of that type (i.e. 'Lusatian') was found. A further seven sites were also labelled as probably 'Lusatian' hill-forts, on which Early Medieval material was also found (Fig. 2).

Unfortunately, the project described above, even though it had very ambitious hopes, led to only a short publication underlining the problem of the presence of 'Lusatian' material in those contexts, not explaining or solving it (Olczak 1971, 185-196). The monograph by J. Olczak describing exclusively 'Lusatian' hill-forts and other sites linked with this culture discovered in Middle Pomerania was not published (Olczak 1971, 187f., Footnote 11). Only site 3 at Gałżinowo (Olczak 1984, 3-14) and site 2 at Szczecinek (Cnotliwy, Rogosz 1972, 237-254) were published separately, but these papers were more like announcements than comprehensive studies (Table 1).

To understand better the quality of information acquired during the verification research described above, the methodology applied should be discussed first (Olczak, Siuchniński 1967, 53ff.). A comprehensive archival enquiry was carried out first, and already at this stage, a preliminary verification was conducted. A second stage was carried out in the field on the basis of information prepared in archives. Hill-forts were searched for and verified with the aid of local inhabitants. Three actions were taken on all the sites. A surface survey was conducted in the immediate area of the hill-forts, to find presumed settlement traces linked with the researched object. At the same time, at least a few small digs were carried out both within the ramparts and outside. This way, the thickness of the cultural layers and the amount of material were measured and acquired. On this basis, a general chronology was estimated for the whole site. Precise altitudinal measurements were also taken, leading to hypsometric plans for the sites (Olczak, Siuchniński 1967, 53ff.). These steps led to a relatively complementary database for particular sites, although the limited area of excavations in many cases capped attempts to establish an unambiguous chronology of a given site, especially a chronology of the ramparts. All in all, the methodology applied allowed for the verification of information about sites in contemporary literature that in many cases was highly inaccurate or simply false.

The altitudinal measurements conducted and the hypsometric plan based on them were in most cases precise enough to be used even for present-day research. At the moment, there is a convenient way of verifying them, because Lidar data for the discussed area is available at the geoportal of the National Heritage Board of Poland (Narodowy Instytut Dziedzictwa, NID) (Figs. 3, 4). Only two hill-forts connected with Lusatian culture from the group distinguished by J. Olczak and K. Siuchniński are located in areas without available Lidar data: Buntowo site 1 (Złotów district, Złotów county)

Table 1. A list of supposed ‘Lusatian’ hill-forts in Central Pomerania (according to Olczak 1971, 185-195). Types according to J. Olczak: 1 Lusatian hill-fort; 2 supposed Lusatian hill-fort solely with Late Bronze Age/Early Iron Age pottery; 3 supposed Lusatian hill-fort with Late Bronze Age/Early Iron Age and Early Medieval pottery

No.	Name of location and site no.	District, County	Type according to J. Olczak (1971)	Bibliographical reference:
1	Gałęzinowo, site 3	Słupsk, Słupsk	1	Olczak 1984, 3-14
2	Szczecinek, site 2	Szczecinek, Szczecinek	1	Olczak, Siuchniński 1970, 173-178
3	Trzynik, site 1	Siemyśl, Kołobrzeg	1	Łosiński et al., 1971, 130ff.
4	Gałężnia Mała, site 12	Kołczygłowy, Bytów	2	Olczak, Siuchniński 1989, 121f.
5	Kamnica, site 3	Miastko, Bytów	2	Olczak, Siuchniński 1989, 75ff.
6	Żoruchowo, site 4	Głównyzyce, Słupsk	2	Lachowicz, Olczak, Siuchniński, 1977
7	Mały Buczek, site 1	Lipka, Złotów	3	Olczak, Siuchniński, 1966, 132-136
8	Buntowo, site 1	Złotów, Złotów	3	Olczak, Siuchniński, 1966, 136-140
9	Grąbczyn, site 1	Szczecinek, Szczecinek	3	Olczak, Siuchniński 1970, 38-46
10	Równno, site 4	Głównyzyce, Słupsk	3	Lachowicz et al., 1977
11	Słonowice, site 1	Brzeźno, Świdwin	3	Olczak, Siuchniński 1968, 193ff.
12	Stary Kraków, site 6	Sławno, Sławno	3	Łosiński et al., 1971, 223ff.
13	Żydowo, site 10	Polanów, Koszalin	3	Łosiński et al., 1971, 255ff..

and Mały Buczek site 1 (Lipka district, Złotów county), although both sites are located in northern Greater Poland rather than in Pomerania. Nevertheless, both altitudinal measurements and Lidar data enable the analysis of the morphology of sites on which material from the turn of the metal ages was discovered. Assuming that all of these hill-forts had a ‘Lusatian’ origin, it should be noted that they present different forms, which was already observed by A. Niesiołowska-Wędzka as a general rule connected with ‘Lusatian’ hill-forts (Niesiołowska-Wędzka 1974, 171f.). Some of them are large, distinctly shaped and well-preserved sites, like Grąbczyn site 1 (Szczecinek district, Szczecinek county; Fig. 4.9), or the somewhat smaller Równno site 4 (Głównyzyce district, Słupsk county). Ramparts on both of these sites are distinguished clearly both on Lidar data and on site (Fig. 4.10). Based on the taxonomy by J. Olczak and K. Siuchniński, these are upland hill-forts with a more (Grąbczyn) or less (Równno) convex courtyard surrounded by irregular, oval ramparts. On the other hand, some of the hill-forts discussed here are ruined by modern human activity. This problem is especially visible at two ‘highly probable’ ‘Lusatian’ hill-forts: Gałęzinowo and Szczecinek. Site 3 at

Gałęzinowo (Słupsk district, Słupsk county) is an upland hill-fort within which a modern farm is located. A well-shaped rampart (transverse, according to the typology of Olczak and Siuchniński) that divides the peninsula on which the site is located from the rest of the land was partially destroyed as a result of modern human activity (Fig. 3.1) (Olczak 1984, 8). Szczecinek site 2 hill-fort, on the other hand, is located in the central part of the town. Unfortunately, it was levelled so severely that its form is barely visible, even in rendering done by a laser scanner (Fig. 3.2). Furthermore, the terrain was deformed during the construction of an observation tower at the beginning of the 20th century (Cnotliwy, Rogosz 1972, 242f.). Taking these problems into consideration, the site can only be described as a lowland hill-fort type. A much better situation was observed on a third hill-fort, considered by J. Olczak and K. Siuchniński to be ‘Lusatian’, namely Trzynik site 1 (Siemyśl district, Kołobrzeg county) (Łosiński, et al. 1971, 130ff.). It is an upland hill-fort, located on a peninsula, and divided from the rest of the land by two ramparts (Fig. 3.3).

The situation of site 6 at Stary Kraków (Sławno district, Sławno county; Fig. 4.12) is very interesting.

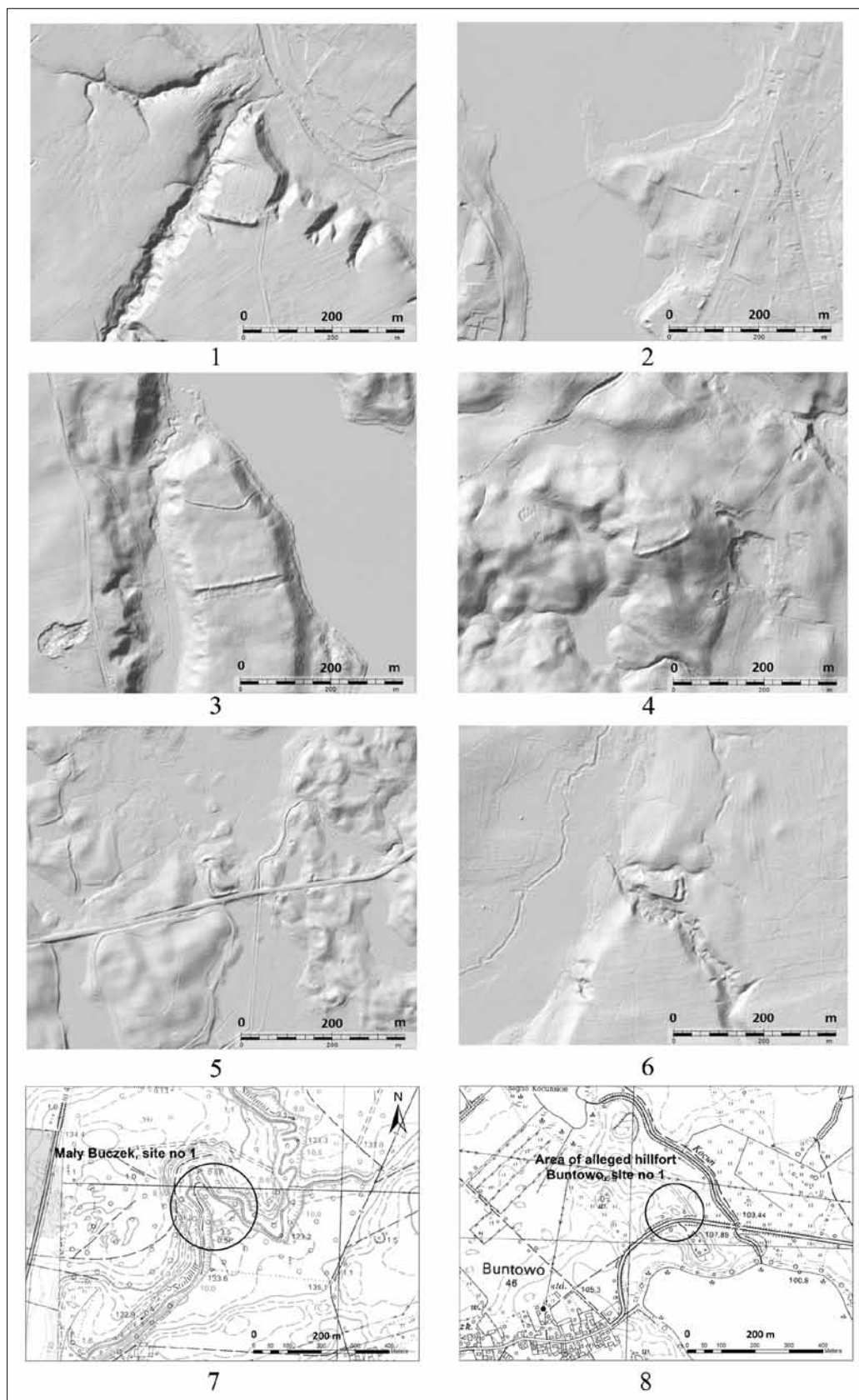


Fig. 3. A visualisation of the terrain of hill-forts in Central Pomerania based on Lidar data (source: <http://geoportal.nid.pl/nid/>) and topographical maps in the case of Mały Buczek site 1 and Buntowo site 1 (in these cases, Lidar data was unavailable): 1 Gałżinowo, site no 3; 2 Szczecinek, site no 2; 3 Trzynik, site no 1; 4 Gałżnia Mała, site no 12; 5 Kamnica, site no 3; 6 Żoruchowo, site no 4; 7 Mały Buczek, site no 1; 8 Buntowo, site no 1.



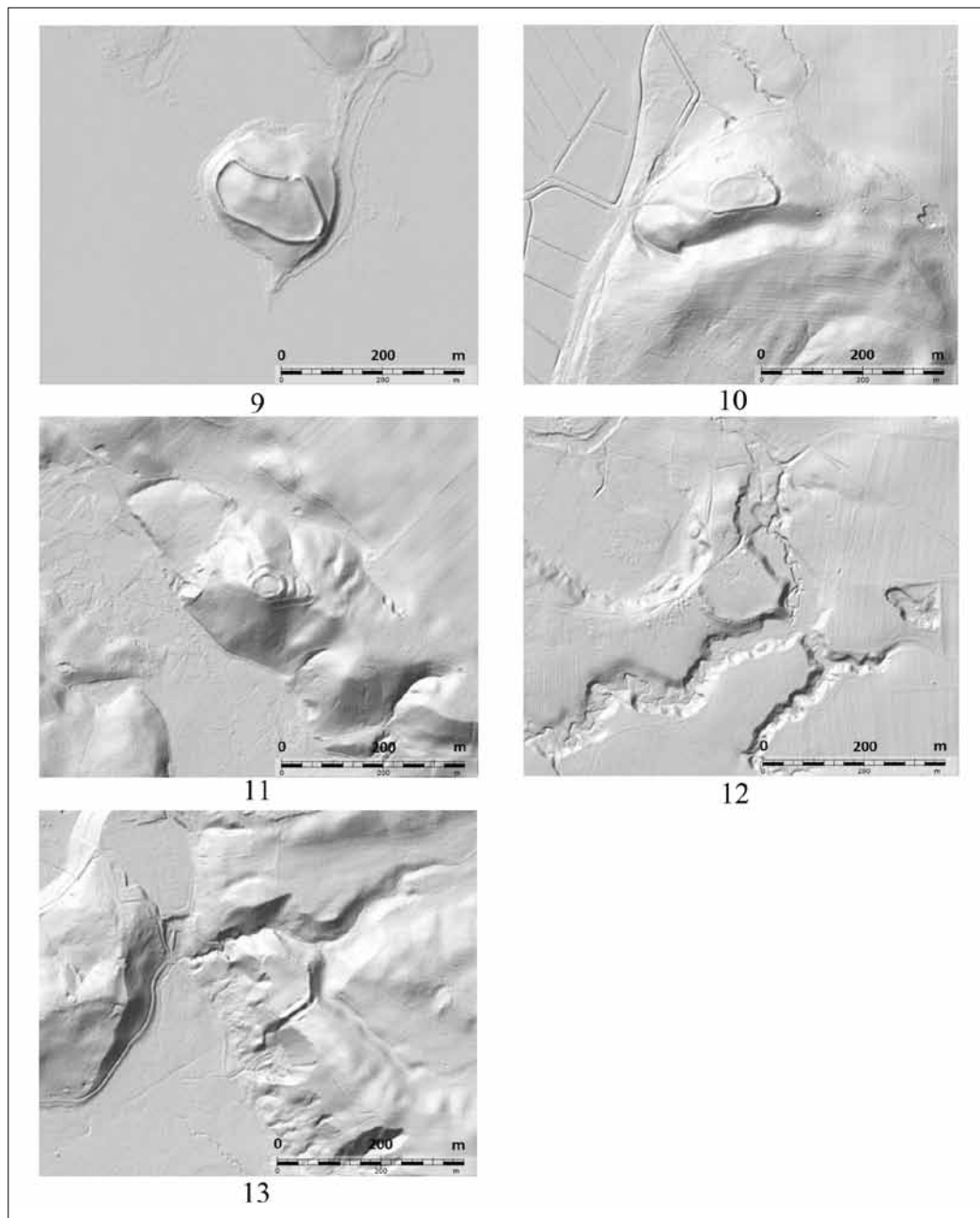


Fig. 4. A visualisation of the terrain of hill-forts in Central Pomerania based on Lidar data (source: <http://geoportal.nid.pl/nid/>): 9 Grąbczyn, site no 1; 10 Równo, site no 4; 11 Słonowice, site no 1; 12 Stary Kraków, site no 6; 13 Żydowo, site no 10.

According to the description by J. Olczak and K. Siuchniński, it is an uphill hill-fort located on a peninsula and with a flat courtyard (Łosiński et al., 1971, 223). Verification research was conducted, but the results did not stand out in any way from those obtained for the other sites described here. However, in recent years, this site (formally with Early Medieval dating), as well as a neighbouring barrow burial site associated on the basis of Polish Archaeological Record with Lusatian culture, became an object of extensive research, based on the detailed analysis of Lidar data (Banaszek 2015, 191-205). Their author, Ł. Banaszek, proposed

‘reversing’ the chronology of both these sites: the hill-fort and the barrow burial site. One of the premises was the location of one of the barrows directly in a dry moat, right beside a still-preserved rampart. From a topographical point of view, the assumption that the hill-fort was constructed during the Early Medieval period, and the barrow at the turn of the Bronze and Iron ages, is less convincing. A barrow placed this way would reduce the defensive advantage of the rampart, and make its construction difficult (Banaszek 2015, 199f). Furthermore, the author of the LIDAR data analysis was unconvinced by the premises on which



previous researchers based their chronology of these sites. The hill-fort was assessed as a Late Medieval or Early Medieval construction, even though most of the pottery found on the site was of 'Lusatian' origin (Lachowicz, et al. 1971, 223ff.). On the other hand, in the publication by J. Olczak cited above (1971, 194), this site was described as a supposed 'Lusatian' hill-fort. Meanwhile, the chronology of the barrow burial site was conducted on the basis of one piece of pottery (Banaszek 2015, 196f.). Taking into account the relation of barrows to ramparts of the hill-fort, it seems quite probable that the hill-fort was constructed earlier, at the turn of the Bronze and Iron ages, and the barrows were definitely younger. A piece of 'Lusatian' pottery that was found on them probably originated from the hill-fort that was reused in Medieval times. While not taking sides with any of these concepts, it should be noted how conjectural archaeological interpretations can be when it comes to interpreting neighbouring objects with a well-preserved form.

The rest of the sites are mostly severely damaged, like site 1 at Buntowo (Złotów district, Złotów county; Fig. 3.8), which is crossed by a road, and there is no certainty that the site was a hill-fort during the Bronze Age or the Early Middle Ages at all. The hill-fort at Słonowice site 1 (Brzeźno district, Świdwin county; Fig. 4.11) is also severely damaged. On the other hand, there are sites like Gałąźnia Mała site 12 (Kołczygłowy district, Bytów county; Fig. 3.4) and Kamnica site 3 (Miastko district, Bytów county; Fig. 3.5), where only a few pieces of 'Lusatian' pottery were found. This may suggest that the research by J. Olczak and K. Siuchniński should be treated with caution. The division of 13 chosen sites into 'Lusatian' hill-forts and supposed 'Lusatian' hill-forts proposed by them is not necessarily appropriate, something which was noticed by A. Niesiołowska-Wędzka, who pointed out that the contemporaneous state of research was inadequate as a basis for such a classification (Niesiołowska-Wędzka 1974, 15, Footnote 82). On the other hand, it should be mentioned that a general response to these studies was positive (Olczak 1986, 4), and since then, no other project of this size has been conducted for this area. Unfortunately, it also means that no research whatsoever was conducted for the supposed 'Lusatian' sites. The Lidar data analysis for the hill-fort at Stary Kraków mentioned before is unfortunately an exception. Furthermore, this project was not backed by invasive verification of the conclusions, like excavations crossing through the ramparts or one of the barrows, which would finally solve the problem of chronology. The analysis of Lidar data in this case was especially useful, because a characteristic spatial relationship between hill-fort and barrows was observed. In the other

cases, reaching additional conclusions would be limited.

To sum up, it should be stated that even though the problem of hill-forts connected with the turn of the Bronze and Iron ages was sometimes mentioned in literature, the state of research has remained unchanged since the verification project described above ended. The wider cultural context with which these hill-forts can be connected should be underlined; assuming, of course, that the dating for them is correct. This is especially important, because the question has hardly been touched on in the literature on the subject (Figs. 3, 4).

### The cultural situation on the southern shore of the Baltic Sea at the turn of the Bronze and Iron ages in comparison with the location of supposed hill-forts of Lusatian culture

Pomerania was a very interesting area at the turn of the Bronze and Iron ages, especially for researchers trying to reconstruct the supposed network of trade routes, or, more generally, the interregional contacts in that era. These contacts were conducted mainly between societies inhabiting vast areas of central and northern Europe, and to some extent also southern Europe. Middle Pomerania, in which supposed hill-forts of Lusatian culture were found, remains a specific area within the region of Pomerania.

Starting with the middle of phase III, and especially from phase IV of the Bronze Age, according to the literature, there were two local groups of Lusatian culture in Pomerania: the West Pomeranian Group which inhabited the region between the left bank of the Oder to the River Wieprza on the east, and the East Pomeranian Group (also known as the Kashubian Group), located between the River Wieprza and the Bay of Gdańsk (Dąbrowski 1979, 74). This divide is arbitrary, however, and does not take into account Middle Pomerania. On the contrary, M. Gedl put the eastern border of the West Pomeranian Group on the rivers Ina and Rega (Gedl 1990, 44). Both authors agreed that the differences in inventories of those local groups were a result of continuing elder traditions (Dąbrowski 1990, 76; Gedl 1990, 36f.). In a wider context, the appearance of 'Lusatian' material in Pomerania during the Bronze Age was naturally caused by the spread of the influence of Urnfield culture. On the other hand, a strong influence emanated from regions located to the northwest of Pomerania, the Nordic Bronze Age. These groups inhabited southern Scandinavia, the Jutland peninsula and northern Germany. Their influence is visible from

the bronze period III, and especially in the bronze period IV and V, with the distinct appearance of bronze items of Nordic origin in the whole area of Pomerania (Bukowski 1998, 188-348). Taking into account the division of this area into the eastern and western part, the absorption of these influences took different routes (see below). Nevertheless, the presence of numerous Nordic metal items may indicate close ties between societies inhabiting all these regions.

An explanation of the form of supposed contacts between particular areas in the Bronze Age and the Early Iron Age should be attempted. One of the most recent and complementary studies was published in a monograph by M. Przybyła (2009, 40, Fig. 3). The many ways in which contacts between societies living in different areas took place were presented. The diagram quoted here is a synthesis of the concepts appearing in archaeological literature concerning interregional and intercultural contacts. These would then be the 'chain' trade which was mentioned by Z. Bukowski (1998, 365-366, fig.180) in the context of Pomerania, as well as long distance contacts between elites, which was underlined by K. Kristiansen (1987, 74-85). Other options presented in that work were migrations on a wider or a local scale, marriage exchanges, the movement of mobile groups specialising in plunder, or different variations of possibilities mentioned here. It is appropriate then to look at the situation that was taking place in Pomerania in the discussed period from the perspective of these hypotheses.

As has already been stated, the presence of numerous imports from the zone of the Nordic Bronze Age undoubtedly proves close ties between their culture and the inhabitants of Pomerania. Apart from original objects, clearly originating in the Nordic Bronze Age, local copies of these items are known, in inventories of both West Pomeranian and Kashubian groups, which may suggest a more immaterial influence on these groups (Bukowski 1998, 354). The personal presence of metallurgists from Nordic Bronze Age zones in East Pomerania is also probable (Dąbrowski 1990, 75f.; Bukowski 1998, 356; Nørgaard 2014, 49f.). In the case of West Pomerania, their presence is almost certain, because influences coming from Nordic societies were much stronger than in East Pomerania (e.g. Gedl 1990, 43). The relocation of both individuals (e.g. metallurgists) and larger groups dealing in bronze may be supposed. However, the process was based on the aforementioned 'chain' trade rather than long-distance caravans, and had a local, indirect character. Unfortunately, the present state of research is not suitable for the unambiguous and precise instance for mechanisms spreading both material and immaterial elements of culture that reached Pomerania at the end of the Bronze

Age (Dąbrowski 2005, 88). On the other hand, the influences between Nordic Bronze Age zones and Pomerania, and in a wider sense, the whole of Lusatian culture, were not one-sided, which is proven especially by the presence of 'Lusatian' pottery in middle and southern Scandinavia or the Danish isles (Thrane 1990, 99-108, 2008, 245-256; Bukowski 1998, 349-353). Their appearance in Nordic inventories may suggest the movement of small groups of people (families?) or matrimonial exchange (Bukowski 1998, 352; Thrane 2008, 254). This question needs further study.

Bearing in mind the above remarks about the presence of Nordic items in Pomeranian contexts, it needs to be stated that the bronze trade was the main axis for the creation of trade/exchange routes between this area and culturally advanced neighbouring groups, especially Nordic societies (Dąbrowski 1990, 73-82; Fogel 1993, 140). On the basis of the spread of these metal objects, propositions for maps of possible trade routes were created. However, it is still unclear what Nordic societies received for these numerous bronze items found in Pomerania. Amber may be the first possible equivalent: it was especially desired in southern Europe, for example in Italy. Numerous sites containing deposits of succinite (Baltic amber) are dated to the end of the Bronze Age and the Early Iron Age (Angelini, Bellintani 2005, 441ff.). Geological data states that sources of this material were all around the southern shore of the Baltic, sometimes reaching into the interior. Easily accessible sources were also located near the Bay of Gdańsk, in the Wisła estuary, and in Bory Tucholskie, which was the southern border of East Pomerania (Bukowski 1999, 151f.). The importance and use of this material is often discussed in literature (see Kosmowska-Ceranowicz, Paner 1999; Bukowski 2002, and further literature there). The oldest known traces of amber processing on the Baltic shore are roughly 13,000 years old (Burdukiewicz 1999, 99). The Jutland peninsula, which was an integral part of the Nordic Bronze Age zone, also had sources of amber. It seems then that there was no need to import this source from outside, but at the turn of the II and III bronze period, there is a significant decline observed in amber found in Nordic inventories. This fact may be connected with the exhaustion or partial inaccessibility of natural sources on the Jutland peninsula, probably caused by natural factors (Fogel 1993, 139; Bukowski 1998, 371). East Pomerania and especially Sambia were both influenced by Nordic groups, because it was convenient to use their sources. This theory is confirmed by activity in areas rich in amber in East Pomerania and the Sambian peninsula at the end of bronze period V (Bukowski 1998, 371). This activity probably generated numerous contacts between western and eastern

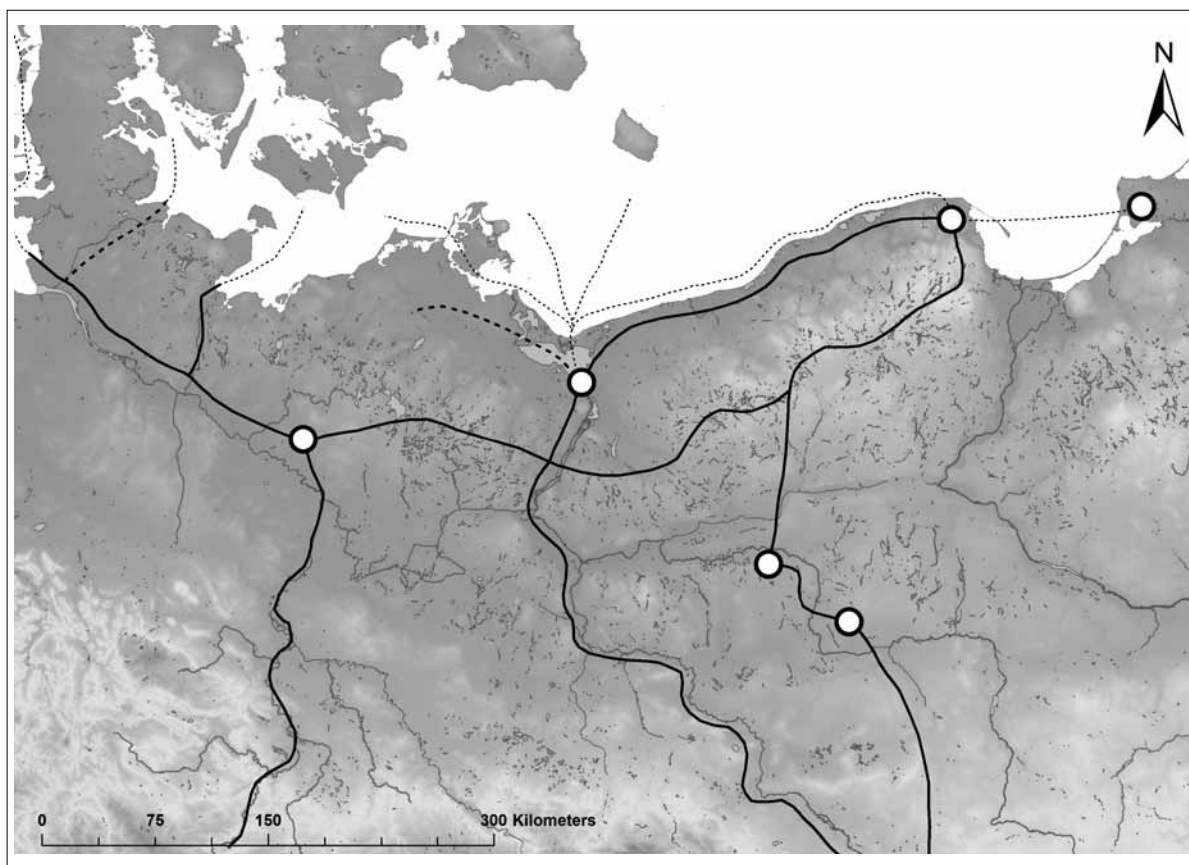


Fig. 5. The network of supposed trade/exchange routes of the Late Bronze Age/HaC (based on: Fogel 1993, 143, Ryc. 1A; Horst 1990, 89-98).

parts of Pomerania, the Nordic Bronze Age zone, and areas located to the south.

The amber trade should not be perceived as equal to the bronze trade (Dąbrowski 1990, 81; Fogel 1993, 138). As has already been mentioned, bronze was the axis of interregional contacts in areas surrounding East Pomerania. Bronze finds in archaeological contexts are a basis for reconstructing routes in northern and central Europe. It is natural then to assume that there were equivalents necessary for trade to be conducted between East Pomerania and Nordic Bronze Age zones. Salt was also mentioned in previous archaeological literature, but it seems it should be excluded, because there is no data proving the existence of brine springs in Pomerania (Bukowski 1998, 368). Unfortunately, there is no evidence when it comes to other resources. It is possible then that equivalents were mostly organic, and are not preserved. On the basis of data concerning the natural environment of East Pomerania, and corresponding data from latter periods, these were probably wax, mead, furs, leather, wool, smoked fish and grain (Dąbrowski 1992, 94; Bukowski 1998, 371).

Another step in analysing the situation on the southern shore of the Baltic Sea, but directly connected with the presence of supposed hill-forts of Lusatian culture in

the middle part of Pomerania, is the attempt to delineate routes by which communication was conducted. Due to the incomplete archaeological data, these attempts should be treated with caution (Kmieciński, Gurba, 2006, 13ff.). It is also not an attempt to find the physical traces of roads, but rather wider zones in which contacts were made (Bukowski 1988, 111f.). All in all, the mappings of F. Horst (1990, 94, Fig.1.95, Abb.2; also: Bukowski 1998, 364) are a commonly accepted view on communication-trade routes within the Baltic Sea and Middle Europe during the Bronze Age and the Early Iron Age. They were further modified by Polish researchers for the Pomeranian region (e.g. Bukowski 1998, 360, Fig.179; Fogel 1993, 141, Fig.1.A). In the model prepared by J. Fogel for the turn of bronze period V and HaC (Nordic Bronze Age period V and VI), there are visible characteristic conditions of routes existing then (Fig. 5). Communication with Nordic Bronze Age zones was probably conducted by societies living in the Lower Oder area (West Pomeranian Group), neighbouring groups living in northern Germany which were a direct part of Nordic communities. This route could have led along the shores of the Baltic Sea, from the Bay of Pomerania to the Bay of Gdańsk. It was also possible that communication was conducted offshore along the coast.

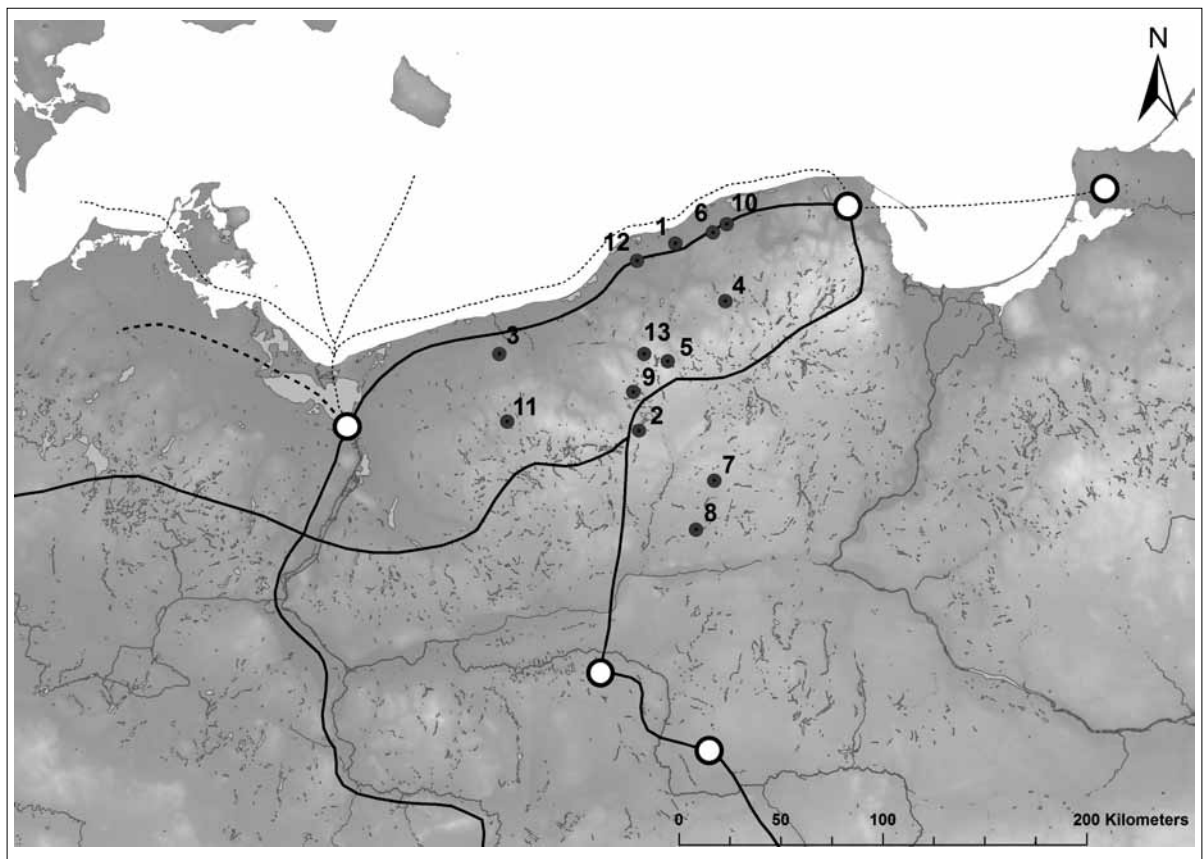


Fig. 6. The location of supposed 'Lusatian' hill-forts in Central Pomerania against the background of J. Fogel's and F. Horst's trade/exchange map (based on: Fogel 1993, 143, Ryc. 1A; Horst 1990, 89-98).

Another possibility was moving along the drainage divide. This way, travellers avoided crossing several bigger rivers located in the area (Fogel 1993, 140). This idea looks especially interesting when compared with the location of supposed 'Lusatian' hill-forts according to J. Olczak and K. Siuchniński (Fig. 6). These sites could have been hypothetical areas of rest and trade for individuals and/or groups transporting goods from west to east and vice versa. The area in which remains of these objects exist was a supposed buffer zone between regions inhabited by societies of Kashubian and West Pomeranian groups. This fact is reflected by the relatively small number of sites from the turn of the Bronze and Iron ages (Sil 2013, 20ff.). This 'buffer' location of hill-forts was characteristic of the twilight of the Bronze Age in Europe (Kristiansen 1998, 85-94). It seems that the area was sparsely populated, and theoretically these objects were then important anchor points for travellers going both ways. It is, however, a far-fetched hypothesis (Figs. 5, 6).

Looking at the map comparing routes according to J. Fogel, and the displacement of supposed 'Lusatian' hill-forts (Fig. 6), a southern offshoot moving from the route running along the drainage divide and located nearly exactly between the Kashubian Group (Eastern

Pomerania) and the West Pomeranian Group (Western Pomerania) is worth additional attention. Hypothetically, it led directly south, to areas inhabited by 'Lusatian' groups from Greater Poland. As proof, the aforementioned hill-fort at Komorowo may be noted, in which large amounts of amber were found (Malinowski 2006, 143ff.). Material gathered at the site suggests that the owners were wealthy, which is further proven by rich inventories from the neighbouring burial site in Gorszewice (Malinowski 2006, 144). Among them was amber, both as a material and in the form of objects created outside the area and re-imported (Bukowski 2002, 99ff.). It is also possible that some inhabitants of Komorowo were foreigners (Malinowski 2006, 144) from the south, who might have controlled the local market for this precious material (Kneisel 2013, 165).

The hill-fort at Komorowo, which according to T. Malinowski was something like a trading post on a route (Malinowski 2006), may have been something similar to the supposed hill-forts in Middle Pomerania. On the other hand, according to M. Maciejewski, these objects were not trading posts (Maciejewski 2016, 67). Nevertheless, the relationship between hill-forts and routes (Fig. 6) suggested by J. Fogel seems quite con-

vincing. Hill-forts at Kamnica, Żydowo, and especially at Szczecinek and Grąbczyn, are almost perfectly located on the offshoot leaving the Pomeranian drainage divide (and East-West route) to the south that was previously described. Moreover, sites at Stary Kraków, Gałęzinowo, Żoruchowo and Równo are placed in a way that suggests a correlation with a route outlined by J. Fogel leading directly near the shore, or linked with a cabotage water route. To some degree, the site at Trzynik also fits the scheme, although it is located further from the coastline. But coastlines nearly 3,000 years ago were different to the present situation. Also, the location of the site in Gałąźnia Mała is far from the shore, but on the other hand, it is located near the River Słupia, which gives direct access to the sea. What is more, the Baltic arguably used to be easy to travel, since the technique of sailing, enabling the crossing of the sea, was known and used within its area, which is proven by images carved in stone in Scandinavia (Goldhahn, Ling 2013, 276, Fig. 15.3). When it comes to the location and role of hill-forts at Mały Buczek and Buntowo, if they were of ‘Lusatian’ origin, they are located essentially in northern Greater Poland, and should probably be compared with sites from that region.

To summarise this part, it should be added that the course of trade routes by J. Fogel presented here is only one of a few (however similar) proposals that can be found in literature. It is based on the dispersion of metal objects (for a wider perspective on the subject: Fogel 1988), meaning that the final shape of routes is arbitrary. On the other hand, it corresponds quite clearly with the dispersal of hill-forts described here, which may suggest a deeper relationship between these two questions.

## Conclusions

The aim of this publication is to be a starting point for further studies of the presence of hill-forts identified with Lusatian culture in Middle Pomerania. The subject is especially important, because influences between the Nordic Bronze Age zone and Pomerania, generally speaking contacts between east and west, as well as the reconstruction of the ‘Amber Road’ which stimulated contacts between north and south, are vital for an understanding of the situation in this region at the turn of the Bronze and Iron ages. Meanwhile, the source base referring to 13 sites mentioned is very limited, and to this day it has not yet been thoroughly analysed. These sites were treated more as a side effect of wide-scale verification research aimed at Early Medieval hill-fort settlements. Unfortunately, the present state of research does not allow us to make any

advanced conclusions. The interpretations presented above are rather far-reaching research hypotheses.

The solution to this problem is, of course, wide-scale verification research concentrating only on finding ‘Lusatian’ material at hill-fort sites. Non-invasive surveys are especially important, because they allow the acquisition of additional information right from the start, before further studies are conducted. These would be both remote sensing survey (high resolution Lidar data, or aerial photography for creating an orthophotomap and three-dimensional models of researched sites) and especially geophysical research. The latter may be crucial in the case of hill-forts with severely damaged ramparts, like those at Szczecinek or Buntowo. What is more, in both kinds of research, there are already examples of references to ‘Lusatian’ hill-forts from other areas (e.g. Bugaj 2014, 47-58; Małkowski, Szczurek 2013, 88-98). Unfortunately, the forests in Middle Pomerania that cover most of the sites mentioned here may cause difficulties when measuring. Anyway, another necessary move is to conduct palaeoecological surveys (palynology). They could give an answer to questions about the impact of contemporaneous settlements on the local environment. This kind of research may provide arguments for or against the hypothesis that hill-forts were centrally located in local networks of settlements. Finally, an invasive study should be conducted, aiming at revealing and crossing a rampart. Only excavations determine unequivocally the chronology of ramparts, and this question is outstanding for most of the hill-forts described here. The verification studies by J. Olczak and K. Siuchniński prove that the few modest excavations done on the baileys of hill-forts usually generate questions rather than give answers.

As a postscript to this publication, it should be mentioned that author of this paper is preparing an initial documentation of the physical form of Grąbczyn hill-fort. A remote sensing survey was conducted with GPS and a high-resolution camera mounted on a drone. As a result, a precise orthophotomap and three-dimensional model will be created. This survey is intended as a starting point for a larger project, including interdisciplinary studies of the hill-fort, which is the first one to be investigated from the group of supposed ‘Lusatian’ hill-forts in Middle Pomerania.

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Received: 4 January 2017; Revised: 26 March 2017;  
Accepted: 11 July 2017.

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## VĒLYVOJO BRONZOS – ANKSTYVOJO GELEŽĪES AMŽIŲ PILIAKALNIAI POMERANIJOJE: NEPASTEBĒTA PROBLEMA

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### Santrauka

Straipsnyje nagrinėjami Pomeranijos regione (šiaurinė Lenkija) esantys Lužitėnų kultūros piliakalniai, priskiriami vėlyvajam bronzos – ankstyvajam geležies amžiams (1 pav.). Literatūroje šie piliakalniai minimi tik vakarinėje aptariamose teritorijos dalyje (t. y. žemutinėje Odros zonoje), tuo tarpu Centrinėje Pomeranijoje tokių nėra. Atsižvelgiant į palyginti didelį įtvirtintų gyvenviečių skaičių pietinėje Pomeranijos kaimynystėje (Didžiojoje Lenkijoje), toks trūkumas stebina. Kita vertus, 7–8-uoju dešimtmečiais A. Mickevičiaus universiteto (Poznanė) archeologai vykdė didžiulio masto archeologinį projektą, kurio tikslas buvo patvirtinti žinomus piliakalnius Košalino ir Slupsko vaivadijose (pagal 1957–1975 m. administracinį paskirstymą). Šio projekto metu, pasitelkus paviršiaus tyrimus, geodezinius matavimus ir vieno kvadratinio metro šurfus, buvo iširta 300 vietovių. Beveik dviejuose šimtuose iširtų vietų buvo patvirtinta esant piliakalnių. Daugelyje jų buvo rasta ankstyvųjų viduramžių (rečiau – vėlyvųjų viduramžių) keramikos. Įdomu ir tai, kad juose buvo rasta vėlyvojo bronzos ir ankstyvojo geležies amžių radinių, kurie priskiriami Lužitėnų kultūrai. Vietovių su tokiais radiniais iš viso yra 13, deja, nors ir buvo minimos ankstyvojoje literatūroje, šiuolaikiniuose archeologiniuose tyrimuose jos yra užmirštos. Tikėtina, kad kartu su Didžiąja Lenkija Lužitėnų kultūros piliakalniai vaidino svarbų vaidmenį bendradarbiaujant rytiniams ir vakariniams Pomeranijos regionams (2 pav.). Žvelgiant dar plačiau, svarbu įvertinti Lužitėnų kultūros piliakalnius Gintaro kelio bronzos amžiaus pabaigos kontekste.

Šis straipsnis turėtų būti įžanginė didelio projekto, kuris jau yra rengiamas, dalis. Jo metu planuojama dar kartą iširti visus turimus duomenis naudojant modernias technologijas (LIDAR, GIS), taip pat atlikti žvalgomouosius archeologinius tyrimus ir pasinaudoti tarpdisciplininėmis studijomis (3–6 pav.).