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## ON THE SYNCHRONIZATION OF THE CHRONOLOGY OF PHENOMENA AND ARTEFACTS

### ABSTRACT

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The article presents a slightly different point of view on the issues related to the chronology and significance of the Chotyniec agglomeration (SE Poland) from the one presented in the discussion by Denys Grechko published in the 72<sup>nd</sup> volume of *Sprawozdania Archeologiczne*. The author highlights the importance of Grechko's contribution in clarifying the chronology and provenance of biconical glass beads, which should be considered eastern imports. The polemical remarks concern the dating of the hillfort in Chotyniec and the entire Chotyniec agglomeration. The current state of research does not authorize drawing categorical conclusions that would limit its use to the end of the 7<sup>th</sup> and early 6<sup>th</sup> centuries BC. This is contradicted by the entire series of radiocarbon dates and other premises. With regard to the Pomeranian culture, it was shown that it is not justified to distinguish the Lusatian-Pomeranian stage in south-eastern Poland. At the same time, new sources of the Jastorf culture were indicated.

Keywords: chronology, the Chotyniec agglomeration, Scythian culture, Hallstatt culture, Pomeranian culture, Tarnobrzeg Lusatian culture

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## INTRODUCTION

This text would probably not have been written if it were not for the Editorial Board of “Sprawozdania Archeologiczne”, which published a very important article by Denys Grechko (2020b) in the “Discussions and polemics” section of the last volume of 2020 (72/2). We can see it as a provocative invitation to a debate, definitely worth accepting. The aim of this article, however, is not engaging in a direct polemic with the author (although such references will also be included), but drawing attention to slightly different aspects regarding evidence and interpretation. Moreover, the author of the article encourages such a step himself in the last sentence of his paper: “The presented work only outlined several possibilities for highlighting individual periods in the phase III/1 of the TLC (SC: Tarnobrzeg Lusatian Culture), which is a task for future fundamental research of Polish and Ukrainian specialists” (Grechko 2020b, 601). It should also be noted that the author published a second paper in 2020 (Grechko 2020a), which should be considered an extension and a more detailed account of chronological issues in a wider European context. In this case, it is a proposal to change the chronology of the “Scythian” invasions in Central Europe, which also applies to Polish territories.

Before we proceed to the main body of the article, it should be noted that in the Polish archaeological literature (*e.g.* Czopek 1989; Kłosińska 2007), attention has for a long time been drawn to the issues related to the chronology and interpretation of phenomena observed in the Early Iron Age in the Polish lands east of the Vistula. In terms of the material evidence, this area differs from the general “Lusatian” scheme in the presence of numerous artefacts of eastern or south-eastern provenance, the best example of which are items related to the Scythian cultural circle (Bukowski 1977). More recent studies advance this thesis even further, providing numerous arguments extending older interpretations (Andrzejowska 2016; Trybała-Zawiślak 2020). The distinctiveness of the area of eastern Poland (associated rather with “the east” in its broader sense) in relation to western Poland has been clearly demonstrated by recent discoveries of sites attributed to the Hallstatt (“Western European”) cultural circle in Lower Silesia (Gediga 2010; Gediga *et al.* 2020). Thus, it can be stated that in the Early Iron Age, the border between the cultures of Eastern and Western Europe runs through the present-day Polish lands. The contemporary national frontier between Poland and Ukraine does not correspond to any cultural border (Czopek and Machnik 2013) nor an environmental one (Makohonienko 2009), which leads to the conclusion that there is a need for cooperation in the context of homogeneous, international and interdisciplinary research programs. It is for these reasons that the very interesting article by Denys Grechko (2020b) should be warmly received and its findings should be adopted as a starting point for a discussion. The author’s most important proposals involve correction of the dating of selected artefacts – the archaeology of artefacts (military items of Scythian provenance and small, biconical glass beads), which have been used as the source basis for the separation of two chronological phases ordering cultural

temporal relations (chronology of phenomena) in some parts of Central Europe, particularly in the east of Poland.

## TARNOBRZEG LUSATIAN CULTURE (TLC)

The cultural situation in the Early Iron Age in south-eastern Poland has long been treated as a kind of phenomenon, the sources of which were sought in relations with eastern and south-eastern cultural groups. At the same time, researchers adopted the thesis about cultural homogeneity resulting from the continuation of the TLC (Moskwa 1976). However, the latest study by Katarzyna Trybała-Zawiślak (2019) clearly showed that cultural relations and their exact chronology are more complex than previously thought, and TLC can no longer be treated as a monolith in time and space, especially in terms of its youngest materials. Studies on the chronology and periodisation of this unit in relation to the Early Iron Age have been repeatedly undertaken by archaeologists associated with the Rzeszów (Czopek 1989; Czopek and Trybała-Zawiślak 2015; Trybała-Zawiślak 2019, 137-182) and Cracow academic centres (*e.g.* Przybyła 2003; Gawlik and Przybyła 2005). The new perspective of Denys Grechko, although incomplete or even fragmentary, is very valuable because it meets the criteria of an objective and “external” point of view. His most important and well-motivated finding is the narrowing of the chronology of the small, biconical glass beads that appear in funerary complexes (well-dated thanks to Greek imports) of the Scythian cultural circle in the first three/four (?) decades of the 6<sup>th</sup> century BC, not going beyond the middle of that century (Grechko 2020b, 587-597). The researcher also identifies a production centre at the Black Sea settlement of Yahorlyk in Kherson Oblast operating, in his opinion, within the lifetime of one generation of Greek colonists who produced the aforementioned beads. In such a context, these inconspicuous artefacts take on the significance of Greek imports, reaching the Vistula and Oder basins via “Scythian” mediation. There are no obstacles to assigning a significant role to the Chotyniec agglomeration in this respect, which is also pointed out by Grechko (2020b, 598). The author proposes synchronizing the horizon of biconical beads with the HaD1 phase and the second phase of the Kelermes period. It seems, however, that there is a fundamental contradiction here between the “narrow” chronology of the production workshop (*ca.* the first three decades of the 6<sup>th</sup> century) and the entire HaD1 phase, the beginning of which covers also the last decades of the 7<sup>th</sup> century (Trachsel 2004, 151, 152). Therefore, if we assume a very narrow dating of the beads, then we should only talk about the synchronisation with the younger part of HaD1. At this point it is worth mentioning a rich grave inventory with this kind of beads (referenced in Grechko’s article), coming from Zabłotce (left bank of the San river, Jarosław district), dated no earlier than the middle of the 6<sup>th</sup> century BC to the beginning of the 5<sup>th</sup> century BC (Bajda-Wesołowska *et al.* 2014), thus later than HaD1. It should be noted, however, that this complex is associated more with the “Thracian” environment,

hence, although similar to the “Black Sea” ones, the biconical beads may have a different provenance and therefore a slightly different, later dating. These inaccuracies show that the chronology of the aforementioned biconical beads cannot be considered settled. However, it would be very promising to adopt a narrow horizon (early 6<sup>th</sup> century BC) for the occurrence of such beads in south-eastern Poland. This interpretation seems to be confirmed by the grave inventories from large TLC cemeteries (Trzęsówka, Kosin), where the beads appear in single graves (in about 3,000 known graves from phase III of the TLC, biconical beads were registered only in eight), suggesting the existence of a short period of their functioning in south-eastern Poland (Czopek 2011). In such an interpretation, we could obtain an artefact with the most precise dating, but it would rather not have a “phase-forming” significance for the entire III1 phase of the TLC, but its part. Therefore, “horizon” is a suitable term here.

Recognizing the provenance of the described artefacts as proposed by Denys Grechko, one can refer to them as Greek (“provincial Greek”) imports. This quite fundamentally changes their interpretation as a determinant of the rank of people buried with such ornaments and creates new possibilities for determining the dynamic functioning of the necropolises in historical time. A good example here could be the cemetery in Grzęska (Czopek *et al.* 2016). It is characterized, like many other TLC necropolises from phase III (Trybała-Zawiślak 2015), by an ordered, linear arrangement of graves, which is derivative of the time when they were founded. In Grzęska this period was defined for five generations, *i.e.* 125-150 years. Two graves with beads can be assigned exactly to the middle of this interval, as long as we make some adjustments to the order of graves in zone B of the cemetery, which was proposed in the monograph (Czopek *et al.* 2016, 116-125). Taking into account the limited dating of the horizon of biconical beads (600-570 BC), the onset of the functioning of the cemetery can be attributed to the range 660-650 BC, and its decline to 520-510 BC. From the point of view of cultural relations, it is important to observe that this narrow horizon of the evident “Scythian” provenance, which is also confirmed by the grave ceramics, falls in the middle stage of the use of the necropolis. It cannot be linked to either the beginning or the end of its functioning. This example shows a slightly different manner of inference, specifying the chronology of the site on the basis of findings about its functioning in a situation when we have an accurate dating of at least one component of the grave inventory. Such a possibility is given by the precise dating of the horizon of biconical beads (or other artefacts occurring over a period of several decades). Considering the remarks above, it is difficult to overestimate the contribution of Denys Grechko, who establishes a precise dating for the seemingly inconspicuous biconical glass beads. However, not only the beads can determine the absolute dating of phase III1 TCl, which should last at least until the end of HaD, or even the beginning of LtA, *i.e.* the end of the 6<sup>th</sup> century BC. In many complexes we have confirmed the presence of other artefacts, well dated to the second half and the end of the 6<sup>th</sup> century.

## DATING AND IMPORTANCE OF THE CHOTYNYEC HILLFORT

A very important issue, and at the same time one of the essential elements of Denys Grechko's reasoning, is the chronology of the Chotyniec agglomeration, particularly the Chotyniec hillfort itself. It is not yet possible to set the dates of its beginning and end, as the excavation work has not been completed. The only thing we can date with precision is the *zolnik* (ash mound), excavated in its entirety. Transferring the observations and chronological discoveries made for this feature in order to determine the time of functioning of the entire settlement is unjustified (which is the bottom line of Denys Grechko's proposal), at least until the field research has been completed. So far, only 2% of the area of the settlement itself have been explored. The sum of the facts (for the *zolnik*), *i.e.* the dating of ancient amphorae, arrowheads and pins, together with radiocarbon dates, places its origin in the 6<sup>th</sup>/7<sup>th</sup> centuries BC. The chronology of the entire collection of arrowheads, consisting of 38 items, ranges between the mid-7<sup>th</sup> and mid-6<sup>th</sup> centuries (Burghardt 2020). Some types of pins and a twisted necklace may be similarly dated (Czopek 2019, 133), although this group of artefacts may be placed in a slightly wider chronological range. Fragments of Greek amphoras used to transport wine, including the best-preserved items, indicate the turn of the 6<sup>th</sup>/7<sup>th</sup> centuries or the first decade of the 6<sup>th</sup> century BC (Czopek 2019, 126, 127; Trybała-Zawiślak 2019, 268-272). Needless to say, Greek imports in Eastern Europe are considered the best determinants of absolute chronology.

A few words should also be devoted to the hand made ceramics. At the sites of the Chotyniec agglomeration, we encounter forms present in other hillforts of the forest-steppe zone. Most of the pottery found in the Chotyniec *zolnik* (over 12,000 fragments) can be synchronized with phase III.1.3. of the fortified settlement in Nemirov, dated to the second half of the 7<sup>th</sup> and the first thirty years of the 6<sup>th</sup> century, BC related to stage 3 of the Early Scythian culture ("ESC"; Smirnova *et al.* 2018, 223, 224, 231). The presence of fragments of large, thick-walled vessels with black surface in Chotyniec (Fig. 1), which in the Nemirov hillfort were considered a manifestation of influences from the Hallstatt culture (!), clearly suggests the possibility of an earlier dating – at least until phase III 1.2. synchronized with "ESC" 2, *i.e.* dated to the first half of the 7<sup>th</sup> century (Smirnova *et al.* 2018, 227, 231). Thus, we obtain a premise to date the Chotyniec hillfort earlier than the 7<sup>th</sup>/6<sup>th</sup> centuries, perhaps even in the second half of the 7<sup>th</sup> century. We find confirmation of this thesis in the radiocarbon dating. One must agree with the caution that Denys Grechko (2020b, 587) exhibits in approaching radiocarbon dates for the Early Iron Age, but they cannot be ignored, especially as we now possess an increasing quantity. They relate to various Early Iron Age complexes and cultural groups in south-eastern Poland (Trybała-Zawiślak 2019, 143-158). For the hillfort in Chotyniec, we currently have 17 such dates from the *zolnik* area, which make up a sequence from the 8<sup>th</sup>/9<sup>th</sup> to the 4<sup>th</sup>/5<sup>th</sup> centuries (Czopek and Krąpiec 2020). The oldest of them correspond to the period before the founding of the *zolnik*, which took place in its first phase, *i.e.* 7<sup>th</sup> – 6<sup>th</sup>/7<sup>th</sup> centuries. The largest series of dates

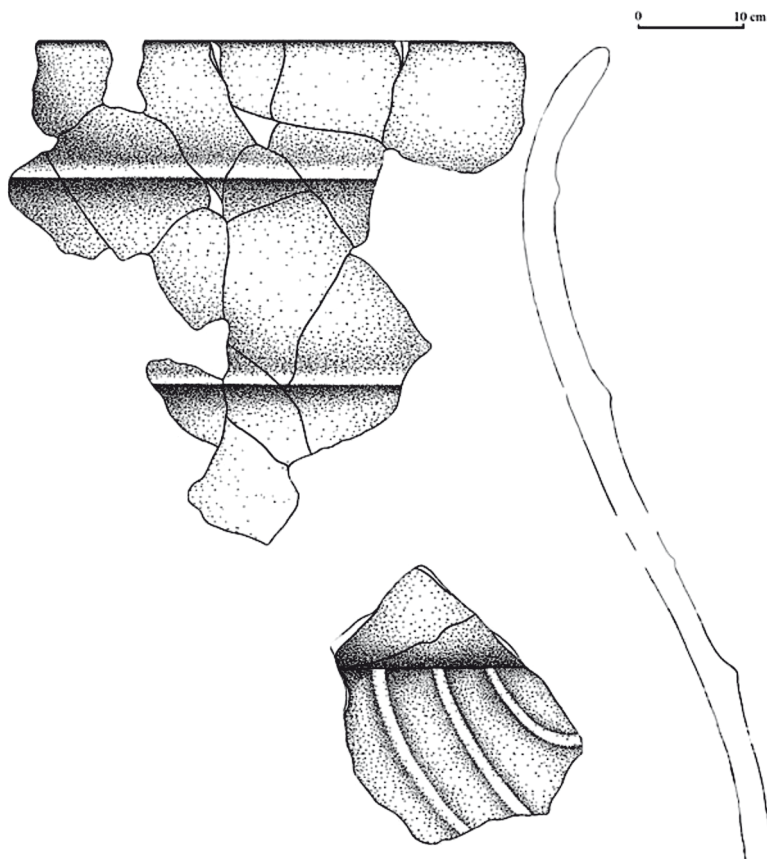


Fig. 1. Chotyniec, Jarosław district, Site 1. Zolnik (ash mound).  
Fragments of a large thick-walled vase with black outer surface

indicates intensive use in the second phase, falling in the 6<sup>th</sup> and 5<sup>th</sup> centuries. Only one date can refer to possibly the youngest horizon (6<sup>th</sup>-3<sup>rd</sup> centuries), which is quite problematic in all respects (concerning stratigraphy, dating of artefacts or knowledge of the processes and trends in the development of settlements in the Scythian circle). There is no doubt, however, that the Chotyniec *zolnik* functioned also in the second half of the 6<sup>th</sup> century and probably in the 5<sup>th</sup> century (possibly only in part of it). The main argument here is very clearly preserved relationship between the various layers. In the profiles that have already been published (Czopek 2019, fig. 5; Czopek and Krąpiec 2020, 1602, fig. 4) only the oldest layer, rich in artefacts, including precisely dated ones, is clearly visible. The younger layer is preserved only on the edges of the *zolnik* and is distorted by modern ploughing. Thus, it can be assumed that the youngest horizon of its use was almost completely destroyed, hence the lack of sources that could characterize it. The only traces are

the charcoal from the edges of the “ash-*zolnik*” layer, and probably some bones and ceramics that cannot be accurately dated.

In the last research season (2020), it was possible to obtain material for radiocarbon dating at the base of the embankment, thus identifying the time of its construction. It is a charcoal sample dated to 2514±24 BP (MKL-A5046). Its calibration is not entirely unambiguous, but the highest probability ranges, both at 1 and 2 sigma levels, clearly indicate the second half of the 7<sup>th</sup> and first half of the 6<sup>th</sup> centuries BC (Fig. 2). It seems that such dating may correspond to the beginning of the use of the *zolnik*.

If we take radiocarbon dates as a determinant of the dating of the entire settlement, which does not have to constitute an obvious strategy, it probably functioned from the second half of the 7<sup>th</sup> to the 5<sup>th</sup> century. Its decline cannot be precisely determined at the moment. Therefore, Denys Grechko’s view that the settlement was abandoned as early as the 6<sup>th</sup> century (and even at the end of the first thirty years of this century – Grechko 2020b, 600) seems to be at least premature. The hillforts to which we refer for analogies when analysing the site in Chotyniec, located in the zone of the Ukrainian forest-steppe (from the Dnieper to the Dniester), can be dated very differently. While the beginning of their usage is attributed quite consistently by many authors to at least the end of the 7<sup>th</sup>

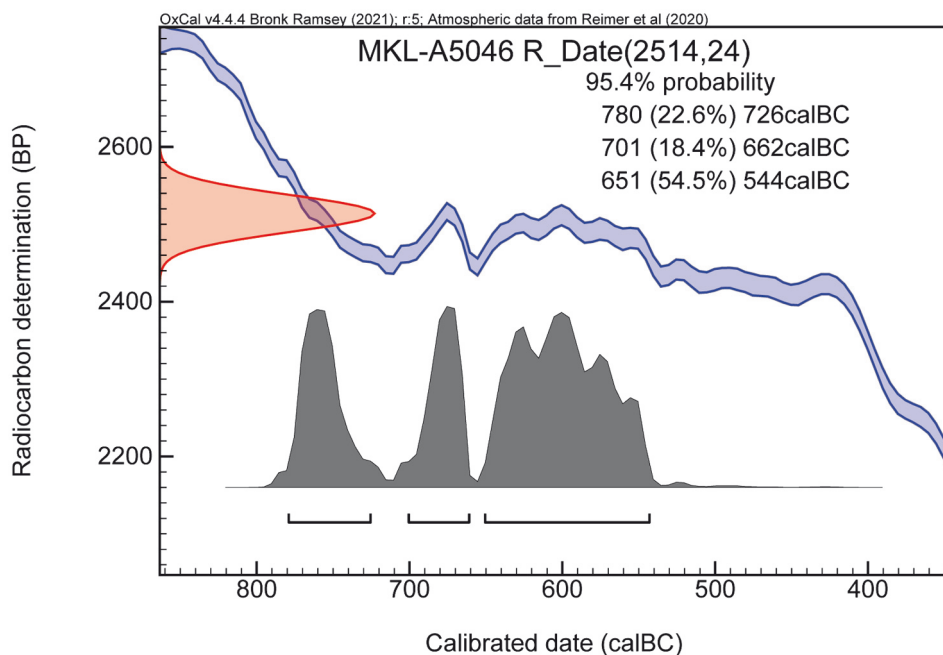


Fig. 2. Chotyniec, Jarosław district, Site 1.

Calibration chart of radiocarbon dating of a charcoal sample from the base of the embankment

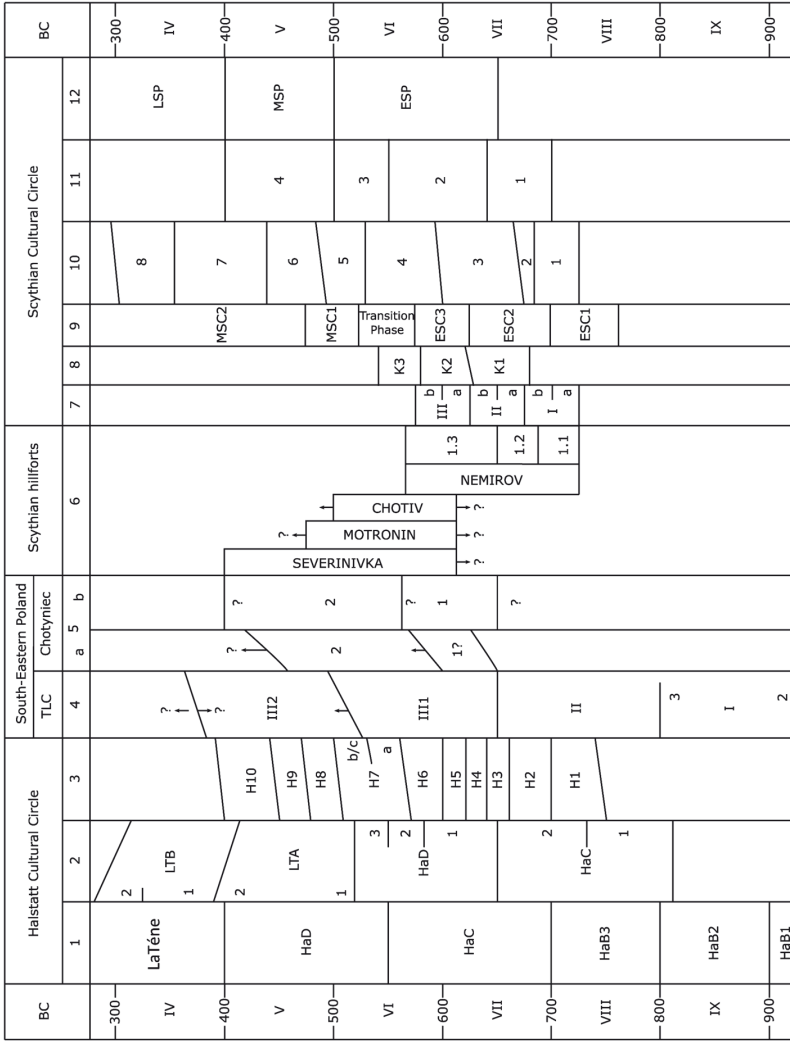


Fig. 3. Chronology of the Early Iron Age. Authors: 1 – Reinecke/Kostrzewski – Czopek 2010; 2 – Trachsel 2004; 3 – Parzinger 1998; 4 – Czopek 1989 (with later modifications); 5a: *zolnik* – Czopek and Krąpiec 2020; 5b – Hillfort (the author's own proposal); 6 – Ignaczak et al. 2016; Bessonova and Skoryi 2001; Kravchenko 2017; Smirnova et al. 2018; 7 – West Podolian Group: Bandrivskiy 2014; 8 – Kelermes Period: Grechko 2013; 9 – Early Scythian Culture – Medvedskaya 1992; Grechko 2012 (MSC – Middle Scythian Culture, ESC – Early Scythian Culture); 10 – Alekseev 2003; 11 – Murzin 1984; 12 – Melyukova 1989 (LSP – Late Scythian Period, MSP – Middle Scythian Period, ESP – Early Scythian Period)



century, the end of their functioning is not so clearly defined. More recent studies of hillforts point to the end of the 6<sup>th</sup> or the beginning of the 5<sup>th</sup> century. Examples are the hillforts in Motronin (Bessonova and Skoryi 2001, 125) and Chotiv (Kravchenko 2017, 131). It seems that in terms of chronology, the dating closest to Chotyniec was confirmed for Severynivka – from the end of the 7<sup>th</sup> century to the end of the 5<sup>th</sup> century (Ignaczak *et al.* 2016). Adopting the narrow dating proposed by Denys Grechko would be consistent with the chronology established for the aforementioned Niemirow (Smirnova *et al.* 2018). It would also have to mean an unequivocal link between the Chotyniec agglomeration and the West Podolian group (probably this is the basis of Denys Grechko's reasoning), which is possible, but not proven. This grouping ended its presence on the Dniester in the 6<sup>th</sup> century, but also in this respect we note discrepancies in the accuracy of dating. It is even attributed to the first quarter of the 6<sup>th</sup> century (Kowalski-Biłokryły 2012, 184; Bandrivskiy 2014, 306, 345, 355) or the first half of that century (Chochorowski 2014, 21-25). On the other hand, this would suggest earlier dating of the beginning of the hillfort in Chotyniec, at least from the middle of the 7<sup>th</sup> century. So we see that fundamental decisions on this issue are still ahead of us. We must wait for the completion of the first phase of research on this important site.

It should be remembered at this point that the available literature clearly shows a tendency to rather precisely determine the beginnings of hillforts in the forest-steppe zone, while, but when it comes to determining the end of their use we encounter a number of difficulties. This is related not only to the state of their excavation, but also to the possibilities of source studies. There is a visibly greater dynamics of changes of leading types of artefacts, mainly militaria in the Early Scythian period (ESC). It is enough to look at the chronological patterns (Fig. 3) where we can see narrow ranges of separated periods (*e.g.* in the Early Scythian phase or in the Kelermes complexes), which clearly contrasts with the Central Scythian period (Grechko 2012; 2013). The 6<sup>th</sup> century BC is sometimes called the “dark age” (Aleksiev 2003, 27, 153-168), which results from the low accuracy of the dating of the sources. This remark must be taken into account when discussing the chronology of the Chotyniec agglomeration.

The chronology of the Chotyniec hillfort is important for the site itself, but also for several other reasons. It also allows us to study the cultural input of the phenomena of Eastern European origin on the areas to the west. Two recent works (Czopek 2020; Trybała-Zawiślak 2020) clearly show its role as a centre from which the impulses referred to as the “scythization” of local Early Iron Age groups might have spread. This is also admitted by Denys Grechko (2020b, 598), but he clearly suggests that this process (probably lasting at least from the end of the 7<sup>th</sup> century) preceded the military actions of the Scythians in Central Europe. The key in this narrative is the changed dating of the fall of the hillfort in Wicina to the last years before the middle of the 6<sup>th</sup> century and its synchronization with the period of destruction of other hillforts in Central Europe – the so-called “Horizon of the Scythian invasions” (570/560-520 BC: Grechko 2020a; 2020b). Unlike other researchers (*e.g.* Chochorowski 2014, 41), he proposes a narrow and clearly “rejuvenated” chronology.

In the context of Chotyniec, it is worth paying attention to a very significant typological and chronological similarity of the arrowheads from the Chotyniec *zolnik* (Burghardt 2020) and the ruins of the defensive settlement in Wicina. It may of course be a matter of good synchronization in time of their use, but also a cause-and-effect relationship can be considered. In this case, the hillfort in Chotyniec might not have been abandoned. It is also probable that a group of “Chotyniec warriors” participated in the Scythian invasion of other areas of Central Europe. In such a case, two scenarios are possible – feeding the main wave of aggressors towards the Carpathian Basin or an independent escapade aimed at the territory of the Lusatian cultural circle to the west (example of Wicina), but also to the north-west (see axes from the vicinity of Płock in Mazowsze – Kotowicz 2014, 42, table 21: 2; Andrzejowska 2016, 299, fig. 8: a).

Eastern references are also visible in the forms and ornamentation of local, “East Lusatian” ceramics (Andrzejowska 2016, 281-297; Ignaczak 2016; Trybała-Zawiślak 2020). In this case, we are also dealing with the observation already made of quite precise dating of the beginning of a given phenomenon, and less precise determination of its end. Limiting the significance of the stronghold in Chotyniec only to the narrow range of HaD1, as it is done by Denys Grechko, does not seem justified. Influences from the forest steppe zone in eastern Poland are visible after the hypothetical discontinuation of the use of this hillfort. An important argument here is the fact that they also occur in communities of the Pomeranian culture, *i.e.* younger than the first half of the 6<sup>th</sup> century BC (see below). Other TLC materials quoted by Denys Grechko, referred to periods later than HaD1 (*e.g.* an arrowhead from Nienowice – a site close to the compact range of the Chotyniec agglomeration, or the entire assemblage of material from Site 22 in Grodzisko Dolne) do not contradict, but rather support, the thesis about the functioning of the Chotyniec enclave of the Scythian cultural circle also in the second half of the 6<sup>th</sup> century, and possibly also in the 5<sup>th</sup> century BC. Also of interest is the remark by Denys Grechko about the quantitative difference of artefacts of “Scythian” origin in these two horizons – the 6<sup>th</sup> to 7<sup>th</sup> centuries and the end of the 6<sup>th</sup> to the middle of the 5<sup>th</sup> century BC. However, the thesis that in the latter period the mediation of the inhabitants of the Chotyniec agglomeration was no longer involved is debatable in the light of the above-mentioned comments. However, it is necessary to take into account not only nail-shaped earrings and arrowheads, but also other artefacts of exceptional importance – *e.g.* acinaces from Rozborz nad Sanem (Czopek 1995) or more and more numerous finds of greyware wheel-thrown ceramics. For most of them, it is difficult to pinpoint their origin. It is possible to link them with the East European zone – forest-steppe one, but also with the Vekerzug Culture, which has already been highlighted in the analysis of arrowheads (Czopek *et al.* 2015). These issues should undoubtedly be analysed more thoroughly in a wider territorial context, in the zone adjacent to the north-western zone of the forest-steppe variant of the Scythian cultural circle.

## POMERANIAN CULTURE (PC)

Apart from his essential remarks, Denys Grechko (2020b, 600, 601) also touched upon the issues related to the Pomeranian culture (PC). In south-eastern Poland, two horizons are becoming increasingly clear, which is attributed to the appearance of new evidence (Trybała-Zawiślak 2019, 312-342). The first of them is represented by a few funerary complexes, and the second, clearly younger, by settlement material. The finds made concerning the settlement in Jarosław (Czopek 2014) are of key importance for their dating, which this author did not take into account. On this site we confirmed the chronological sequence of TLC and Pomeranian culture settlements. Radiocarbon and TL dating as well as historical material (including wheel-thrown ceramics – the so-called “grey Thracian”; glass beads, an iron axe) allow us to relate these materials quite reliably with two chronological intervals within the 8<sup>th</sup> to 6<sup>th</sup> (TLC) and 5<sup>th</sup>/4<sup>th</sup>-3<sup>rd</sup> centuries (PC). Separation is also confirmed by the manner and location of the spatial development of the settlement. The only problem is the 5<sup>th</sup> century, which may suggest the existence of a settlement hiatus or a transitional horizon, assuming the continuity of use of the settlement by two different communities – local (TLC) and coming from outside (PC). It is impossible to recognize the presence of the latter type of materials already in the HD phase, therefore it was assumed that in this phase we are dealing with homogeneous TLC settlements. On the other hand, the horizon of the 5<sup>th</sup>/4<sup>th</sup>-3<sup>rd</sup> centuries BC (and maybe also a bit later) is well dated by the presence of graphitic (Celtic) ceramics, as well as the ceramic references to the Jastorf circle. Identification of similar materials at Site 24 in Nienowice (Czopek *et al.* 2018, 274-280), among which more distinct and probably slightly younger “Jastorf” features were discovered (slanted vessel rim, globular vessels, presence of typical clay spoons and fragments of the so-called firedogs), allows for a formation of a completely new hypothesis. It refers to the presence of PC settlement materials in the Jastorf context, dated to the older pre-Roman period. So it seems that the population of the Jastorf culture arrived (probably with some Pomeranian component) not earlier than in the 4<sup>th</sup> and 3<sup>rd</sup> centuries (= LtB2 and LTC – Woźniak 2011, 31-33; Grygiel 2018, 352-375) and put an end to the TLC settlement. There is no reason to date materials of this type to HaD. Such a chronology can at best be justified for some, few burial complexes known only from the northern part of the Sandomierz Basin. The analysis of the chronology of brooches (Woźniak 2011, 27) shows that we can speak of the appearance of the Pomeranian culture in Lesser Poland only at the end of HaD3 and at the beginning of LTA, *i.e.* not earlier than at the turn of the 6<sup>th</sup> and 5<sup>th</sup> centuries BC. Similar conclusions apply also to other areas of eastern Poland (Andrzejowska 2016, 307).

In this context it is difficult to talk about the Pomeranian expansion and the emergence of a new cultural model (“Lusatian-Pomeranian”; Grechko 2020b, 600) in the San and Vistula interfluvium. It is rather about the diffusion of small, individual groups that seem to have been assimilated fairly quickly by the local TLC population. The separate nature of

burying the deceased in different cemeteries is very significant in this context. Among all TLC cemeteries dated to the Early Iron Age (with a total number of over 3,000 burial complexes), not a single case of a grave with PC features was found, nor that of mixed (TLC/PC) grave inventories. This can be compared to the relationship between the TLC and the Scythian cultural circle. In this case, the list of such complexes would be very long, including the materials referred by Grechko to the time both before and after the horizon of the Scythian destruction in Central Europe (Grechko 2020b, 600, 601). A good argument is also a clear discrepancy in the radiocarbon dating of the TLC and the dates for the settlement material of the Pomeranian or Pomeranian-Jastorf culture (Trybała-Zawiślak 2019, 342, fig. 8.13).

## CONCLUSIONS

The comments presented in the article systematized some chronological issues concerning south-eastern Poland in the Early Iron Age. One of the most important observations here is that in this dynamic period of many changes, it is difficult to develop a homogeneous system of relative chronology for all the material evidence available today. Good chronological markers relate mostly to eastern analogies, the chronology of which takes into account, first of all, absolute historical dating. References to the Hallstatt circle are practically absent in this area (in contrast to the western part of Poland), hence it is difficult to responsibly use the patterns developed for it. They are based on the occurrence of specific forms of artefacts, and not on their absolute chronology, as this is a secondary issue. This is not surprising, because the basis of relative chronology is always stratigraphy and typological variability of artefacts. Therefore, comparing cultural phenomena from eastern and western Europe is very difficult (if at all possible) due to the low mutual repeatability of the types of material evidence. In this case, we use a similar scheme: **artefacts/layer** → **phase of relative chronology/periodisation** → **absolute chronology**. However, there is a very big difference between the East and the West, resulting from the research tradition. While the understanding of the chronology of the Hallstatt cultural circle has been developed on the basis of relative chronology since the times of Reinecke (*i.e.*, the 1920s), the Eastern European Scythian world has for many years been treated in a different way, disregarding the relative chronology. We can even talk about the opposite situation, *i.e.* assigning archaeological material to specific historical events with a specific chronology. The situation has changed only in recent decades, with the appearance of more precise internal divisions based on the variability of the archaeological sources themselves – *e.g.* the periodisation of the Early Scythian culture (Medvedskaya 1992; Grechko 2012). It should be noted that the relative chronology remains a stable element in the aforementioned three-stage system, while absolute dating undergoes numerous corrections as more evidence becomes known and more precise analytical methods – including the use of natural dating – are used.

Another important observation is the opposition of regionalism versus universalism. The history of European archaeology (especially in relation to the archaeology of the Bronze Age and Early Iron Age) shows the degree of the attachment to universal chronological systems into which local sources and cultural phenomena were adapted, not always on the basis of strong premises. This was more a case of “salving the conscience” of local researchers than a real chronological study. Recent decades have shown, as almost every year of new excavations provides new arguments, that these general findings can only be viewed as schemata. Much more important for the actual chronology of specific areas are regional studies, which can take on a more universal dimension. At this point, we can refer to studies for the Hallstatt period (*e.g.* Parzinger 1988: ten chronological horizons between 750/740 BC and 400/390 BC with numerous local modifications) and for comparison of the Scythian circle (Alekseev 2003: eight horizons between the end of the 8<sup>th</sup> and the turn of the 4<sup>th</sup>/3<sup>rd</sup> centuries). Their common feature is a different scale of the length of individual stages, resulting from the findings of source studies and not the arbitrary adoption of the same, several hundred year long intervals.

Referring these remarks to the Tarnobrzeg Lusatian Culture as a whole, it should be said that at the moment we can be more precise in designating certain chronological boundaries, most often dates (or wider ranges – *e.g.* a quarter of a century) in terminus *post quem* or *terminus ante quem* type for some phenomena rather than to construct more detailed periodisation diagrams for the evidence. This goes hand in hand with the proposals of Denys Grechko (2020, 597, 598), who also distinguishes two separate and opposing horizons: the presence of biconical beads as a determinant of acculturation processes and destabilization in Central Europe caused by the “Scythian” nomads. It should be noted, however, that their distinguishing is not comparable (archaeology of things versus archaeology of phenomena). In the case of the “horizon of beads” it would be more appropriate, for example, to name it a “scythization” of local cultures of the Vistula basin of the Early Iron Age. Such a term (or a similar one) would be comparable to destabilization and would adequately reflect wider processes that are being reconstructed at the moment. In addition, it should be slightly longer-in temporal extent than the narrowly understood horizon of the appearance of biconical glass beads. The emergence of the Chotyniec agglomeration in the second half of, or at the end of, the 7<sup>th</sup> century, a centre transmitting Scythian cultural elements further north and west, is essentially such a chronological indicator, and the starting point of the changes in many aspects of material culture, clearly visible in this part of Europe.

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