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## Notes on Bronze Age Flintwork

### ABSTRACT

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The article is a brief overview of current state of research on the issue of production and use of flint tools in the Bronze Age and at the beginning of the Iron Age in Poland. Both special purpose tools and tools manufactured *ad hoc* are known to be widely used throughout Bronze Age. Usewear analysis of materials from Poland and Germany made an interesting contribution. Also flint mines were functioning at that time.

**Key words:** flint, tools, Bronze Age, Trzciniec culture, Lusatian culture

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For some time now I have been trying to recreate a complete set of objects used by certain prehistoric populations (Dąbrowski 1996). Lack of this knowledge has a negative impact on any attempts to reconstruct the lifestyle of these people. The ongoing debate over flintwork in the Bronze Age, in which the Professor also participates, is therefore a good idea. Apart from theoretical reflections on the relation of present culture and that discovered by archaeologists, I will focus here only on the pragmatic context of such inquiries. It is very easy to study areas of activity where hard, relatively well kept (stone, metal, ceramic) objects were used, while other traces are incomparably more difficult to grasp. Biskupin research has shown the whole array of wooden forms, but it is a discovery of unique character. Bone and horn objects can be found only in the soil of a particular condition. If we add that materials that are well-defined in terms of their origin and chronology must necessarily dominate in the analysis, then the possibilities of exploring such a set of tools should be considered extremely limited. However, despite all these difficulties, I think that possible ways of use and publication of these materials should be discussed.

In this respect, research on the Bronze Age flintwork, which only recently started to develop on a larger scale in Poland, should be still considered underdeveloped. After all, the long-held claims that flint tools were used by the people of the Lusatian culture were ignored for

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a long time (cf. Mogielnicka-Urban 1997, 281). The current state of knowledge does not imply, however, that the problem does not require any investigation and analysis. Concerning the fact that we only have a small amount of random data available, both existing descriptions of the Trzciniec Culture flintwork are far from presenting the problem in a thorough way (Dąbrowski 2004, 64ff.; Makarowicz 2010, 178ff.).

In particular, it is almost impossible to assess the scale of usage of flint tools from the discussed time period. The main reasons for this are the long duration of many types, the possibility of reuse of older tools, and a frequent lack of dating characteristics. For the Bronze Age this kind of assessment can be carried out by analysing flint assemblages from settlements (Goldhammer 2015, 19ff.).

It is necessary to devote some attention to chronological scope of the analysis. The basic criterion of division in the three-age system is the increased importance of a new material in a given area. Thus the concept is not precise, leaving room for interpretation. At times, however, the permissible limits are exceeded by recognizing copper or even ceramic objects as determinants of the beginning of the Bronze Age. Yet “differences in the pace of change in often adjacent areas” (Kadrow 2000, 131) are often observed in chronological studies, and logicians define a change in the concept range without changing its name as “fallacy of irrelevant genus” (cf. Ziemiński 1990, 49; Dąbrowski 2011, 239).

The transition from flint to metal tool production is a long and evolutionary process. During the Neolithic, there begin phenomena such as mining of flint and copper deposits, ability to adjust the temperature of fire, improvement of casting techniques, specialization of production, and a long exchange of products, resulting in formation of relatively durable routes (cf. Coles 1981, 96ff.; Ottaway 2001, 91ff.). These processes were slow and territorially differentiated, but the populations of our lands certainly took an active part in them, although in terms of copper it was rather a matter of picking it up from the ground.

The exact estimation at what point in history we should study the beginning of the occurrence of bronze items is not easy when you need to divide the evolutionary process into specific stages. The basic criterion of division in the system of three ages is, as it was indicated above, inaccurate. In Poland, the late phases of Epineolithic cultures are contemporary to cultures that already utilize bronze objects. Existing valid analyses of metal objects from Epineolithic cultures of southern

Poland do not undoubtedly indicate that bronze objects were used by their populations (Burchard 1978, 255; Dąbrowski, Hensel 1983; Bąbel 2013a, table 49). It can be inferred only from some analyses from Mierzanowice, Opatów district, carried out with the use of quantitative method during the occupation, and the author himself is rightly doubtful about them (Bąbel 2013b, 133). For some of these objects also spectrographic analysis was performed, whose outcomes did not allow for previous results to be considered reliable. So far, probably the earliest bronze object is the Kałdus dagger from the Chełmno district, dating back to the Wiórka phase of the Funnel Beaker culture (Adamczak 2015, 206ff.).

From the Trzciniec culture, *i.e.* from the middle of the I to the beginning of the III period, from the whole territory of Poland we know of 23 sickles and 35 spearheads made of bronze (Dąbrowski 2004, 18ff.). It is thus obvious that most of these items had to be made from other materials, mostly flint. In Poland during the Bronze Age there were various flint mines yielding different types of flint. We have to mention here Wierzbica and Polany, Radom district, yielding chocolate flint (H. and J. Lech 1997; Lech 1997) and Rybniki, Białystok district with Cretaceous flint (Zalewski 2011, 298ff.). All the available types of flint were used: Baltic erratic, Jurassic, Volhynian, Świeciechów, Turonian, and even banded flint. Most likely, some of them were reused after collecting flint formerly used (cf. *e.g.* Kurgan-Przybylska 1997, 241ff.; Dąbrowski 2014, 117ff.). Striped flint flakes from Maciejowice, Garwolin district may evidently prove the transformation of earlier forms. It is believed that some late flint points were imitation of bronze forms (Rassmann 2000, 7ff.). It is also known that the various imitations of bronze objects (even swords) in flint and stone were common in the Nordic region (Goldhammer 2015, 163ff.).

The specialization of flint production is proven by the semi-finished sickles found in mine settlements, as well as by analysis of settlement materials (Kopacz 1987, 180). Undoubtedly, the production of large bifacial tools required not only an appropriate quality and size of the raw material, but also relevant skills of the manufacturer. It seems, however, that the thesis of the late Neolithic occurrence of graves of the makers of flint items in Poland (Bátora 2002, 211, cf. Goldhammer 2015, 165) is rather an adoption of phenomena from distant lands rather than reproduction of a real situation. It is enough to recall how

much time had passed after the beginnings of metallurgical production in Poland before there appeared the graves of producers. Evidently, the concretions, cores and/or their fragments found in the Trzciniec and Lusatian settlements (e.g. Dąbrowski 2004, 65; Mikłaszewska-Balcer 1995, 53) prove that it was manufacturing for own use only. It must be added that in Maciejowice, Garwolin district flint recomposited as well as (axe?) flakes of striped flint were discovered both in the settlement and in the Lusatian culture cemetery (Dąbrowski 2014, 117ff.). Semi-finished tools are also found in the Lusatian culture settlements (Dąbrowski 1997, 74). Not well-recognized differences in tool sets from individual sites also corroborate the thesis of local production in individual settlements, especially since they occur not only in Poland (cf. Kopacz 1987, 178ff.; J. Goldhammer 2015, 121ff.). The use and re-use of raw material located in the immediate surroundings is typical for these sites. These remarks apply probably also to materials from the Lusatian culture settlements (cf. Papiernik 2003, 371). I will discuss the reasons for using flint even in the early Iron Age later in this paper.

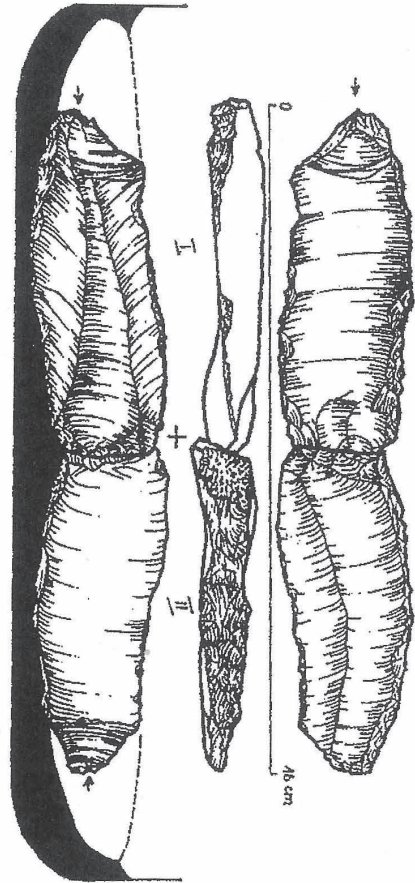
What poses the greatest difficulty in analysing large bifacial forms is their dating. Since the beginning of the Bronze Age the earlier practice of depositing such forms in graves is abandoned, and loose finds, though numerous, are of no help here. Few points are known from Únětice and Trzciniec cultures (a few items in the mounds of barrows), and for Lusatian culture even the point from Halstatt C-D was discovered (Libera 2001, 83ff.). The presence of these forms in Pomerania is a reflection of contacts in the Nordic circle (Rassmann 2000, 18ff., Abb. 12A). It is believed that some late flint points were imitation of bronze forms (Rassmann 2000, 7ff.).

The case of a sickle is slightly easier to analyse. They were discovered at eight sites of different periods of the Lusatian culture (Libera 2001, 119ff.). They belong to several analyzed varieties (Fig. 1) and are made of different raw materials. One should also note rare *Krummesser*-type stone sickles (Valde-Nowak, Gancarski 1999, 191ff.), of a rather local significance, related to the Otomani culture. It is now known that tools with flint insets were commonly used, as noticed by A. Gardawski (1959, 152). Such insets include bifacial knives of Szuminka type made of erratic or Cretaceous flint and found exactly between the Bug and Wieprz rivers (Mazurek 1997, 186ff, fig. 1). They are dated for the late Bronze Age and early Iron Age, which is consistent with the duration

of other bifacial forms. However, during the entire Bronze Age some segmental sickle insets are also present, as proven by the gloss they have (Libera, 2001, 107ff.; Dąbrowski 2014, 118; Wilczyński 2014, 236). They were made from available materials such as blades and flakes. The attention is drawn to the famous Lusatian culture insets (Kruk 2005, 213ff., table XV–XVII) identified as either backed or truncated knives, often with sickle gloss, for which two sets with sickles were reconstructed (Fig. 1). The use of segmental sickles during the Bronze Age and even the Iron Age was also discovered in other areas (cf. Taras 1997, 174). This reinforces the notion of widespread use of flint harvesting tools at that time.

Little is known about other large bifacial items, *i.e.* axes. The axes like the ones known from the sites of the Trzciniec culture come from the mine in Wierzbice (H. and J. Lech 1997, 107; Taras 1955, 80). So far, two types of axes of this culture have been identified in eastern Poland. On the other hand, there is no convincing evidence of their use by the population of the Lusatian culture. Most data on Bronze Age flint axes refer to their discovered fragments (cf. Kowalewski 2014, 161ff.). The discovery of striped flint flakes in Maciejowice corresponds well with this, suggesting that the axes could have been treated as a source of raw material. We should also mention a great popularity of stone axes in the Lusatian culture (Fogel 1981, 160ff.). Made mostly of hard igneous rocks (Fogel 1981, 171), with points that are longer and better embedded on the handle than those of bronze axes, they were more suitable for tree cutting and woodworking than metal tools.

Arrowheads are a common type of bifacial forms, as, according to Marek Gedl's catalogue (2014, 115), 510 of them from the Bronze Age

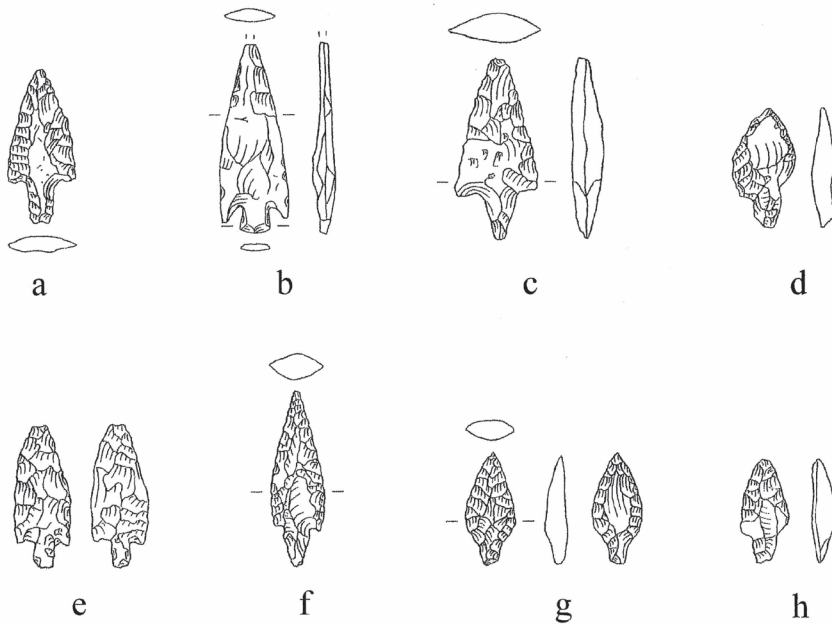


**Fig. 1.** Dargobądz, Kamień Pomorski district, reconstruction of hilt embedding of knives with harvest gloss. *After K. Kruk*  
**Ryc. 1.** Dargobądz, pow. Kamień Pomorski, rekonstrukcja osadzenia w rękojeści noży z wyświeceniem żniwnym. *Wg K. Kruka*

and Early Iron Age were found (after eliminating Eneolithic items). They occur mainly in eastern and central Poland in several basic variations, with a triangular or heart-shaped points and with a handle. It is noted that two of these variations, *i.e.* arrowheads with shaft and triangular or laurel leaf points (Fig. 2) occur almost exclusively in the Lusatian culture period (Gedl 2014, 133ff.; Borkowski, Kowalewski 1997, 210). Projectile points were made of all available flint. Surface treatment as well as retouching of the edges are relatively common. Data for the Vistula River Basin is of particular importance here; for the first and second period of the Bronze Age, 74 flint points and 6 bronze ones were identified, and in the periods III and IV there is still a predominance of flint points, but in much reduced proportions, *i.e.* 42:29 (cf. Gedl, 2014, 28 with additions). According to Gedl's catalogue, about  $\frac{2}{3}$  of bronze points come from the Oder river basin, which, unfortunately, can be due to not only the role of the route along the river, but it can also be caused by the significant difference in development of archaeological institutions in Prussian and Russian lands and the possibility of depositing monuments in museums or their publication. If we also take under consideration here an abundance of bone and horn points (Gedl 2014, 84ff.), assumed on the basis of several sites where they were found, we have to acknowledge that metal points were much less popular than those made of other raw materials.

The tools discussed above (except arrowheads) were for some time identified as remains of earlier practices. It was a result of accepting the predominant idea about the departure of the early Bronze Age from the earlier flintwork practices and the production of smaller forms by splintering technique and embedding them in wooden or bone handles (Gardawski 1959, 97). Only after some time did we start discussing a fuller set of early Bronze Age and later also Lusatian culture flint tools. Despite these apparent advances, mainly thanks to the engagement of flintwork specialists, the image we are obtaining is only beginning to gain some prominence. Unfortunately, we are still far from standardizing our terminology.

The list of forms that can be described as produced for own needs and not requiring specialization on the part of the manufacturer is long and it includes frequent flakes with retouch limited to one side, and also splintered pieces, endscrapers, burins, borers, knives (also the aforementioned backed and truncated knives could have been used in



**Fig. 2.** Arrowheads with shaft and triangular (a–c) and laurel leaf point (d–h). a – Węgrów; b – Wieprzec, Zamość district; c – m.n.; d – Jasło; e, f – Kamionka Nadbużna, Ostrów Mazowiecka district; g – Koczów, Chełm district; h – Maciejowice, Garwolin district. Ca

**Ryc. 2.** Grociki krzemienne z trzonkiem o ostrzach trójkątnych (a–c) i laurowatych (d–h). a – Węgrów; b – Wieprzec, pow. Zamość; c – m.n.; d – Jasło; e, f – Kamionka Nadbużna, pow. Ostrów Mazowiecka; g – Koczów, pow. Chełm; h – Maciejowice, pow. Garwolin. Ok. ½

this way), hammerstones, blades and bladelets. On some of the flakes there is a sickle gloss. The size of the above assembly is considerable – in the studied settlement of the Trzciniec culture in Polesie, Łowicz district, 449 items were discovered (Domańska, Wąs 2011, 277), and in as little as 9 ares of the Lusatian culture settlement in Maciejowice, Garwolin district, 226 were found. B. Balcer (1997, 308) pointed out that splintered pieces, endscrapers and retouched flakes found in Biskupin could have been used to cut and scrape animal skin. It was proven only after laboratory analyses of traces of use (Małeczka-Kukawka 2008, 228ff.; Goldhammer 2015, 130ff.). In Zakrzów, Krapkowice district, among 291 tools examined, 27 tools for cutting meat and leatherwork (scrapers, knives, perforators) were found alongside numerous sickle insets. This number can be higher because among scrapers 39 were identified as used for wood, 3 for hardwood and several for hard

objects, with no detailed criteria for such a division. Also from the late Bronze Age comes the study of 31 flint objects from Schleswig (retouched flakes, borers, knives, scrapers and sidescrapers). They showed mainly traces of cleaning of the animal skin, but also of killing the animals, cutting the meat and bones, and one of the borers was used to open the shells. Some similarities between the traces on flints are noticeable there (see *e.g.* Balcer 1997, fig. 2 b, g; Goldhammer 2015, Abb. 84; 107). On the Jutland materials, however, there was no sickle gloss at all, even though the flint bifacial sickles were still present at that time in grave inventories (Goldhammer 2015, 150). Thus, it seems that the material under investigation came from the time of the widespread use of metal sickles. It seems that the above analyses show why these kinds of items were commonly used all the time in the Lusatian culture. It did not require a great effort to find or create the needed tool *ad hoc* which would be sufficient for a given activity. It can be stated here that in the set of bronze items of this culture it is difficult to find tools for such a frequent and necessary activity as skin cleaning. Flint tools were undoubtedly superior to animal ribs that could also have been used for this purpose. With full conviction it can be concluded that a large proportion of flint items either filled the gaps in the tool kit or had to replace the insufficient supply of metal products, which is confirmed for instance by the number of bronze sickles from the second period.

The importance of flints discovered in graves has also been discussed. The apparent differences between the flint inventory from the settlement and from the cemetery (Wilczyński 2014, 237) suggest a conscious selection of things before depositing them in a grave. In general, it can be stated that there is a clear change in relation to Epineolithic cultures. In the Trzciniec culture, large bifacial tools occur only occasionally in the graves and other tools are also rare. (Taras 1995, 79ff.). A small amount of flint in the grave inventory in general is rather bizarre. On the other hand, there are frequent occurrences of various bronze objects, mostly jewellery, so it makes it similar to Polish Tumuli culture, where we have not recorder any flint findings. It is possible, therefore, to recognize the observed phenomena as adapting to the general tendencies of the funeral customs at the time.

In the Lusatian culture there is another variation of the phenomenon. Cemeteries are abundant in flint, although the number of tools is very



limited. Burned items are not uncommon. In Maciejowice, Garwolin district, flint was found in 23% of graves, but chips constituted  $\frac{2}{3}$  of the material from the cemetery (Mogielnicka-Urban 1997, 277ff.). On other sites flint occurs in varying amounts, reaching up to 16% (Mogielnicka-Urban 1997, 281). This data is relatively scarce, but it already allows for generalizations. And now we are dealing with the practice of depositing all kinds of symbolic gifts, adopted in various European cultures (Dąbrowski 2013, 440ff.). It is expressed by frequent deposition in the graves of only fragments of bronze objects, items with imperfections or miniature ones, and the findings of animal bones indicate that they come from the least edible parts of animals. It is associated with the Greek myth of Prometheus who deceived Zeus by allowing people to eat most of the meat intended for ritual sacrifice (Dąbrowski 2013, 439). Mythological reasons were certainly different, but the economic meaning of the symbolic gift was the same: to save useful things from depositing them in a grave.

Very little can be said about routes through which flint tools or raw flint spread. It is known that in the Neolithic both flint and copper were migrating sometimes even long distances, but it is assumed that only in the Bronze Age some routes were created that maintained their significance for a long time (Coles 1981, 97ff.). Considering that the flint migration started from its mining sites and that in the Bronze Age it was mainly found in the closest casts, then the probability of using such routes as the Oder and the Vistula may only concern short sections of the rivers. It is worth to mention here chocolate flints found in Maciejowice, Garwolin district (Dąbrowski 2014, 117), coming from mines in the area of Wierzbica, Radom district, located more than 50km away on the other bank of the Vistula River. It seems more sensible to identify areas of concentration for certain types of flint than to look for the routes of their migration. Unfortunately, the aforementioned difficulties with dating of objects found outside the ensemble make it very difficult to track changes in the migration of flint material.

Here I shall finish my very brief discussion of the long-known issue. However, the changes that it has been undergoing give us hope that in the next prehistory textbooks the role of tools other than metal ones in the Bronze and the Early Iron Age will no longer be underestimated.

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