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## FLINT AND BRONZE SPEAR AND ARROWHEADS FROM THE BRONZE AND IRON AGE SETTLEMENT AT RUSZOWICE IN SW POLAND

### ABSTRACT

Hryniewicz-Bogenryter A. and Baron J. 2022. Flint and bronze spear and arrowheads from the Bronze and Iron Age settlement at Ruszowice in SW Poland. *Sprawozdania Archeologiczne* 74/1, 513-524.

We analysed a small collection of three arrowheads and one piece of spearhead. They were made of flint and metal and come from the Bronze and Early Iron Age settlement at Ruszowice in today SW Poland. Although only one comes from a settlement pit, we argue they were used by the community occupying the site at the beginning of the Urnfield period which starts around 1300 BC. All four objects bear clear traces of use including hafting and sharpening proving they use in every-day life.

Keywords: arrowheads, flint, metal, Bronze Age, settlement

Received: 05.02.2022; Revised: 26.05.2022; Accepted: 21.08.2022

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## 1. INTRODUCTION

In recent years, flint objects found at various Bronze Age sites in today's Poland have received more attention and are not considered just relics of the past technologies (*e.g.*, Lech and Piotrowska 1997). It seems obvious that the implementation of metal tools took a long time and depended on access to raw materials, individual skills, and knowledge transmission models. This process was stretched over centuries and represented various dynamics. This is particularly well observed at Early Bronze Age high-rank sites like Bruszczewo or Maszkowice with early evidence of the use of metal tools (on bone and antler objects: Kneisel 2010; Przybyła and Jędrzyk 2018). The evidence from other contemporary sites proves rather co-use of tools made of various raw materials at least to the early part of the Iron Age (for bone and antler see Baron and Diakowski 2018). There is also evidence of intense re-use of older Neolithic flint tools on one hand, and the continuation of production of flint tools in the Bronze Age demonstrating a surprisingly unified style (Masoń 2018, with further literature therein). The latter was based on surface-collected erratic flint and in some areas raw material obtained from flint mines, well-dated to various stages of the Bronze Age (Lech *et al.* 2011). Flint objects were, therefore, present in the everyday life of Bronze Age communities together with the metal, wooden, lithic, bone, or antler ones.

This paper discusses the chronology and function of three arrowheads and one spearhead found at the Bronze Age site at Ruszowice in SW Poland (Fig. 1: 1). Two are made of flint and two of copper-based alloy. We assume it is tin bronze (as were most of the objects of this type and chronology) and will use this term in further paragraphs. We analysed the micro traces on the arrowheads using an Olympus SZX9 stereoscopic microscope and a metallographic microscope Nikon Eclipse LV 100 at the Institute of Archaeology, University of Wrocław. The interpretation of observed traces on the flint objects was based on published libraries (van Gijn 1989; Osipowicz 2010; Nowak and Osipowicz 2012; Kufel-Diakowska and Bronowicki 2017; Małecka-Kukawka 2017). The metal objects were documented under the microscope both before and after conservation work.

## 2. THE SITE

The settlement is located on a slope of a small hill with SE exposition and near a seasonal stream called Krzemienica, 5 km east of Kłodzko (Fig. 1: 2). After a successful surface survey, the excavations started in 2014 and were continued until 2018 (Baron *et al.* 2018; 2021). They produced 321 pits, 7618 pottery sherds, 28 flint objects, three metal artefacts of prehistoric chronology, and two stone axes (Fig. 1: 3). All the pits and all the artefacts are dated to two stages of the settlement use: one is the beginning of the so-called Urnfield



1



2



3

Fig. 1. Localisation of site Ruszowice.

1 – locations mentioned in the paper; Ruszowice is marked by a star; 2, 3 – part of the settlement at Ruszowice excavated in 2014-2018, a red dot marks a storage pit where one of the arrowheads was found.

Source: google maps; Baron *et al.* 2018

period (starting around 1300 BC) and the other to the Early Iron Age (starting around 750 BC). A settlement with similar structures and the same two-stage chronology comes from Kłodzko-Książek about 5 km NE of Ruszowice (Romanow 1971; 1974). On the surface of the Ruszowice site and in the topsoil many objects of the late medieval and modern periods were found as well. It is noteworthy that no evidence of Neolithic or Early Bronze Age was found neither at the site nor in its vicinity. Due to a complete lack of organic material, no  $^{14}\text{C}$  dating was possible and the dating is based entirely on the characteristics of artefacts, in this case mostly ceramics.

### 3. ARROW- AND SPEARHEADS

On the site, three arrowheads and one piece of spearhead were found. Except flint arrowhead no. 1 which comes from a large storage pit no. 276, all were found on the site surface and in the topsoil. We realise this makes their chronology disputable, due, however, to the fact that the site was settled only during the Bronze and Early Iron Ages, we treat them as evidence of these settlement episodes.

The site produced a collection of 25 flint objects. They are mostly half-products and debris including chips (4), blades (4), flakes (6), and splintered pieces (2). The objects representing more advanced working are retouched blades (2), retouched flakes (5), and the two arrowheads that are discussed in this paper.

Arrowhead 1 comes from a large structure with flat bottom interpreted as a storage pit. Today the artefact is 20 mm long with maximal width of 18 mm and thickness at the base reaching 4 mm (Fig. 2: 1). Both faces of the tool are retouched at the edges. Arrowhead 2 was found in 2014 during the surface survey which proceeded each excavation season. The maximal length of the specimen was 18 mm, width 12 mm, and thickness of 3 mm (Fig. 3: 1). Like arrowhead no. 1, this item was retouched on both faces along the edges. Both arrowheads were made from the locally accessible erratic Baltic flint of rather poor quality (Hrynkiewicz-Bogenryter 2021, 11). According to a classification offered by *e.g.*, Borkowski and Kowalewski (1997), they represent Early Bronze Age heart-shaped arrowheads. They are slender with maximal width situated above the barbs and arch-shaped base (Borkowski and Kowalewski 1997, 208-209).

A metal detector was used to search the topsoil preceding each excavation season at the site, one of the finds made by this means was a complete socketed bronze arrowhead. It is a small object with a triangle-shaped leaf and a socket with a perforation in its wall which is probably a miscast (Fig. 4: 1). The arrowhead is 25 mm long and 10 mm wide. The socket section is oval and measures  $7 \times 8$  mm. The mouth of the socket is slightly bent inwards which was designed to stabilise the core in course of casting (comp. Baron *et al.* 2020). The triangle-shaped leaf arrowheads without barbs are mostly dated to the early Urnfield period which starts roughly around 1300 BC. M. Gedl argues they occur mostly in



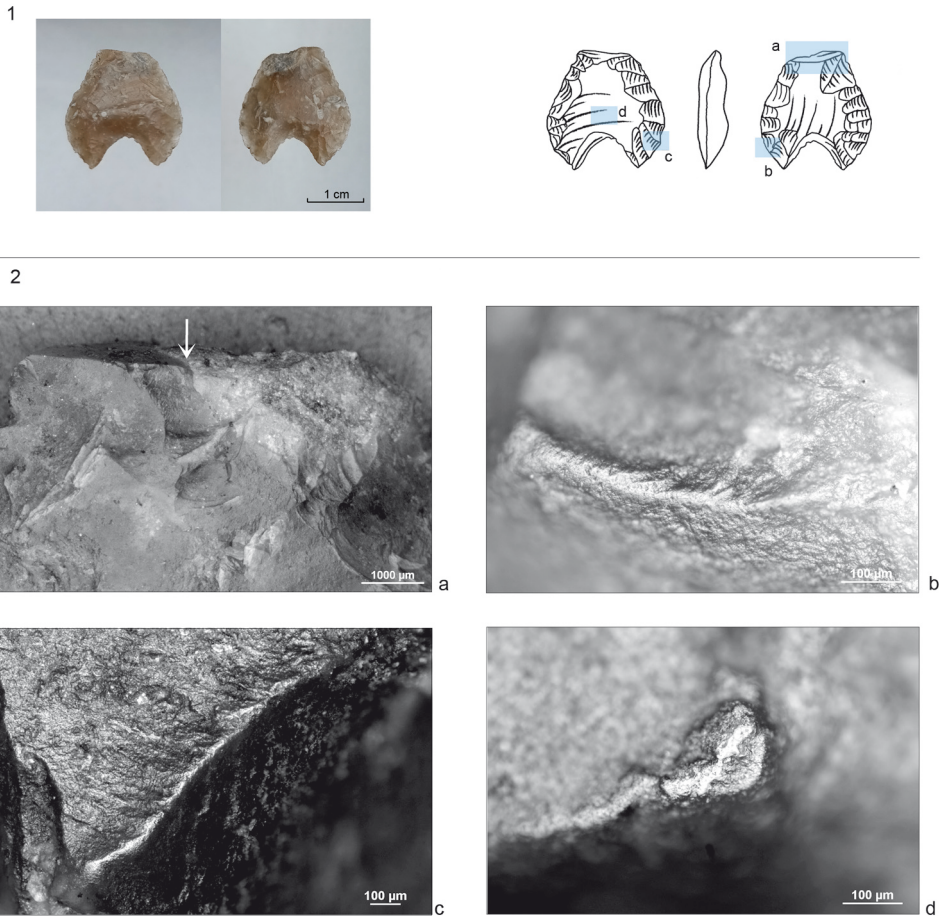


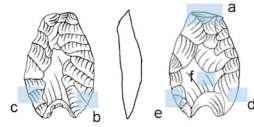
Fig. 2. Flint arrowhead no. 1:

1 – general view; 2 – microtraces: a – impact scar, b, c – rounded negative edges, d – glossy spots.  
 Drawing and photographs A. Hryniewicz-Boghenryter

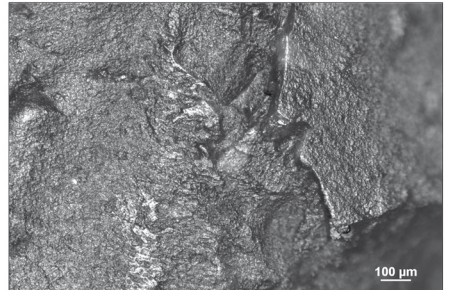
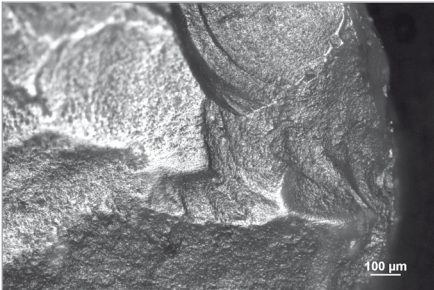
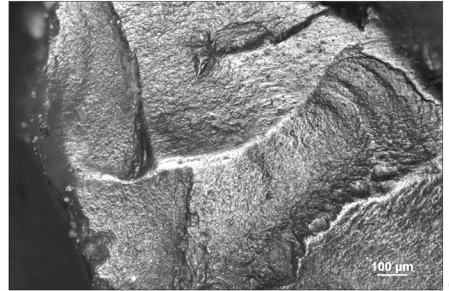
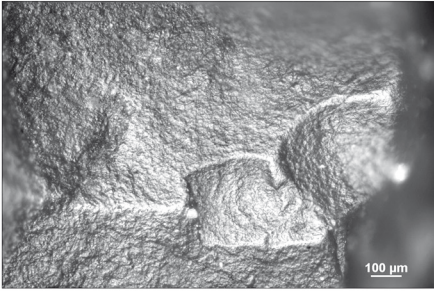
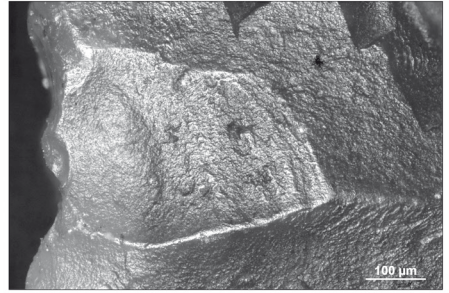
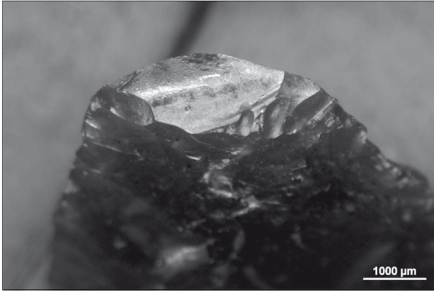
graves, while they are extremely rare at settlements (2004, 24). The chronology of the arrowhead corresponds therefore with the first stage of the settlement.

A piece of metal spearhead is 51 mm long and 23 mm wide (Fig. 4: 2). In its cross-section, the top of a socket is observed. In this part, the maximal thickness of the piece was 7 mm. The specimen is heavily damaged, the tip is rounded and along the edges many notches and cracking are noticed. The fragment is too small to date it, the general shape and patina are, however, completely different from other copper-based objects found at the site.

1



2



**Fig. 3.** Flint arrowhead no. 2:

1 – general view; 2 – microtraces: a – impact scar, b-e – rounded negative edges, f – glossy spots.  
Drawing and photographs A. Hryniewicz-Bogenryter

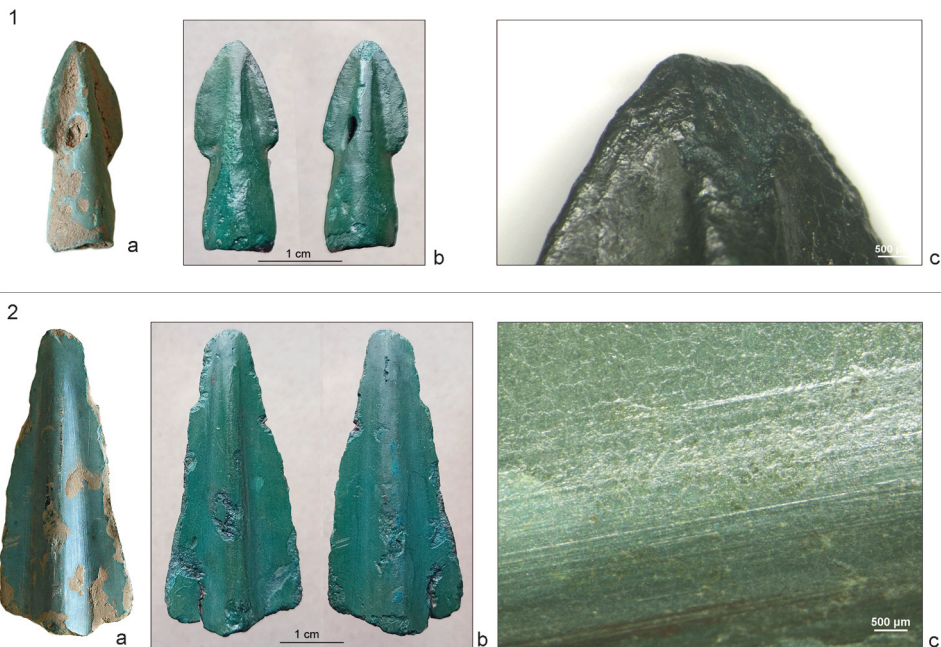
## 4. MICROTRACES

### Flint arrowhead 1

The object was used, proved by an impact scar at the tip (Fig. 2: 2a) and numerous chips along the edges. The fracture of the surfaces made the observations difficult but at the barbs, on both faces, rounded retouch ridges were noticed (Fig. 2: 2b-c). In the central part of the specimen, some glossy spots were also visible (Fig. 2: 2d). Both the spots and rounded retouch ridges may confirm hafting.

### Flint arrowhead 2

Breakage of the tip is observed however its origin remains unclear (Fig. 3: 2a). At the barbs, the ridges between surfaces of flake scars are rounded and abraded (Fig. 3: 2b-e). The origin of such traces is not clear. One of the interpretations is that they reflect a deliberate



**Fig. 4.** Metal objects:

1 – socketed arrowhead: a general view before (a) and after (b) conservation, c – rounded tip;  
 2 – a fragment of a spearhead: a general view before (a) and after (b) conservation, c – traces of sharpening.  
 Photographs M. Konciewska, J. Baron

abrasion before hafting (van Gijn 2010). In the central part of the arrowhead, some glossy areas were also observed (Fig. 3: 2f). They might have also resulted from hafting.

## Bronze objects

The only clear trace on the arrowhead is the rounded tip, which can be the result of the use (Fig. 4: 1c). On the fragment of a spearhead, long parallel striations are visible, both in macro (Fig. 4: 2a) and micro observations (Fig. 4: 2c). They are located on the leaf along with the socket and are typical traces of sharpening observed on objects of similar shape (*e.g.*, Baron *et al.* 2020).

## 5. DISCUSSION

The use traces were observed on all four specimens. Flint objects were hafted and their tips were broken, metal ones were intensively used which resulted in a rounded tip or repaired as proved by sharpening traces. What was the function of these objects? This question may be trivial but only the function of metal arrowheads is usually obvious. They were shafted and launched from bows to reach distant targets. Flint arrowheads were sometimes used as sickle inserts (*e.g.*, Schlichtherle 1992) and bronze spearheads might have been both thrown or used in direct combat (Anderson 2011). The numerous finds of arrow- and spearheads in graves and settlement pits prove their use was a common skill in all stages of the Bronze Age (*e.g.*, Gedl 2004). They come from the site with only Bronze and Early Iron Age registered stages. Were they produced in the Neolithic or Early Bronze Age and then collected and incorporated into tool sets used in the Urnfield period? There are many examples of such procedures in the literature (*e.g.*, Gackowski and Osipowicz 2013, 187) and it seems that it was the case at our site. At Ruszowice the collection consists of both artefacts of the Neolithic chronology (retouched blades), Early Bronze Age (arrowheads), or late Bronze Age (splintered pieces).

J. Libera notes that many flint arrowheads are grave-goods in later stages of the Bronze Age (2001, 92). They also occur in several well-dated Urnfield contexts (Gedl 1997, 218, 219) also in today western Poland which represents less developed "late" flint knapping compared to the eastern areas. They were found in at least four urn graves at Kietrz, in one case accompanied with bone and metal objects (Fig. 5: 1). The arrowheads were cremated together with the bodies and then deposited with the bones in urns or shallow pits. Grave 3228 contained the remains of an *Adultus* and *Infans* I (Gedl 1997, 218). All the graves can be dated to the early Urnfield period starting in this area c. 1300 BC which corresponds with the first stage of occupation at the Ruszowice settlement.

An interesting collection of flint objects (N=186) comes from a small urnfield (43 graves) at Masanów (Ziábka and Martyniak 2001). Two arrowheads come from the topsoil,



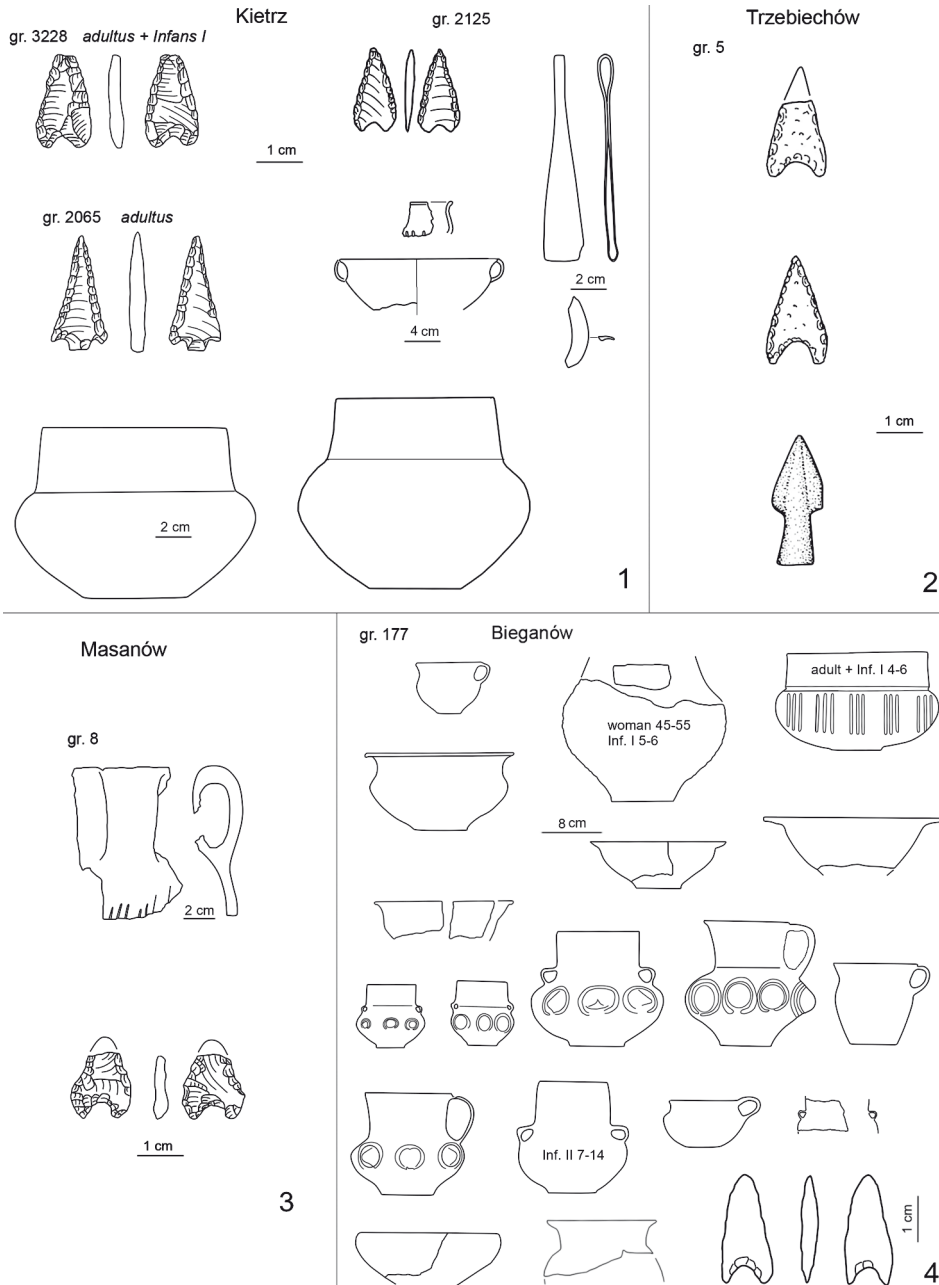


Fig. 5. Flint arrowheads in Urnfields contexts:  
 1 – Kietrz, 2 – Trzebiechów, 3 – Masanów, 4 – Bieganów. Source: Gedl 1997,  
 Ziąbka and Maryniak 2001, Marcinkian 2010a



while other two were found in the grave pits (Fig. 5: 3). Another arrowhead made of metal was found in Grave 5 which contained remains of an *Infans* I. The authors date the site to the Montelius period III which corresponds with the chronology of the Kietrz graves.

Two other sites of the same chronology are cemeteries at Marcinów and Trzebiechów. At Marcinów a burnt arrowhead, probably cremated together with the body was found under a barrow. In Trzebiechów, two flint arrowheads were placed together with a metal one in an urn (Fig. 5: 2). Both sites were dated based on the properties of the pottery to the Montelius III period (Gedl 1997, 218-219).

At the Bieganów urnfield in today's western Poland, one flint arrowhead was found in a layer of broken ceramics and stones placed above grave 177 (Fig. 5: 4). The grave contained remains of at least five people deposited in three urns, both adults and children of various ages (Marcinkian 2010a, 79-80). According to Marcinkian, the grave is dated to period IIIb which is 1100-1000 BC (2010b, 20-21). In this case, that would be the youngest context producing a flint arrowhead.

These examples clearly show that flint objects, even if not produced as late as the Urnfield period were recognised, collected and reused by the Urnfield communities around 1300 BC onwards. We have discussed only selected examples of well dated grave contexts, but there are hundreds of them found at the settlements in most parts of today's Poland (Libera 2001; Gedl 2004). Clearly they occurred more densely in the areas with long-lasting flint knapping traditions typical for the Mierzanowice followed by Trzciniec culture. In a grave from Skurcz in Volhynia, they co-occurred with metal ornaments dated to the final Bronze Age (Libera 2001, 91). Flint arrowheads were given a similar meaning and value in the tradition of grave furnishing as the metal ones which is proved by co-occurrence of both types on the same site (Masanów) or even in the same grave (Trzebiechów). We are not able to answer if the flint arrowheads were produced by the community which lived at Ruzowice settlement around 1300 BC. However we argue that they were incorporated into this community's every day activities. Our collection, although modest, illustrates therefore well the successful co-existence and use of various raw materials.

### Acknowledgements

We would like to thank the anonymous reviewers for their valuable comments which significantly improved the final version of the manuscript.

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