Review Article

Aleksander Kośko, Marzena Szmyt*, Przemysław Makarowicz, Marcin Ignaczak

Intermarine Area Archaeology and its Contribution to Studies of Prehistoric Europe

https://doi.org/10.1515/opar-2020-0205
received January 15, 2021; accepted September 20, 2021

Abstract: Intermarine Area Archaeology refers to research programmes focusing on the prehistory of the Baltic-Pontic Intermarine Area, i.e. lands extending between the Baltic and Black seas. This article outlines the development stages and current state of Intermarine Area Archaeology in Poland, being one of the several important research studies into the prehistory of the continent in the Eneolithic, Bronze, and Early Iron Ages. The authors concentrate on the southern portion of the Intermarine Area that covers the Black Sea catchment area. When describing the current state of the Polish conceptual and research contribution to Intermarine Area Archaeology, space shall be given to the programme offer, formation of international research teams, and research specializations.

Keywords: Baltic-Pontic Intermarine Area, Eneolithic, Bronze and Iron Ages, history of archaeology

The aim of our article[1] is to present the past, present, and future of a research direction known as the Baltic-Pontic Intermarine Area Archaeology in the Polish scientific life. Its principal goal is to build an integral and cross-border perspective of the prehistory of lands extending between the Baltic and Black seas that constitute the Baltic-Pontic Intermarine Area (Figure 1). This vast area has been only marginally treated in the synthesizing works of European archaeology to this very day, whereas its significance for the prehistoric societies of our continent has been overshadowed by that of its other, more celebrated regions. This is so despite the fact that the Intermarine Area is crossed by one of Europe's most important internal natural boundaries, dividing the continent into its western and eastern parts – the Bug-Dniester "limes" (Kośko, 1991). By reason of its climatic, botanical, zoological, and physiographic aspects, the boundary was of paramount importance to the prehistoric human societies as well (Makohonienko, 2009). This is the reason that this area is also referred to as the bio-cultural borderland between the East and West of Europe.

In today's political terms, the lands lying between the Baltic and Black seas are sometimes called East-Central Europe (Ger. *Ostmitteleuropa*). Poland – in both modern and historical times – has always been part of the Baltic-Pontic Intermarine Area, thus it comes as no surprise that these lands attracted the attention of

What is New in the Neolithic? – A Special Issue Dedicated to Lech Czerniak, edited by Joanna Pyzel, Katarzyna Inga Michalak & Marek Z. Barański.

1 Dedicated to Lech Czerniak in memory of our joint studies of the Neolithic in Kuyavia.

* **Corresponding author: Marzena Szmyt,** Faculty of Archaeology, Adam Mickiewicz University in Poznań, 7, Uniwersytetu Poznańskiego Str., 61-614 Poznań, Poland; Archaeological Museum, 27, Wodna str., Poznań, Poland,
e-mail: marzena@amu.edu.pl
Aleksander Kośko, Przemysław Makarowicz, Marcin Ignaczak: Faculty of Archaeology, Adam Mickiewicz University in Poznań, 7, Uniwersytetu Poznańskiego Str., 61-614 Poznań, Poland
ORCID: Aleksander Kośko 0000-0002-0529-3004; Marzena Szmyt 0000-0002-5975-4494; Przemysław Makarowicz 0000-0003-4452-7704; Marcin Ignaczak 0000-0002-3592-0275

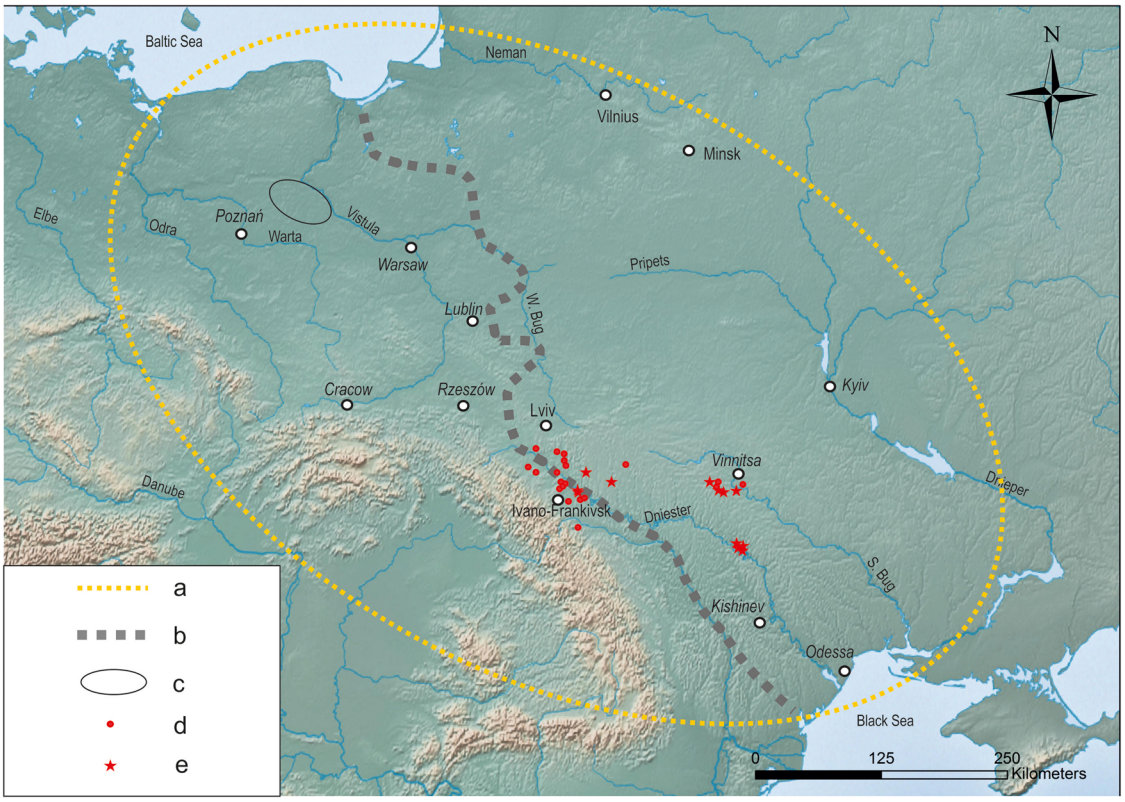

Figure 1: Intermarine Area and sites investigated by archaeologists of Adam Mickiewicz University in Poznań in cooperation with National Academy of Sciences of Ukraine, Institute of Archaeology. (a) Intermarine Area; (b) natural boundary of Eastern and Western Europe (Bug-Dniester "limes"); (c) Kuyavia region; (d) sites investigated only with non-invasive methods; and (e) excavated sites.

many Polish archaeologists, especially in the nineteenth and twentieth centuries. Nor is it surprising that the attraction dates back to the times when archaeology as an academic discipline was only being born in the nineteenth century. This appealing field, and subsequent research in particular, was greatly influenced and sometimes even overwhelmed by the complex politics of recent centuries. This aspect is not widely known, although its consequences can be felt to this very day. For this reason, this article aims at outlining the development stages and current state of Intermarine Area Archaeology, being one of the several important studies into the prehistory of our continent in the Eneolithic and Bronze Ages that are of the greatest interest to us. It shall concentrate on the southern portion of the Intermarine Area that covers the Black Sea catchment area. It is obvious now that a broad international cooperation is a *sine qua non* for any investigations there. The early days of Intermarine Area Archaeology, as lived by Polish amateur, semi-professional, and professional archaeologists, were, though, a totally different matter.

1 Foundations of Intermarine Area Archaeology

When archaeology was in its infancy, especially in the latter half of the nineteenth and early twentieth centuries (until 1914), the Polish contribution to the study of the prehistory of the Pontic Area was rather substantial (Blombergowa, 1993). This was so despite an extremely unfavourable political situation prevailing at that time. It must be remembered that throughout this period no sovereign Polish state could be found on the map of Europe as Poland had been divided up ("partitioned") between her three neighbours: Russia, Austria, and Prussia in 1795. The period when there was no Polish state, known as the "period of partitions", continued until 1918 when Poland re-emerged as a republic after the First World War.

Most of the Intermarine Area was ruled by Russia while only its smaller portion (with Lwów/Lviv and Stanisławów/Ivano-Frankivsk) belonged to Austria. In both parts – Russian and Austrian – Polish amateur archaeologists operated, driven by the ideals of the Enlightenment and Romanticism. One of their purposes, universally accepted by local communities, was to build collections of "national memorabilia." In the absence of Polish public institutions, such private activities took place of non-existent public sponsorship.

Among pioneering archaeologists, there were Polish landowners from the Kyiv region. One of them was Michał Grabowski, active in the intellectual circles of Kyiv and Odessa. According to his own admission, he explored 6,000 barrows (Grabowski, 1850). His activities followed the fashion of the day of "digging up" barrows, popular then in many parts of Europe. This fashion sometimes took on exceptionally creative forms, which is illustrated by the work of Aleksander Bydłowski from the Nowosiółki estate, Lipowiec district (now Cherkasy *oblast*). Remaining in the intellectual circle of Erazm Majewski – an investigator of "barrows with tinted skeletons of the Black Sea world" living in Warsaw – Bydłowski started investigations at a cemetery of 76 barrows on the Tikich Uhorski River in the Southern Bug drainage basin in 1901–1903. Particularly valuable work was done by him in Jackowica (now Dolinka), the results of which were published in Warsaw (Bydłowski, 1904, 1906).

Next to the work of amateur antiquarians, there thrived another research trend pursued by semi-professionals that was much better documented (especially in the archives of the major centres such as Cracow, Lwów, Warsaw, Kyiv, and Odessa). A prominent figure among them was Volhynia-born Gotfryd Ossowski. It is to him that we owe the exploration of the Great Barrow in Ryżanówka/Ryzhanivka, Kyiv region. This feature was preliminarily explored by the anthropologist Julian Talko-Hryncewicz in 1884 and 1887, who asked the Cracow Academy of Sciences to send "a delegate to extract objects that undoubtedly still remain in the ground" (Chochorowski, 2016, p. 29). The person sent to Ryżanówka was Ossowski who set about excavating work there with much success. He also explored barrows from earlier ages such as a feature in Łosiatyń/Losyatyn on the Ros River, Kyiv region (Ossowski, 1889). Ossowski may serve as an archetypical explorer of this time: an active explorer of sites in the three partitions (Austrian, Prussian, and Russian), he ended his life in Tomsk, Siberia, where he explored barrows, too, and where he died in 1897 (Chochorowski, 2016).

The professional branch of Polish archaeology was represented by Karol Hadaczek, professor at the University of Lwów, researcher of the famous Tripolye settlement at Koszyłowce/Koshylivtsi in Podolia (Hadaczek, 1914).

The outbreak of the Great War in 1914 ended the explorations by landowners. It is worth mentioning that – regardless of important findings on antiquarians' activities (Abramowicz, 1967; Blombergowa, 1993) – we still know little on private archives and dispersed exploration and collector undertakings. What can be only regretted is the fading out of interethnic cooperation, accommodating fascination with the landscape of local homelands that lay in the Black Sea catchment area.

2 Intermarine Area Archaeology in the Second Republic of Poland (1918–1939)

In the Second Polish Republic, the prehistory of the Intermarine Area – limited by political borders – was reflected in the academic output of Lwów and Cracow scholars. Thus, Intermarine Area Archaeology began to be pursued by professionals, educated mainly in Cracow, Lwów, and Warsaw. Amateur archaeologists were left the task of supporting investigations, which they did with much enthusiasm (e.g. Makarowicz, 2017).

In investigating the Intermarine Area, the Lwów centre clearly took the lead, thanks to archaeologists of various backgrounds (Sytnyk, 2010): Polish (Tadeusz Sulimirski, Jan Bryk, and Irena Siwkówna), Ukrainian (Jaroslav Pasternak, Markian Smishko/Śmiszko), and Russian (Igor Sveshnikov).

Tadeusz Sulimirski's work still ranks high among the achievements of twentieth-century archaeology. It is internationally known, owing to the publication of his works in the United Kingdom after 1945 (e.g. Sulimirski, 1968, 1970). Earlier, in the 1930s, having moved to Cracow in 1937, he concentrated on the exploration of Bronze Age barrow cemeteries in Komarów/Komariv, Krasów/Krasiv, Okniany/Vikniny, or Sarniki (Makarowicz et al., 2016; Sulimirski, 1968; Sytnyk, 2010). To a degree, he overshadowed the field work of other researchers based in Lwów, for instance, Jan Bryk (1932) – the discoverer of a necropolis in Bukówna/Bukivna, now in the Ivano-Frankivsk *oblast* (Makarowicz et al., 2016).

The interwar period also saw the continuation of the study of the Eneolithic on the forest-steppe (Tripolye culture). This was the domain of mainly Lwów scholars: Leon Kozłowski and Kazimierz Majewski as well as Marian Himner who explored a famous Popudnia/Popudnya settlement (cf. Kozłowski, 2012). The most prominent sites excavated by Kozłowski include ones in the Dniester drainage basin: Koszyłowce, Niezwiska/Nezvis'ko, and Buczacz/Buchach (Kaczorowski, 2010, pp. 429–434; Sytnyk, 2010, p. 135). On the invitation of Kozłowski, Koszyłowce was visited by V. Gordon Childe in 1923 (Lech, 1992, p. 7). Majewski, in turn, studied Tripolye anthropomorphic and animal figurines, in particular their Mediterranean connections (cf. Kolendo, 2010; Majewski, 1935, 1947). To this group of researchers, Józef Kostrzewski should be added, who from faraway Poznań travelled to Podolia in 1925 to conduct excavations at a Tripolye settlement in Biały Potok/Biliy Potik (Kostrzewski, 1928; cf. Szmyt, 2016).

If one compares, however, the second stage of the Polish studies of Intermarine Area Archaeology with the first, two fundamental characteristics strike the eye: professionalization and limitation to lands remaining within the borders of the Second Polish Republic. The studies were even further restricted in the third stage only to return to a broader perspective, crossing current political borders, at the end of the twentieth century.

3 Research Restrictions in Communist Poland (1945–1989)

Poland, as a politically delimited "research space", which our generation knows from the professional lives, came into being in the wake of the Treaty of Yalta in 1945. This space was studied by post-war archaeologists from the fragmented perspective of prehistoric Europe's individual regions. Works tagged as "prehistory of Poland" or "prehistory of Polish lands" actually by assumption referred to various macro-regional research trends, including above all circum-Baltic, circum-Carpathian, circum-Sudeten-Alpine, and circum-Pontic. This variety was subjected, however, to political restrictions, making any chances for programme autonomy slim even when compared with other "national archaeologies" of East-Central Europe.

For this reason, preference was given to research programmes that concerned smaller, mesoregional units with attested considerable development peculiarity over a long period of prehistory, i.e. a sequence of epochs. As an example that is personally close to us, Kuyavia can be given (Figure 1) – a historical and cultural mesoregion in the centre of Poland, the study of which – in an innovative manner – began to reveal and later underscored the complexities of broader civilization connections in the origins of regional peculiarities (Cofta-Broniewska, 1989; Kośko, 1996).

One of the key correspondences of Kuyavia research projects is considering the Vistula catchment area, a western portion of the Baltic-Pontic Intermarine Area. This perspective can be applied more broadly to the prehistoric narrative, beginning with the fourth millennium BC. However, its detailed analytical application ran up against many political and organizational barriers after 1945. They included not only restrictions on scholarly publications, but also on research travel. One was the requirement of applying for so-called service passports. After a return from a trip abroad, they had to be rendered to the relevant university or academy of sciences authorities.

4 Revision of Research Areas at the End of the Twentieth Century

Lasting several decades, the stagnation of Intermarine Area research was broken in the late 1980s and early 1990s as a result of Soviet Bloc disintegration. It was followed by a quick reorientation of intellectual ties where West met East. The mental transformations occurring then were symbolically ushered in by a symposium in Kishinev, Moldova, held in December 1990. There, hopes and plans were voiced for reviving cooperation between countries and academic centres on the scale of the Intermarine Area. Subsequently, the 1990s witnessed a number of organizational undertakings based on bilateral scholarly-cooperation agreements, joining the paired academic institutions of Cracow – Lviv, Poznań – Kyiv, and Poznań – Minsk and gradually including other academic centres located in the Intermarine Area (Kośko, 2011). On the whole, there were two major ideas for cross-border cooperation.

The first concentrated on features of outstanding informative position on the European scale. This involved the joint study of Palaeolithic sites or ones connected to the migrations of Great Steppe peoples or the colonization of Pontic shores by Greeks. A particularly great achievement, the resumption of Julian Talko-Hryncewicz and Gotfryd Ossowski's excavations, mentioned earlier, involved revisiting the site of the Great Barrow in Ryżanówka after 108 years and brought about spectacular discoveries by Jan Chochorowski (Cracow) and Sergei Skoryi (Kyiv) in 1995 (Chochorowski, Skoryj, Grigor'ev & Rydzewski, 1999; Chochorowski & Skoryj, 2001).

The second idea, one that this article is chiefly concerned with, focused attention on micro-geographic studies. Their purpose was to identify key areas for Intermarine Area Archaeology. It was then that a network of ties began to be created that rested on personal research specializations. They, in turn, fitted into a sweeping programme of study of the bio-cultural borderland between the East and West of Europe with preference given to the questions of early-agrarian epochs (sixth–first millennium BC).

This idea stemmed from the experience related to circum-Carpathian archaeology, pursued in the Cracow archaeological community. One may posit that it was highly creative at the preparatory stage in framing projected undertakings into new organizational strategies, which referred to Oskar Halecki's division of the European continent into regions, one of them being the "civilization space of East-Central Europe" (Halecki, 1950). Interestingly enough, this concept was banned by communistic censors prior to 1989. Now, it has been replaced by the political media catchphrase of "Europe of Three Seas."

Intermarine Area Archaeology has centred on the northern portion of East-Central Europe, being one of the four main segments of this part of our continent and, additionally, a diagnostic area for the study of its early-agrarian beginnings (Childe, 1929; cf. Lech, 1992). This perspective of spatial analyses is taking on the role of one of the principal norms organizing international research within historical sciences, which can be seen in, for instance, such archaeological specializations as Pontic-Baltic, circum-Carpathian, Balkan and Aegean, or possibly Aegean-Anatolian.

The search for the origins or roots of East-Central Europe has become a phenomenon, marking a new stage in research. Initially, East-Central Europe was delimited – by Oskar Halecki – relying on the circulation of Christian civilization cultural patterns (Dębiec & Wołoszyn, 2007). The scope of research into the "early beginnings" began to cover the circum-Pontic early-metal civilization and Indo-Europeanization (i.e. the origins of Indo-Europeans and their migrations), making Intermarine Area Archaeology acquire pan-European research relevance.

5 Intermarine Area Archaeology Programmes in 1990–2020

When describing the current state of the Polish conceptual and research contribution to Intermarine Area Archaeology, space shall be given to the programme offer, formation of international research teams, and research specializations.

5.1 Offer of the Polish Archaeological Milieu

In Poland, the programme of Intermarine Area Archaeology (also known as the archaeology of the bio-cultural borderland between the East and West of Europe) was initially (in the 1990s) developed chiefly by the academic centres of Cracow and Rzeszów and Poznań. In the first decades of the twenty-first century, cooperation was extended to include other important centres such as Lublin.

5.1.1 Subcarpathian Programme

The research programme pursued jointly by the centres of Cracow and Rzeszów in Poland and Lviv in Ukraine may be called Subcarpathian. Its sources may be traced to the research preferences prevailing in the Second Republic (*see* stage two above). After the Second World War, a major milestone on the way to their revival was the foundation of the international journal *Acta Archaeologica Carpathica* in 1960 edited by Andrzej Żaki. Its purpose was to encourage joint research by scholars from the Carpathian countries, reviews of work and achievements of all specialists engaged in the study of the history of the Carpathians, and efforts to get rid of separatism in research (Żaki, 1960).

The final decade of the twentieth century witnessed important endeavours by the Cracow archaeologists. Among them, a cross-border programme of field investigations in the Carpathians ranked high. Started already in the early 1990s by Jan Machnik, it was carried out by two major centres: the Cracow Branch of the Institute of Archaeology and Ethnology, Polish Academy of Sciences, and the I. Krypyakevych Institute of Ukrainian Studies, Ukrainian National Academy of Sciences, Lviv, with the participation of researchers from other institutions (Cyhylyk & Machnik, 1994). Its focus was the many-sided exploration of a selected section of the Polish-Ukrainian frontier in the Subcarpathian area. The pioneering and multi-disciplinary work, combining the methods of traditional archaeology and diverse natural-science analyses, examined the relationships between man and the environment from the Neolithic to the early Middle Ages (Harmata, Machnik, & Starkel, 2006; Harmata, Machnik, & Rybicka, 2013). In addition, about 3,000 barrows were documented in the forest-steppe and steppe zones of Western Ukraine (Machnik, Pavliv, & Petehyryč, 2006a,b,c; Machnik, Pawliw, & Petehyrycz, 2011), with some having been excavated (Czopek, Machnik, Pasterkiewicz, Pawliw, & Petehyrycz, 2015; Machnik et al., 2011).

The principal goals set by Jan Machnik were pursued and expanded first by the Department and soon the Institute of Archaeology founded at Rzeszów University in 1998. Rzeszów (initially Cracow-Rzeszów) research projects encompassed – next to neighbouring lands on the Dniester – Volhynia and Moldavia. These efforts, especially the study of the Neolithic and Eneolithic, were carried out for the most part by Małgorzata Rybicka and her international, Polish-Ukrainian-Moldovan research team (Diaczenko, Król, Kyrylenko, Rybicka, & Werteletski, 2016; Diachenko, Rybicka, Król, & Sîrbu, 2019; Rybicka, Hawinskyj, & Pasterkiewicz, 2019; cf. Rybicka, 2017). The main partners in these endeavours were the I. Krypyakevych Institute of Ukrainian Studies, Ukrainian National Academy of Sciences, Lviv, and the Institute of Archaeology, National Academy of Sciences of Moldova, Kishinev.

In turn, an earlier period, namely that of the first agrarian communities, is studied by international teams (Polish-German and Polish-German-Moldovan) headed by Maciej Dębiec, Thomas Saile, and the prematurely departed Stanislav Ţerna (Dębiec & Saile, 2015; Saile, Dębiec, Posselt, Ţerna, & Kiosak, 2016).

Furthermore, important results have been produced by the study of the Bronze Age and the transition period between it and the Iron Age. The Cracow and Rzeszów centres were prime movers in this context. The first step was taken by the expedition headed by Jan Chochorowski and mounted by the Institute of Archaeology, Jagiellonian University, with researchers from the Institute of Archaeology, National Academy of Sciences of Ukraine in Kyiv, headed by Sergei Skoryi. The exploration of the Scythian Great Barrow in Ryżanówka in 1995–1998 resulted in the discovery of the main tomb, which significantly modified what had been known about that age (Chochorowski et al., 1999; Chochorowski & Skoryj, 2001). As a sequel to the discovery came equally spectacular discoveries made within the stronghold in Motronin close to the Great Barrow (Khokhorovski & Skoryi, 2006; Skoryi & Khokhorovski, 2009).

In turn, the Rzeszów archaeological centre headed by Sylwester Czopek set its sights on the study of the Polish-Ukrainian frontier in collaboration with the Archaeological Rescue Service, National Academy of Sciences of Ukraine, Lviv. As part of the endeavour, joint planned investigations of settlement were completed in the drainage basin of the Wisznia/Vishnya River (Czopek et al., 2018). They were a prologue to further studies of the frontier as illustrated by the current exploration of a fortified settlement in Chotyniec, Rzeszów region. It has already rendered spectacular discoveries that modify the picture of the beginning of the Iron Age in Subcarpathia (Czopek, 2020; Trybała-Zawiślak, 2019).

5.1.2 Poznań Programme

As a distant prologue to the Poznań programme, the excavations conducted in 1925 by Józef Kostrzewski in Biały Potok, Podolia, can be considered (Kośko, 2011; Szmyt, 2016). However, it owned its further development chiefly to the "Kuyavia Programme" initiated by Aleksandra Cofta-Broniewska in the late 1960s and early 1970s. It went on to reveal "a record of multidirectional development ties existing in the borderland between the Oder and Vistula drainage basins" including "conspicuous markers of Pontic ties among central European cultures, beginning with the 5th/4th millennium BC" (Kośko, 2011, p. 481). The Kuyavia experience gave rise to a number of cooperation projects carried out in Poland, Ukraine, and Belarus (Kośko, 1981, 1985, 1988, 1990).

The activities of the Poznań centre were given a broader executive framework in the final decade of the twentieth century. This involved inter-institutional agreements made in 1992 by the Adam Mickiewicz University, Poznań and the Institute of Archaeology, National Academy of Sciences of Ukraine, Kyiv, and later joined by the Institute of History, National Academy of Sciences of Belarus, Minsk. The promoters of these agreements planned for a joint selection of research projects as part of common interdisciplinary programmes. They were to cover both indoor studies and – to a limited extent only – field investigations (Kośko, 2011). The latter were undertaken on selected sites in the drainage basins of the Southern Bug (Figure 1): excavations of a Bronze Age barrow in Pechera (2000), and in basins of Horyn (investigations of basalt and copper outcrops, 2000) and Teterev rivers (excavations of a Tripolye settlement in Kornin, 2004). The first two decades of the cooperation, however, were dominated by the need to bring closer together conceptual strategies, including methodological positions.

For this purpose, a cycle of international symposia on the bio-cultural borderland between the East and West of Europe was held at which ideas and experiences were creatively exchanged among the academic centres of Poznań, Kyiv, and Minsk. Four such symposia – in 1997, 2003, 2008, and 2013 – took place in Obrzycko on the Warta, whereas one – in 2000 – in Brest on the Bug. To present the results of joint research, the journal *Baltic Pontic-Studies* began to be published in 1993, whereas 1997 saw the commencement of the series *Archaeologia Bimaris* with two sub-series: *Monographs* and *Discussions* (Figure 2).

5.2 Pontic Echoes: Time of International Research Teams

A need to broaden areas of cooperation arose on the part of Ukraine's academic centres which, in addition to the Kyiv scholarly community (clearly dominating), developed interest in the study of the Intermarine Area. They included such archaeological centres (university and conservation ones) as Ivano-Frankivsk, Donetsk, Odessa, Mykolaiv, Vinnitsa, and Zaporizhzhya. In the case of Belarus, the period of great activity in the late twentieth and early twenty-first centuries is followed now by stagnation. Minsk remains a clearly dominating centre, thanks to its community of scholars, working at the Institute of History, National Academy of Sciences of Belarus. A new development is the newly commenced cooperation by Moldovan research institutions led by the Kishinev-based Institute of Archaeology, National Academy of Sciences of Moldova, and the National Museum of History of Moldova.

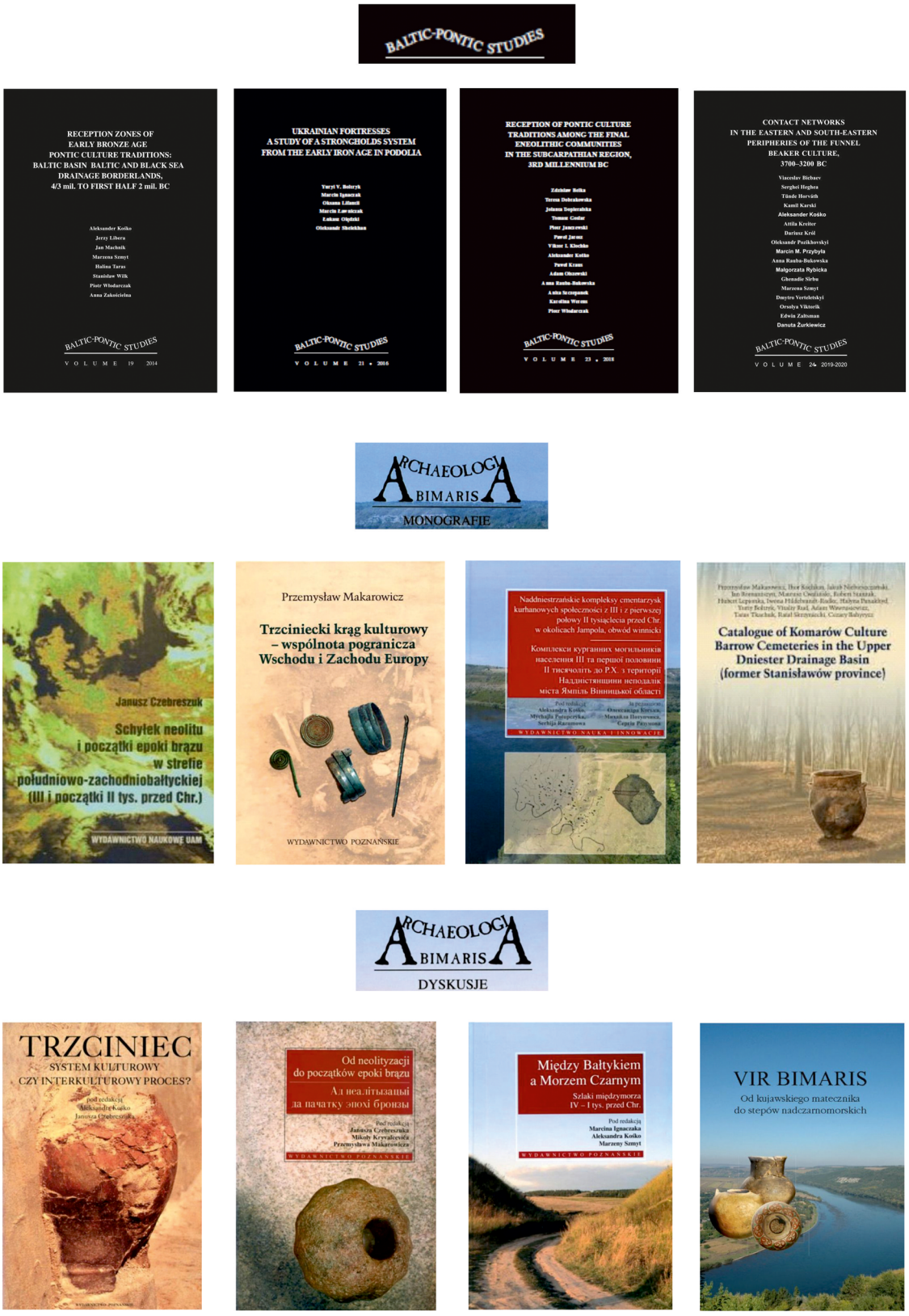

Figure 2: Selected publications discussed results of Intermarine Area Archaeology: journal *Baltic-Pontic Studies*; series *Archaeologia Bimaris – Monographs* and *Archaeologia Bimaris – Discussions*.

Thus, in 1990–1991 – against the background of political upheavals witnessed by East-Central Europe – archaeological studies were reorganized in the international research domain, in effect tying Poland's territory to the Pontic Area, in particular that lying within the borders of Ukraine and Moldova. This found expression in the rise of international teams geared to the joint execution of field investigation projects (non-invasive and excavation ones) as well as laboratory and indoor ones. The projects are financed by Poland, with funds being competitively awarded by the National Science Centre and the Ministry of Science and Higher Education (National Programme for the Development of Humanities).

Research activity flourished in the second decade of the twenty-first century. Initially modest, it was gradually expanded, with joint Polish-Ukrainian and Polish-Moldovan research teams setting out to work on selected problems – research specializations to be discussed below.

It is worth adding that these joint research efforts are carried out in parallel to other international cooperation programmes, involving the same Ukrainian and Moldovan centres, on the one part, and archaeological centres in the United Kingdom and Germany (cf. Chapman et al., 2014; Müller, Rassmann, & Videiko, 2016), on the other part.

5.3 An Outline of Intermarine Area Archaeology Research Specializations: Fifth to First (First Half) Millennium BC

The list of research achievements of the last three decades concerning the Baltic-Pontic Intermarine Area should underscore the specializations that demonstrate the research effectiveness of the organizational formula applied after 1991. Together, they form a more comprehensive programme that is well-recognized among all the humanities: the study of the origin of present-day East-Central Europe (Dębiec & Wołoszyn, 2007).

5.3.1 Pontic Metallurgical Centres: Carpathian-Volhynia Prologue

The correspondence between the smelting experience of Funnel Beaker culture communities and copper metallurgy of the Tripolye culture was observed during the post-war investigations of so-called large settlements, for instance, in Gródek Nadbużny (Gumiński, 1989, pp. 166–169). Alas, the observation could not be developed any further at that time by conducting analytical physical-metallurgy comparisons between regions, especially as any such endeavour faced Soviet programmes of diagnosing Tripolye metallurgy (Chernykh, 1992).

After 1991, these issues were revisited as part of the research cooperation mentioned earlier between Poznań and Kyiv archaeological centres (*see* 5.1.1) with the help of Ukrainian physical-metallurgy institutes: Institute of Geology, National Academy of Sciences of Ukraine, and State Scientific Center of Environmental Nuclear Geochemistry. Initially, investigations concentrated on Ukrainian copper deposits – their geography and local physical-metallurgy peculiarities (Klochko et al., 2000; Kłoczko, Manichev, Kompanec, & Kovalchuk, 2003). Since 2003, the programme has had much greater opportunity to expand, owing to an exponential increase in sources: a wave of discoveries by metal-detector users in Ukraine that radically changed the source base as known earlier for the study of Eneolithic-Early Bronze metallurgy in the Intermarine Area.

At that time, a new opportunity opened for the study of the Pontic catchment area within Ukraine's borders, owing to a project carried out by Klochko and Kozymenko who had the idea to exercise maximum supervision over so-called black archaeology by purchasing metal objects from their "discoverers" and earmarking funds and organizational means to carry out specialist analyses and publish their results (Klochko & Kozymenko, 2011, 2017). The long-term goal of the project was to develop a new periodization scheme of the Pontic Early Metal Age, relying on evidence provided by diagnostic metal objects. In respect of the Eneolithic and Early Bronze Age, these were massive (heavy) metal objects associated, generally

speaking, with the Cucuteni-Tripolye culture (Klochko & Kośko, 2020). Encouragement to take up the study of such objects came from earlier archaeological-physical metallurgy programmes focused on the typo-chronology and topogenesis of the Carpathian-Volhynia metallurgical centre (Klochko, 2001, 2006, 2017; Klochko & Klochko, 2013). The year 2020 saw the publication, announced earlier, of the periodization scheme of the Pontic Early Metal Age (Klochko, Hoshko, Kozymenko, & Klochko, 2020) and an attempt to apply the conception of the Carpathian-Volhynia metallurgical centre to the Baltic portion of the Intermarine Area (Klochko & Kośko, 2020).

Following the discussion on the integration of the Carpathian-Volhynia centre and "Baltic" metallurgical centres (mainly those operated by the Funnel Beaker culture groups on the Vistula), two projects were agreed upon and have already begun to be implemented since then (Klochko & Kośko, 2020, p. 20).

The first involves the application of micro-archaeometric methods to so-called great Funnel Beaker culture settlements to detect any evidence of early metallurgical experiences (cf. Chernovol, 2016) on selected – by non-invasive reconnaissance – diagnostic surfaces. Priority is given in this respect to the settlements that were inhabited synchronously with the Tripolye culture (Phases CI–CI/CII) and the Lublin-Volhynia culture (Phases II–III) – components of the Carpathian-Volhynia metallurgical centre.

The second encompasses comparative analyses, integrated throughout the Intermarine Area, of massive Eneolithic artefacts. They are studied from the angle of taxonomy to lay the groundwork for a broader endeavour: the drawing-up of a "Baltic-Pontic" list of artefacts from the early metal age. In addition, the artefacts are subjected to archaeo–physical–metallurgy analyses.

5.3.2 Stimulation of the Circulation of Ideas and People in the Intermarine Area

The investigations carried out in the 1950s and 1960s on so-called great Funnel Beaker culture settlements encouraged scholars to study the stimulation of the circulation of ideas and people where the East and West of Europe met. The impact of the Tripolye culture on the Funnel Beaker culture (*tripolization*) was initially studied on the example of lands occupied by the south-eastern group of the FBC, more specifically its Bug subgroup (Jastrzębski, 1985).

The 1970s and 1980s witnessed an important development in these studies. It involved an exponential growth of evidence for *tripolization* on the Polish Lowland (mainly in Kuyavia), known as the so-called Mątwy cultural component (Kośko, 1981, 1988). It documented "the amalgam of north-Pontic Eneolithic traditions (Sredny Stog and the Tripolye cultures) and those of formally sub-Neolithic (?) groups from the borderland between the taiga and forest-steppe (the circle of the Dnieper-Donets culture, e.g. sites of the Višinki-Mnevo type)" (Kośko, 2010, p. 12). In the set of traits identified with the Tripolye culture, the technological and stylistic traits of pottery attracted special attention such as covering vessel surfaces with mineral and organic pigments (Kośko & Szmyt, 2015) and "cord" impressions among ornamentation motifs (Kośko & Szmyt, 2010). In addition, a Tripolye impact was suggested by a greater use of Volhynia flint in tool making (Libera & Zakościelna, 2011) and clay in building structures (the question of the so-called quasi-ploshchadki; Kośko & Szmyt, 2015).

Since the second decade of the twenty-first century, the investigations carried out in the Rzeszów University in collaboration with Ukrainian and Moldovan partners have revealed ever stronger symptoms of a reverse process: the *beakerization* of the late, CII-stage Tripolye groups (Rybicka et al., 2019). In this way, it is possible to identify ever more thoroughly mutual cultural ties and routes of exchanging ideas, artefacts, and people where the two large Eneolithic entities met in the bio-cultural borderland between the East and West of Europe in the fourth millennium BC.

5.3.3 Globular Amphora Culture Pontic Exodus

Studies on the eastern European exodus of the Globular Amphora culture opened a new stage of research on the borderland between Eastern and Western Europe. First of all, they encouraged the preliminary

identification of the routes joining the Baltic and Pontic areas from the end of the fourth to the middle of the third millennium BC. Work on these issues has been underway since 1995, and its results are gradually revealing the multifaceted and wide-ranging activities of Globular Amphora culture populations that encompassed the vast expanses of eastern Europe (Szmyt, 1999, 2009, 2013, 2014, 2016, 2018). They spread all across Volhynia, Podolia, and the Moldavian Upland, forming agglomerations making up the eastern group of the Globular Amphora culture (with three subgroups: Volhynian, Podolian, and Moldavian).

A starting point was the Lublin Upland, where the Globular Amphora settlement flourished from the end of the fourth until the middle of the third millennium BC (Bronicki, 2016; Włodarczak, 2016). From there, settlers probably moved to Volhynia right at the turn of the fourth millennium BC. The movement towards Podolia and the Moldavian Upland was rather quick (Mihailescu-Bîrliba & Szmyt, 2003; Szmyt, 2009).

Initially, the migrations of Globular Amphora culture populations eastwards followed in the footsteps of earlier Funnel Beaker groups. However, in the course of two to three centuries, Globular Amphora communities penetrated more thoroughly the area between the Carpathians and the Dnieper than any of their central European predecessors in the fourth millennium BC. Entirely independent of older experience, the new migration wave brought about a considerable expansion of areas settled by Globular Amphora populations (to include the Moldavian Upland and lands on the middle Dnieper).

Relying on current records, it is possible to distinguish areas settled and controlled by Globular Amphora communities from others where only scattered traces of their settlement are evidenced. The latter, in the form of single, isolated sites are found between the Southern Bug and the middle course of the Dnieper as well as west of the Moldavian subgroup, in Transylvania (Székely, 2002).

The demise of the eastern Globular Amphora group came in the middle of the third millennium BC. Its place was taken then by the communities that combined local patterns with new ideas developed in the Corded Ware and Steppe cultures.

Currently, research focuses primarily on exploring the relationship of the Globular Amphora and Yamnaya cultures (Szmyt, 1999, 2014), i.e. it takes the perspective of Indo-Europeanization processes. It seems that direct contacts between the communities of the two cultures took place in the peripheries of regions they controlled, namely in the forest-steppe. As can be seen from the dispersion of sites, only in the western part of the forest-steppe zone, a clear frontier between areas dominated by the Yamnaya communities and those controlled by the Globular Amphora groups could be reconstructed. It followed the Prut and the middle section of the Dniester, but, of course, did not prevent contacts.

In this context, archaeogenetic analyses are gaining in importance. A series of aDNA studies showed that people connected to the Globular Amphora culture represented in about 70% the so-called *ancient farmers ancestry* and in 30% the *western hunter-gatherers ancestry* (Mathieson et al., 2018; Schroeder et al., 2019; Tassi et al., 2017). New light is shed on the matter by recently published analyses that point to the probable influx of Globular Amphora populations into the Yamnaya populations of the north Caucasian steppe (Wang et al., 2019).

5.3.4 Archaeology of Intermarine Area Routes

In connection with the "inter-regional GAC reconnaissance" outlined above into the cultural milieus of the borderland between the West and East of Europe, it is interesting to know that since the turn of the fourth/third millennium BC, there had existed mental chorographies whose general identification (as to methods and attempts to trace them in the field) was discussed at the Obrzycko symposia (Ignaczak, Kośko, & Szmyt, 2011; Klochko, 2008; Kośko, 2014; Kośko & Klochko, 2009, 2013).

One of their key conclusions is the revision of the position of Baltic catchment area populations in the system of neighbour (peripheral) policies of the most active Early Bronze civilizations in this part of the continent, namely, Danube-Carpathian and north Pontic. Prior to 1991, research focused mainly on the Baltic-Danube relations, which reflected both their special position with regard to cultural transformations

in East-Central Europe in the third–second millennium BC and almost 50 years of intensive research conceptually inspired by Jan Machnik's scholarly output (Machnik, 1967, 1977, 1978, 1987).

Against this background, a parallel attempt to assess systematically Baltic-Pontic relations was sorely missed. This was a result above all of delays in the transfer of knowledge on the Bronze Age in the Pontic Area. Restrictions applied mostly to the reanalysis of the investigation results of many thousands of barrows that had been excavated as part of a rescue operation in advance of the Soviet programme of steppe agrarisation implemented from the late 1960s to the early 1990s.

This huge programme of barrow investigations in Ukraine has radically changed our knowledge of many aspects of culture of the Metal Ages. One research trend aims at exposing the Ingul-Donets culture centre of the prologue of the Bronze Age, also known as Ingul-Donets Early Bronze Civilization (Bátora, 2006; Klochko & Kośko, 2009). Another stimulus for this research trend has been the finding that the topogenesis of the "Pontic" markers of Early Bronze cultures in the Baltic catchment area was broader than previously thought (Kośko, 2014).

At present, a key role in the identification of ties between the Ingul-Donets centre and the Baltic catchment area is played by the study of the geography of finds of insignia-type artefacts of a Pontic origin. Such finds appear in the bio-cultural borderland between the East and West of Europe from the middle of the third to the early first millennium BC. These are above all fluted stone maces (Kośko, 2002) followed by shaft-hole axes with a fluted butt, associated with the period of transition from the Early to Middle Bronze Age in the Pontic Area (Klochko & Kośko, 2020). These artefacts indicate connections with the stonework of the Catacomb culture (Sharafutdinova, 1980).

The cultural stimuli from the Ingul-Donets civilization reached the Baltic catchment area along a system of routes (Kośko, 2002, p. 71):

- Southern Bug – Western Bug – Wieprz – Vistula (or Vistula-Nemunas)
- Southern Bug – Western Bug – Vistula (or Vistula – Nemunas)
- Dnieper (or Ingul – Dnieper) – Pripet – Western Bug – Vistula (or Vistula – Nemunas)
- Dnieper (or Ingul – Dnieper) – Byarezina – Nemunas
- Dnieper (or Ingul- Dnieper) – Byarezina – Neris – Nemunas

5.3.5 Proto-Indo-Europeans and Barrow Dispersal in the Cultural Landscape of the Intermarine Area

The rise of barrows in the bio-cultural landscape of the Black Sea catchment area is commonly believed to be a marker of worldview and linguistic transformations and the onset of widespread Indo-Europeanization (Gimbutas, 1980). The process is dated to the final centuries of the fourth millennium BC in the middle Dnieper drainage basin and correlated with Late Neolithic (Tripolye culture, Stage CII) and Early Bronze cultures (Yamnaya culture) (Goslar, Klochko, Kośko, Włodarczak, & Żurkiewicz, 2015). Beginning with the third millennium BC on Pontic steppes and forest-steppes, barrow groups started to serve as important ceremonial centres and land markers ("signposts") as well (cf. Kośko, 2014, 2015). In the latter function, they marked inter-regional transit routes (*see* 5.3.4).

The last decade has seen the introduction of cultural landscape questions to the programme of Polish-Ukrainian field research. Systematic investigations of selected key regions of the Ukrainian steppe and forest-steppe have begun, concentrating on the drainage basins of the upper and middle Dniester and the Southern Bug. The spatial layout of a number of fourth–second-millennium BC barrow cemeteries in this context has been identified, with recurrent linear and liner-group arrangements of barrows being commonly recorded on river drainage divides – prominent, most-elevated locations (Kośko, Potupczyk, & Razumow, 2014; Makarowicz et al., 2016, 2019). The barrow arrangements form vast funeral barrow landscapes in which individual cemeteries and their parts are separated from one another by low-lying land. The current research concerns the interpretation of spatial organization principles of selected barrow cemeteries, using state-of-the-art spatial analyses as well as cartographic and geodetic methods (Makarowicz et al., 2019). A similar approach has been taken in the investigations of ritual barrow centres located on

the forest-steppe, between the upper Southern Bug and the middle Dniester, Vinnitsa *oblast* (Rud, Shmit, Vlodarchak, & Zhurkevich, 2020).

One of the crucial regions in these investigations is the upper Dniester drainage basin. In 2009, a programme of field and indoor research was started there to explore the barrow cemeteries of the Middle Bronze Komarów culture. Funds to run the programme were provided by Polish government agencies: National Science Centre and National Programme for the Development of Humanities. Part of the programme is the joint Polish-Ukrainian Upper Dniester Expedition that explored, by non-invasive methods, over 900 new barrows in 2009–2016 (Makarowicz et al., 2016). Furthermore, in 2010–2014, non-invasive methods and excavations were used to explore one of the largest Komarów culture necropolises in Bukivna, Ivano-Frankivsk *oblast*. The necropolis was revisited by archaeologists after over 70 years from the investigations conducted by Jan Bryk and others (Makarowicz et al., 2016, here further references). The exploration produced many publications in prestigious global-impact journals (to name a few: Hildebrandt-Radke et al., 2019; Kałużna-Czaplińska et al., 2017; Makarowicz et al., 2018, 2019) and a monograph of the necropolis (Makarowicz, Lysenko, & Kochkin, in press).

In 2019, another research programme was begun to trace the cultural change and trajectory of sociocultural development in the barrow cemeteries of the Final Neolithic and Bronze Age. The programme involves surface surveys, non-invasive investigations, and excavations accompanied by analytical examinations such as palaeo-environmental, anthropological, archaezoological, techno-archaeological, palaeopedological, lithological, geochemical, isotopic, and genetic carried out at selected barrow cemeteries in Ukraine's provinces located on the upper Dniester (Ivano-Frankivsk, Ternopil, and Lviv). So far (2020), a vast necropolis at Myluvannya, Ivano-Frankivsk *oblast*, has been explored.

Moreover, extensive research is conducted into the questions of migration and kinship in East-Central Europe in the third–second millennium BC. The methodology used, combining traditional archaeological methods and archaeological science, has allowed scholars to take a new approach to the questions of settlement continuation/discontinuation, genetic relationships between the populations of various societies from that period, including diversified ties with steppe population groups (Juras et al., 2020), various scenarios of the under-barrow mortuary ritual, e.g. cremation in so-called mortuary houses (Makarowicz et al., 2021), and finally, the question of the introduction of millet to the western part of the region as an important cereal in the diet of the local Middle Bronze Age communities (Pospieszny et al., 2021).

5.3.6 Baltic Exoduses of Scythians

The Scythian period on Pontic forest-steppe is dated to the late eighth and early seventh centuries BC. The Intermarine Area witnessed then important cultural changes, which, owing to the impact of Scythian nomads, included it in the cultural circulation of the Mediterranean world and its vanguard on the Black Sea shores represented by Greek colonies. Peripheral with respect to them, the forest-steppe attracted settlement investigations centred on Scythian strongholds dispersed on it. The investigations were part of a broader research programme called "Fortresses of Ukraine" carried out by a joint Polish-Ukrainian expedition in collaboration with the Institute of Archaeology, National Academy of Science of Ukraine. Their goal was to identify and make an inventory of strongholds, making up the western, Podolia settlement concentration within the Ukrainian forest-steppe. Excavations and surface surveys carried out in 2008–2016 were a prologue to more extensive research plans aimed at explaining what processes had an impact on the rise and life of Early Iron Age "giant strongholds" dated to the sixth and fifth centuries BC.

The first and foremost problem of the ongoing research is the spatial range of the "Early Iron" stronghold settlement. The dispersion of fortified features ought to provide clues for their correct functional interpretation by finding out whether they formed a route chain ("trading-post arrangement") or were arranged in a zone, constituting a frontier of settlement range related to possible sociocultural differences. Another problem to be researched is related to the fact that the area under investigation can be considered an important staging point on the "Dniester" and "Volhynia" sections of the transit route, joining – from the fourth millennium BC – the Baltic and Black Sea catchment areas; for it lies in the borderland between the

East and West of Europe believed to be the place where the impact of central European agrarian societies and forest-steppe/steppe traditions crossed.

Research results justify moving back the dating of strongholds to a more probable period between the end of the seventh and the middle of the sixth century BC (Ignaczak, Affelski, Boltrik, & Šelehan, 2013). This is consistent with the chronology of activation of nomad peoples in Eastern and Central Europe (Chochorowski, 2009) accompanied by, for instance, destruction of defensive settlements on the middle Dnieper (Trachtemiriv), in Slovakia (Smolenice), and on the Polish Lowland (Wicina and Kamieniec).

6 Prospects for the Future

The achievements of various research teams working on Baltic-Pontic Intermarine Area Archaeology have an enormous potential for continuation. In the years to come, it will be vital to continue the study of relationships between steppe and agrarian communities in the long interval from the fourth to the early first millennium BC, using the latest natural-science research methods (geoarchaeology, archaeogenetics, isotopic research, multi-aspectual environmental analyses). It will be important to make this general research trend more concrete by studying relations between various formations, representing both socio-economic models (e.g. communities of the Corded Ware and Globular Amphora cultures with those of the Yamnaya culture). Another promising research area covers the gradual spread of barrow funerary rituals across the Baltic-Pontic Intermarine Area, observed already in the fourth millennium BC and its relation to the question of westward intrusion by Indo-Europeans. Moreover, a large research potential is offered by the man – environment relationship, including the symptoms of increased anthropopressure, noticeable owing to the recent palaeobotanical and palaeopedological studies, in the forest-steppe and the borderland between the forest-steppe and forest in the third and second millennia BC.

These are only some research areas that institutionalized Polish-Ukrainian research teams will work on in the nearest future. It is vital that the current and future results of archaeological investigations in the Baltic-Pontic Intermarine Area be brought more generously into international academic circulation in accord with their significance for Europe's prehistory.

Acknowledgements: This work was part of the projects financed by the National Science Centre, Poland: no. 2017/27/B/HS3/01444 "Podolia as a contact area in the third millennium BC: Kurgans on the rivers Murafa and Riv" and no. 2018/31/B/HS3/01326 "Continuation and change. Barrow societies from the third and second millennium BC in the Upper Dniester drainage basin in light of multidisciplinary studies."

Conflict of interest: The authors state no conflict of interest.

References

Abramowicz, A. (1967). *Wiek archeologii. Problemy polskiej archeologii dziewiętnastowiecznej*. Warszawa: Łódzkie Towarzystwo Naukowe.

Bátora, J. (2006). *Štúdie ku komunikàcii medzi Strednou a Východnou Európou v dobe bronzovej*. Bratislava: Petrus Publishers.

Blombergowa, M. M. (1993). *Badania archeologiczne Polaków na terytorium Imperium Rosyjskiego w XIX i początku XX wieku*. Łódź: Łódzkie Towarzystwo Naukowe.

Bronicki, A. (2016). Obrządek pogrzebowy społeczności kultury amfor kulistych na Wyżynie Lubelskiej. In P. Jarosz, J. Libera, & P. Włodarczak (Eds.), *Schyłek neolitu na Wyżynie Lubelskiej* (pp. 45–256). Kraków: Instytut Archeologii i Etnologii, Polska Akademia Nauk.

Bryk, J. (1932). Tymczasowe sprawozdanie z badań w Bukównie, pow. tłumacki. *Sprawozdania Polskiej Akademii Umiejętności*, *37*, 21–22.

Bydłowski, A. (1904). Mogiły w Nowosiółce w pow. lipowickim, gub. kijowskiej. *Światowit*, *5*, 59–80.

Bydłowski, A. (1906). Mogiły w Nowosiółce w pow. lipowickim, gub. kijowskiej. *Światowit*, *6*, 1–7.
Chapman, J., Videiko, M. Y., Hale, D., Gaydarska, B., Burdo, N., Rassmann, K., … Kruts, V. (2014). The second phase of the Trypillia mega-site methodological revolution: A new research agenda. *European Journal of Archaeology*, *17*(3), 369–406.
Chernovol, D. (2016). Poselenie tripolskoy kultury Bernashevka I [Черновол, Д. (2016). Поселение трипольской культуры Бернашевка I]. *Revista Arheologica*, *12*(1–2), 20–36.
Chernykh, E. N. (1992). *Ancient metallurgy in the USSR. The Early metal age*. Cambridge: Cambridge University Press.
Childe, V. G. (1929). *The Danube in Prehistory*. Oxford: Clarendon Press.
Chochorowski, J. (2009). "Halsztatyzacja" wschodniej części Kotliny Karpackiej. In S. Czopek & K. Trybała-Zawiślak (Eds.), *Tarnobrzeska kultura łużycka – źródła i interpretacje* (pp. 89–118). Rzeszów: Instytut Archeologii Uniwersytetu Rzeszowskiego.
Chochorowski, J. (2016). Godfryd Ossowski (1835–1897) – Niespokojny duch XIX-wiecznej archeologii. In M. Rybicka & M. Rzucek (Eds.), *Nasi mistrzowie* (pp. 9–58). Rzeszów: Instytut Archeologii Uniwersytetu Rzeszowskiego.
Chochorowski, J., Skoryj, S., Grigor'ev, V., & Rydzewsk, J. (1999). Badania wykopaliskowe Wielkiego Kurhanu Rỳanowskiego – etap końcowy (sezon 1998). *Materiały i Sprawozdania Rzeszowskiego Ośrodka Archeologicznego*, *20*, 279–292.
Chochorowski, J., & Skoryj, S. (2001). Polsko-ukraińskie badania wykopaliskowe Wielkiego Kurhanu Ryżanowskiego w Ryżanówce na Ukrainie. In J. Lech & J. Partyka (Eds.), *Z archeologii Ukrainy i Jury Ojcowskiej* (pp. 463–486). Ojców: Ojcowski Park Narodowy.
Cofta-Broniewska, A. (Ed.). (1989). *Prehistoric contacts of Kuiavian communities with other European peoples. Archaeologia interregionalis 10*. Warszawa: Wydawnictwa Uniwersytetu Warszawskiego.
Cyhylyk, V., & Machnik, J. (1994). Pierwsze wspólne polsko-ukraińskie archeologiczne badania terenowe w międzyrzeczu Sanu i Dniestru. *Acta Archaeologica Carpathica*, *32*, 205–213.
Czopek, S. (2020). Znaczenie odkryć w Chotyńcu (południowo-wschodnia Polska) dla interpretacji procesów kulturowo-historycznych na zachodnim Wołyniu i Podolu (Ukraina) we wczesnej epoce żelaza. *Archeologia Polski*, *65*, 67–114.
Czopek, S., Machnik, J., Pasterkiewicz, W., Pawliw, D., & Petehyrycz, W. (2015). *Wielokulturowe stanowiska archeologiczne w Bykowie koło Drohobycza*. Kraków: Polska Akademia Umiejętności, Narodowa Akademia Nauk Ukrainy.
Czopek, S., Trybała-Zawiślak, K., Wojceszczuk, N., Osaulczuk, O., Bobak, D., Gębica, P., … Wacnik, A. (2018). *Przemiany kulturowo-osadnicze w dorzeczu rzeki Wiszni w epoce brązu i we wczesnej epoce żelaza w kontekście zmian prahistorycznej i wczesnohistorycznej ekumen*. Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
Dębiec, M., & Saile, T. (2015). Zu den östlichen Siedlungen der frühen Bandkeramik. *Prähistorische Zeitschrift*, *90*(1–2), 1–19.
Dębiec, M., & Wołoszyn, M. (Eds.). (2007). *U źródeł Europy Środkowo-Wschodniej: Pogranicze polsko-ukraińskie w perspektywie badań archeologicznych*. Rzeszów: Uniwersytet Rzeszowski.
Diachenko, A., Rybicka, M., Król, D., & Sîrbu, G. (Eds.). (2019). *Between the East and the West. Dynamics of social changes from the Eastern Carpathians to the Dnieper in the 4th – Beginning of 3rd Millennium BC* (*Preliminary study*). Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.
Diaczenko, A., Król, D., Kyrylenko, A., Rybicka, M., & Werteletski, D. (2016). *Nowomalin-Podobanka i Kurgany Dubowa. Osiedla kultury trypolskiej na zachodnim Wołyniu*. Rzeszów: Uniwersytet Rzeszowski, Instytut Archeologii.
Gimbutas, M. (1980). The Kurgan Wave #2 c. 3400–3200 B.C. into Europe and the following transformation of culture. *The Journal of Indo-European Studies*, *8*(3–4), 273–316.
Goslar, T., Klochko, V. I., Kośko, A., Włodarczak, P., & Żurkiewicz, D. (2015). Chronometry of Late Eneolithic and 'Early Bronze' cultures in the middle dniester area: Investigations of the Yampil barrow complex. *Baltic-Pontic Studies*, *20*, 256–291.
Grabowski, M. (1850). *Ukraina dawna i teraźniejsza. Vol. 1. O zabytkach najgłębszej starożytności*. Kijów: T. Glücksberg.
Gumiński, W. (1989). *Gródek Nadbużny. Osada kultury pucharów lejkowatych*. Wrocław, Warszawa, Kraków, Gdańsk, Łódź: Instytut Archeologii i Etnologii Polskiej Akademii Nauk.
Hadaczek, K. (1914). *Osada przemysłowa w Koszyłowcach z epoki eneolitu. Studya do początków cywilizacyi w połud.-wschod. Europie* (Archiwum Naukowe. Wydawnictwo Towarzystwa dla Popierania Nauki Polskiej). Lwów: Towarzystwo dla Popierania Nauki Polskiej.
Halecki, O. (1950). *The limits and divisions of European history*. New York: Sheed and Ward.
Harmata, K., Machnik, J., & Rybicka, M. (Eds.). (2013). *Natural environment and man on the upper dnister-region of the Halyč-Bukačivci Basin in Prehistory and Early Mediaeval Period* (Prace Komisji Prehistorii Karpat PAU 6). Kraków: Polska Akademia Umiejętności.
Harmata, K., Machnik, J., & Starkel, L. (Eds.). (2006). *Environment and Man at the Carpathian Foreland in the Upper Dnister Catchment from Neolithic to Early Mediaeval Period* (Prace Komisji Prehistorii Karpat PAU 3). Kraków: Polska Akademia Umiejętności.
Hildebrandt-Radke, I., Makarowicz, P., Matviishyna, Z. N., Parkhomenko, A., Lysenko, S. D., & Kochkin, I. T. (2019). Late Neolithic and Middle Bronze Age barrows in Bukivna, Western Ukraine as a source to understand soil evolution and its environmental significance. *Journal of Archaeological Science: Report, 27*, 1–13. doi: 10.1016/j.jasrep.2019.101972.
Ignaczak, M., Affelski, J., Boltrik, J., & Šelehan', A. (2013). Z badań nad systemem grodzisk z wczesnego okresu epoki żelaza na obszarze Podola. Wstępne wyniki prac ekspedycji Instytutu Prahistorii Uniwersytetu im. Adama Mickiewicza w obrębie grodziska w Severinìvce, obwód Winnica. *Folia Praehistorica Posnaniensia*, *18*, 77–89.

Ignaczak, M., Kośko, A., & Szmyt, M. (Eds.). (2011). *Między Bałtykiem a Morzem Czarnym. Szlaki Międzymorza w IV–I tys. Przed Chr* (Archaeologia Bimaris – Dyskusje 4). Poznań: Wydawnictwo Poznańskie.

Jastrzębski, S. (1985). Imports of the Trypole culture pottery in the south-eastern group of the Funnel Beaker culture. In A. Kokowski (Ed.), *Memoires archeologiques* (pp. 71–92). Lublin: Uniwersytet im. Marii Curie-Skłodowskiej.

Juras, A., Makarowicz, P., Chyleński, M., Ehler, E., Malmström, H., Krzewińska, M., … Dabert, M. (2020). Mitochondrial genomes from Bronze Age Poland reveal genetic continuity from the Late Neolithic and additional genetic affinities with the steppe populations. *American Journal of Physical Anthropology*, *172*(2), 176–188. doi: 10.1002/ajpa.24057.

Kaczorowski, G. (2010). Badania terenowe i publikacje Leona Kozłowskiego. In S. K. Kozłowski & O. Sytnyk (Eds.), *Profesor Leon Kozłowski* (pp. 409–439). Lwów–Warszawa: Ośrodek Badań nad Antykiem Europy Południowo-Wschodniej Uniwersytetu Warszawskiego; Narodowa Akademia Nauk Ukrainy, Instytut Ukrainoznawstwa im. I. Krypiakiewicza; Ministerstwo Oświaty Ukrainy, Lwowski Narodowy Uniwersytet im. I. Franki.

Kałużna-Czaplińska, J., Rosiak, A., Grams, J., Chałupka, K., Makarowicz, P., Maniukiewicz, W., & Szubiakiewicz, E. (2017). The studies of archaeological pottery with the use of selected analytical techniques. *Critical Reviews in Analytical Chemistry*, *6*, 490–498. doi: 10.1080/10408347.2017.1334534.

Khokhorovski, Ya., & Skoryi, S. (2006). Oboronitelnaya sistema Motroninskogo gorodischa. In O. B. Suprunenko (Ed.), *Arkheologichnyi Litopis Livoberezhnoyi Ukrayiny* [Хохоровски, Я., Скорый, С. (2006). Оборонительная система Мотронинского городища. In О. Б. Супруненко (Ed.), Археологічний Літопис Лівобережної України] (pp. 74–81). Poltava: VTs «Arkheologiya» TSODPA.

Klochko, V. I., & Klochko, L. (2013). Complex of metal goods between the Vistula and Dnieper rivers at the turn of the 4th/3rd to the 3rd Millennium BC. Concept of the Carpathian – Volhynia "Willow Leaf" Metallurgy Centre. *Baltic-Pontic Studies*, *18*, 39–71.

Klochko, V. I., & Kośko, A. (2013). The Baltic drainage basin in the reconstruction of the mental map of Central Europe Held in common by Northern-Pontic Early – Bronze civilization communities: 3200–1600 BC. An outline of the research programme. *Baltic-Pontic Studies*, *18*, 9–20.

Klochko, V. I., & Kozymenko, A. V. (2011). *Nash nedavnyi bronzovyi vek* [Клочко, В. И., Козыменко, А. В. (2011). Наш недавний бронзовый век]. Kyiv: Geneza.

Klochko, V. I., & Kozymenko, A. V. (2017). *Drevnyi metal Ukrayny* [Клочко, В. И., Козыменко, А. В. (2017). Древний металл Украины]. Kyiv: Izdatelski Dom SAM.

Klochko, V. I. (2001). *Weaponry of societies of the Northern pontic culture circle: 5000–700 BC* (Baltic-Pontic Studies, 10). Poznań: Adam Mickiewicz University

Klochko, V. I. (2006). Ozbroyennya ta viyskova sprava davnogo naselennia Ukrayiny [Клочко, В. І. (2006). Озброєння та військова справа давнього населення України]. Kyiv: ArtEk.

Klochko, V. I. (2008). Torgovelnyy shlakh Bug-Bog [Клочко, В. І. (2008). Торговельний шлях Буг-Бог]. In J. Bednarczyk, J. Czebreszuk, P. Makarowicz, & M. Szmyt (Eds.), *Na pograniczu światów. Studia z pradziejów międzymorza bałtycko-pontyjskiego ofiarowane Profesorowi Aleksandrowi Kośko w 60. rocznicę urodzin* (pp. 239–249). Poznań: Wydawnictwo Poznańskie.

Klochko, V. I. (2017). Yamnaya culture hoard of metal objects Ivanivka, LowerMurafa: Autogenenesis of 'Dniester copper/bronze metallurgy.' *Baltic-Pontic Studies*, *22*, 226–245.

Klochko, V. I., Hoshko, T. Y., Kozymenko, A. V., & Klochko, D. D. (2020). *Epokha rannogo metalu v Ukrayini* [Клочко, В. И., Гошко, Т. Ю., Козыменко, А. В., Клочко, D. D. (2020). Епоха раннього металу в Україні (історія металургії та генезис культур)]. Kyiv: National University "Kyiv-Mohyla Academy".

Klochko, V. I., & Kośko, A. (2020). Koncepcja impulsów subkarpacko-podolsko-wołyńskich w ocenie procesów prologu metalurgii wśród społeczeństw obszaru zachodniej części bałtycko-pontyjskiego międzymorza. Zarys problematyki aktualnych dyskusji. In M. Dębiec & T. Saile (Eds.), *A planitiebus usque ad montes. Studia archaeologica Andreae Pelisiak vitae anno sexagesimo quinto oblata* (pp. 515–534). Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.

Klochko,V. I., Manychev, V. I., Kvasnitsa, V. K., Kozak, S. A., Demchenko, L. V., & Sokhatskiy, M. P. (2000). Issues concerning Tripolye metallurgy and the virgin copper of Volhynia. *Baltic-Pontic Studies*, *9*, 168–186.

Kłoczko, W. I., Manichev, V. I., Kompanec, G. S., & Kovalchuk, M. S. (2003). Wychodnie rud miedzi na terenie Ukrainy zachodniej jako baza surowcowa metalurgii kolorowej w okresie funkcjonowania kultury trypolskiej. *Folia Praehistorica Posnaniensia*, *10/11*, 47–78.

Kolendo, J. (2010). Kazimierz Majewski we Lwowie – Okres kształtowania się osobowości naukowej badacza. In S. K. Kozłowski & O. Sytnyk (Eds.), *Profesor Leon Kozłowski/Професор Леон Козловський* (pp. 526–540). Lwów, Warszawa: Ośrodek Badań nad Antykiem Europy Południowo-Wschodniej Uniwersytetu Warszawskiego; Narodowa Akademia Nauk Ukrainy, Instytut Ukrainoznawstwa im. I. Krypiakiewicza; Ministerstwo Oświaty Ukrainy, Lwowski Narodowy Uniwersytet im. I. Franki.

Kośko A. (1988). *Osady kultury pucharów lejkowatych w Inowrocławiu-Mątwach, woj. Bydgoszcz, stanowisko 1*. Inowrocław: Uniwersytet im. Adama Mickiewicza w Poznaniu.

Kośko A. (1989). Cultural development of Kuiavian communities during the Late Neolithic and the Neolithic-Bronze interstage in the aspect of exogenous cultural-forming pattern reception. In A. Cofta-Broniewska (Ed.), *Prehistoric contacts of Kuiavian*

communities with other European peoples (Archaeologia Interregionalis 10, pp. 155–182). Warszawa: Wydawnictwa Uniwersytetu Warszawskiego.

Kośko, A. (1981). *Udział południowo-wschodnioeuropejskich wzorców kulturowych w rozwoju niżowych społeczeństw kultury pucharów lejkowatych*. Poznań: Uniwersytet im. Adama Mickiewicza w Poznaniu.

Kośko, A. (1985). Influences of the "pre-yamnaya" ("pre-pitgrave") communities from Black Sea Steppe area in Western European cultures. In J. K. Kozłowski & J. Machnik (Eds.), *L'éneolithique et le début de l'âge du bronze dans certaines regions de l'Europe* (pp. 57–72). Wrocław, Warszawa, Kraków, Gdańsk, Łódź: Ossolineum.

Kośko, A. (1990). The Migration of Steppe and Forest-steppe Communities into Central Europe. *The Journal of Indo-European Studies*, *18*(3–4), 309–329.

Kośko, A. (1991). The Vistula – Oder Basins and the north Pontic region. *The Journal of Indo-European Studies*, *19*, 235–258.

Kośko, A. (2002). Fluted Maces in cultural systems of the Borderland of Eastern and Western Europe: 2350–800 BC. Taxonomy, genesis, function. *Baltic-Pontic* Studies, *11*, 31–81.

Kośko, A. (2010). W kręgu pewnej niedokończonej dyskusji. *Fontes Archaeologica Posnanienses*, *46*, 11–18.

Kośko, A. (2011). Od nadwarciańskiego matecznika ku archeologii pogranicza Zachodu i Wschodu Europy. *Folia Praehistorica Posnaniensia*, *16*, 479–490.

Kośko, A. (Ed.). (1996). *Z badań nad genezą regionalizmu kulturowego społeczeństw Kujaw*. Poznań, Kruszwica, Inowrocław: Uniwersytet im. Adama Mickiewicza w Poznaniu.

Kośko, A. (Ed.). (2002). *Fluted maces in the system of long-distance exchange trails of the Bronze Age: 2350–800 BC* (Baltic-Pontic Studies, 11). Poznań: Adam Mickiewicz University

Kośko, A. (Ed.). (2014). *Reception zones of 'Early Bronze Age' Pontic culture traditions: Baltic Basin – Baltic and black sea drainage borderlands, 4/3 Mill. to first half 2 Mil. BC* (Baltic-Pontic Studies, 19). Poznań: Adam Mickiewicz University.

Kośko, A. (Ed.). (2015). *Podolia as a cultural contact area in the 4th/3rd–2nd millennium BC* (Baltic-Pontic Studies, 20). Poznań: Adam Mickiewicz University.

Kośko, A., & Klochko, V. I. (Eds.). (2009). *Routes between the Seas: Baltic-Bug-Boh-Pont from the 3rd to the Middle of the 1st Millennium BC* (Baltic-Pontic Studies, 14). Poznań: Adam Mickiewicz University.

Kośko, A., & Klochko, V. I. (Eds.). (2013). *The Ingul-Donets Early Bronze civilization as springboard for transmission of pontic cultural patterns to the Baltic drainage Basin 3200–1750 BC* (Baltic-Pontic Studies, 18). Poznań: Adam Mickiewicz University

Kośko, A. & Szmyt, M. (2015). Dom na wzgórzu, 3200 przed Chr. Mała osada ludności kultury pucharów lejkowatych na stanowisku Opatowice 42 (Kujawy) i jej południowo-wschodnie koneksje. In A. Diachenko, F. Menotti, S. Ryzhov, K. Bunyatyan, & S. Kadrow (Eds.), *The Cucuteni – Trypillia cultural complex and its neighbours. Essays in memory of Volodymyr Kruts* (pp. 183–210). Lviv: Institut Arkheologii Natsionalnoyi Akademii Nauk Ukrainy, Instytut Archeologii Uniwersytetu Rzeszowskiego.

Kośko, A., & Szmyt, M. (Eds.). (2010). *"Cord" Ornaments on Pottery in the Vistula and Dnieper Interfluvial Region: 5th–4th Mill. BC* (Baltic-Pontic Studies, 15). Poznań: Adam Mickiewicz University

Kośko, A., Potupczyk, M., & Razumow, S. (Eds.). (2014). *Naddniestrzańskie kompleksy cmentarzysk kurhanowych społeczności z III i z pierwszej polowy II tysiąclecia BC w okolicach Jampola, oblast Winnica. Z badań nad północno-zachodnią rubieżą osadnictwa społeczności kręgu kultur wczesnobrązowych strefy pontyjskiej. Badania z lat 1984–2010* (Archaeologia Bimaris – Monografie 6). Poznań: Wydawnictwo Nauka i Innowacje.

Kostrzewski, J. (1928). Groby eneolityczne ze skurczonemi szkieletami w Białym Potoku (w pow. czortkowskim). *Przegląd Archeologiczny*, *3*, 2–17.

Kozłowski, S. K. (2012). *Tak wiele tak nieliczni. Młoda archeologia polska 1905–1928*. Warszawa, Łódź: Ośrodek Badań nad Antykiem Europy Południowo-Wschodniej, Uniwersytet Warszawski; Instytut Archeologii, Uniwersytet Łódzki.

Lech, J. (1992). V. Gordon Childe a archeologia środkowej i wschodniej Europy. W stulecie urodzin. *Acta Archaeologica Carpathica*, *31*, 5–33.

Libera, J., & Zakościelna, A. (2011). Cyrkulacja krzemienia wołyńskiego w okresie neolitu i we wczesnej epoce brązu na ziemiach polskich. In M. Ignaczak, A. Kośko, & M. Szmyt (Eds.), *Między Bałtykiem a Morzem Czarnym. Szlaki międzymorza IV – I tys. przed Chr.* (Archaeologia Bimaris – Dyskusje 4, pp. 83–115). Poznań: Wydawnictwo Poznańskie.

Machnik, J. (1967). *Materiały do prahistorii ziem polskich. 3. Epoka brązu. 1. Stosunki kulturowe na przełomie neolitu i epoki brązu w Małopolsce* (*na tle przemian w Europie Środkowej*). Warszawa: Instytut Historii Materialnej PAN.

Machnik, J. (1977). *Frühbronzezeit Polens* (*Übersicht über die Kulturen und Kulturgruppen*). Warszawa: Ossolineum.

Machnik, J. (1978). Wczesny okres epoki brązu. In A. Gardawski & J. Kowalczyk (Eds.), *Prahistoria ziem polskich. III. Wczesna epoka brązu* (pp. 9–136). Wrocław, Warszawa, Kraków, Gdańsk: Ossolineum.

Machnik, J. (1987). *Kultury z przełomu eneolitu i epoki brązu w strefie karpackiej*. Wrocław: Ossolineum.

Machnik, J., Pavliv, D., & Petehyryč, V. (2006a). Results of the Archaeological Field Survey on the Sambir Upland. In K. Harmata, J. Machnik, & L. Starkel (Eds.), *Environment and Man at the Carpathian Foreland in the Upper Dnister Catchment from Neolithic to Early Mediaeval Period* (Prace Komisji Prehistorii Karpat PAU 3, pp. 126–161). Kraków: Polska Akademia.

Machnik, J., Pavliv, D., & Petehyryč, V. (2006b). Results of the Archaeological Field Survey on the the Drohobyč Upland. In K. Harmata, J. Machnik, & L. Starkel (Eds.), *Environment and Man at the Carpathian Foreland in the Upper Dnister*

Catchment from Neolithic to Early Mediaeval Period (Prace Komisji Prehistorii Karpat PAU 3, pp. 43–105). Kraków: Polska Akademia Umiejętności.

Machnik, J., Pavliv, D., & Petehyryč, V. (2006c). Barrow of the Late Corded Ware Culture from Bikiv, Drohobyč district. In K. Harmata, J. Machnik, & L. Starkel (Eds.), *Environment and Man at the Carpathian Foreland in the Upper Dnister Catchment from Neolithic to Early Mediaeval Period* (Prace Komisji Prehistorii Karpat PAU 3, pp. 195–227). Kraków: Polska Akademia Umiejętności.

Machnik, J., Pawliw, D., & Petehyrycz, W. (2011). *Prahistoryczne kurhany we wsi Haji Nyżni koło Drohobycza*. Kraków: Polska Akademia Umiejętności, Narodowa Akademia Nauk Ukrainy.

Majewski, K. (1935). Gliniane modele chat kultury ceramiki malowanej na Ukrainie. *Światowit*, *16*, 159–173.

Majewski, K. (1947). Studia nad kulturą trypilską. *Archeologia*, *11*, 93–138.

Makarowicz, P. (2017). Ziemiaństwo w służbie archeologii w II Rzeczypospolitej. Wojciech Komornicki – Członek Polskiego Towarzystwa Prehistorycznego i badania na cmentarzysku kurhanowym w Bukównej nad Dniestrem. *Fontes Archaeologici Posnanienses*, *53*, 331–344.

Makarowicz, P., Goslar, T., Górski, J., Taras, T., Szczepanek, A., Pospieszny, Ł., … Kochkin, I. T. (2021). The absolute chronology of collective burials from the 2nd millennium BC in East Central Europe. *Radiocarbon*, *63*(2), 669–692. doi: 10.1017/RDC.2020.139

Makarowicz, P., Goslar, T., Niebieszczański, N., Cwaliński, M., Kochkin, I. T., Romaniszyn, J., … Ważny, T. (2018). Middle Bronze Age societies and barrow line chronology. A case study from the Bukivna 'necropolis', Upper Dniester Basin, Ukraine. *Journal of Archaeological Science*, *95*, 40–51.

Makarowicz, P., Kochkin, I., Niebieszczański, J., Romaniszyn, J., Cwaliński, M., Staniuk, S., … Bahyrycz, C. (2016). *Catalogue of Komarów culture barrow cemeteries in the upper Dniester drainage basin* (*former Stanisławów province*) (Archaeologia Bimaris – Monografie 8). Poznań: Instytut Archeologii UAM.

Makarowicz, P., Lysenko, S. D., & Kochkin, I. T. (Eds.). (in press). *Bukivna. An elit necropolis on the Dniester*. Poznań: Archaeologia Bimaris.

Makarowicz, P., Niebieszczański, J., Cwaliński, M., Romaniszyn, J., Rud, V., & Kochkin, I. (2019). Barrows in action. Late Neolithic and Middle Bronze Age Barrow Landscapes in the Upper Dniester Basin, Ukraine. *Praehistorische Zeitschrift*, *94*, 92–115.

Makohonienko, M. (2009). Natural scientific aspects of prehistoric and early historic transit routes in the Baltic-Pontic cultural area. *Baltic-Pontic Studies*, 14, 19–71.

Mathieson, I., Roodenberg, S. A., Posth, C., Szécsényi-Nagy, A., Rohland, N., Mallick, S., … Reich, D. (2018). The genomic history of southeastern Europe. *Nature*, *555*, 197–203. doi: 10.1038/nature25778.

Mihailescu-Bîrliba, V., & Szmyt, M. (2003). Radiocarbon chronology of the Moldavian (Siret) subgroup of the Globular Amphora culture. *Baltic-Pontic Studies*, *12*, 82–112.

Müller, J., Rassmann, K., & Videiko, M. (Eds.). (2016). *Trypillia mega-sites and European prehistory 4100–3400* (Themes in Contemporary Archaeology 2). London, New York: Routledge.

Ossowski, G. (1889). Materiały do paleoetnologii kurhanów ukraińskich. *Zbiór Wiadomości Do Antropologii Krajowej*, *13*, 1–19.

Pospieszny, Ł., Makarowicz, P., Lewis, J., Górski, J., Taras, H., Włodarczak, P., … Goslar, T. (2021). Isotopic evidence of millet consumption in the Middle Bronze Age of East-Central Europe. *Journal of Archaeological Science*, *126*, 105292. doi: 10.1016/j.jas.2020.105292.

Rud, V., Shmit, M., Vlodarchak, P., & Zhurkevich, D. (2020). Pershyi sezon doslidzhen kurganiv y baseynakh richok Murafa i Riv. In *Arkheologichni doslidzhennia v Ukraini 2019* [Рудь, В., Шмит, М., Влодарчак, П., Журкєвіч, Д. (2020). Перший сезон досліджень курганів у басейнах річок Мурафа і Рів. In: Археологічні дослідження в Україні 2019] (pp. 15–16). Kyiv: Institut Arkheologyi Natsionalnoi Akademii Nauk Ukrainy.

Rybicka, M. (2017). *Kultura trypolska – Kultura pucharów lejkowatych. Natężenie kontaktów i ich chronologia* (Collection Archaeologica Ressoviensis 37). Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.

Rybicka, M., Hawinskyj, A., & Pasterkiewicz, W. (2019). *Leżnica, stanowisko Czub – Osiedle kultury pucharów lejkowatych na zachodnim Wołyniu*. Rzeszów: Wydawnictwo Uniwersytetu Rzeszowskiego.

Saile, T., Dębiec, M., Posselt, M., Ţerna, S., & Kiosak, D. (2016). Zur Bandkeramik zwischen Pruth und Südlichem Bug. *Praehistorische Zeitschrift*, *91*(1), 1–15.

Schroeder, H., Margaryan, A., Szmyt, M., Theulot, B., Włodarczak, P., Rasmussen, S., … Allentoft, M. E. (2019). Unraveling ancestry, kinship, and violence in a Late Neolithic mass grave. *PNAS*, *116*(22) 10705–10710. doi: 10.1073/pnas.1820210116.

Sharafutdinova, I. N. (1980). Ornamentirovannyye topory-molotki iz katakombnikh pogrebenniy na Ingule [Шарафутдинова, И. Н. (1980). Орнаментированные топоры-молотки из катакомбних из погребений на Інгуле]. *Arkheologiya*, *33*, 60–70.

Skoryi, S., & Khokhorovski, J. (2009). Aristokratocheskii kurgan Skifskaya Mogila v blizi Motroninskogo gorodischa (Ukrainskaya Pravoberezhnaya Lesostep) [Скорый, С., Хохоровски, Я. (2009). Аристократический курган Скифская Могила в близи Мотронинского городища (Украинская Правобережная Лесостепь)]. *Stratum Plus*, *3*, 234–276.

Sulimirski, T. (1968). *Corded Ware and Globular Amphorae North-East of the Carpathians*. London: The Alton Press.

Sulimirski, T. (1970). *Prehistoric Russia*. London: John Baker.

Sytnyk, O. (2010). Lvivska arkheologiya do Pershoyi svitovoi viyny [Львівська археологія до Першої світової війни]. In S. K Kozłowski & O. Sytnyk (Eds.), *Profesor Leon Kozłowski* (pp. 18–81). Lwów, Warszawa: Ośrodek Badań nad Antykiem Europy Południowo-Wschodniej Uniwersytetu Warszawskiego; Narodowa Akademia Nauk Ukrainy, Instytut Ukrainoznawstwa im. I. Krypiakiewicza; Ministerstwo Oświaty Ukrainy, Lwowski Narodowy Uniwersytet im. I. Franki.

Székely, Z. (2002). A gömbamforás műveltség emléke Délkelet-Erdélyben. *Őrségészeti Levelek*, *4*, 40–44.

Szmyt, M. (1999). *Between West and East* (Baltic-Pontic Studies, 8). Poznań: Adam Mickiewicz University.

Szmyt, M. (2009). Eastern destinations of Central European cultural patterns. The case of Globular Amphora culture (end of the 4th – middle of the 3rd millennium BC). *Baltic-Pontic Studies*, *14*, 231–250.

Szmyt, M. (2013). View from the Northwest: Interaction network in the Dnieper– Carpathian area and the people of the Globular Amphora culture in the third millenium BC. In V. Heyd, G. Kulcsár, V. Szeverényi (Eds.), *Transitions to the Bronze Age. Interregional interaction and socio-cultural change in the third millennium BC Carpathian Basin and neighbouring regions*. (pp. 93–112). Budapest: Archaeolingua.

Szmyt, M. (2014). Fourth-third millennium BC stone cist graves between the Carpathians and Crimea. An outline of issues. *Baltic-Pontic Studies*, *19*, 108–147.

Szmyt, M. (2016). Distant east destinations of Globular Amphora Culture People: Creation and re-Creation of Identity in Peripheral Landscapes. In M. Furholt, R. Großmann, & M. Szmyt (Eds.), *Transitional landscapes? The 3rd millennium BC in Europe* (Human Development in Landscapes 9, Universitätsforschungen zur Prähistorischen Archäologie, 292, pp. 21–34). Bonn: Human Development in Landscapes.

Szmyt, M. (2018). Between the seas: Baltic-Pontic contact space in the 3rd millennium BC. *Vita Antiqua*, *10*, 142–151.

Szmyt, M. (Ed.). (2016). *Biały Potok. Materiały z badań Józefa Kostrzewskiego na Podolu/Materials from Józef Kostrzewski's Podolia excavations* (Bibliotheca Fontes Archaeologici Posnanienses, 19). Poznań: Muzeum Archeologiczne w Poznaniu.

Tassi, F., Vai, S., Ghirotto, S., Lari, M., Modi, A., Pilli, E., … Barbujani, G. (2017). Genome diversity in the Neolithic Globular Amphorae culture and the spread of Indo-European languages. *Proceedings of the Royal Society B. Biological Sciences*, *284*, 15–40.

Trybała-Zawiślak, K. (2019). *Wczesna epoka żelaza na terenie Polski południowo-wschodniej – Dynamika zmian i relacje kulturowe*. Rzeszów: Instytut Archeologii Uniwersytetu Rzeszowskiego.

Wang, C. C., Reinhold, S., Kalmykov, A., Wissgott, A., Brandt, G., Jeong, C., … Haak, W. (2019). Ancient human genome-wide data from a 3000-year interval in the Caucasus corresponds with eco-geographic regions. *Nature Communications 10*, 590. doi: 10.1038/s41467-018-08220-8.

Włodarczak, P. (2016). Chronologia absolutna cmentarzysk późno- i schyłkowoneolitycznych na Wyżynie Lubelskiej. In P. Jarosz, J. Libera, P. Włodarczak (Eds.), *Schyłek neolitu na Wyżynie Lubelskiej* (pp. 537–548). Kraków: Instytut Archeologii i Etnologii Polskiej Akademii Nauk.

Żaki, A. (1960). O archeologii karpackiej. Prenotacje redakcyjne. *Acta Archaeologica Carpathica*, *1*(1), 3–29.