

The concept of the 'stage of reduction and concentration of settlements' in Neolithic studies: demography, settlements and social conflict

Sławomir Kadrow

Institute of Archaeology, University of Rzeszów, Rzeszów, PL
slawekkadrow@gmail.com

ABSTRACT – *The paper analyses the meaning of the 'stage of reduction and concentration of settlements' and its place in the evolving structure of a Neolithic settlement system. It considers whether this stage of the development of the settlement system was a specific event, limited only to the evolution of a Funnel Beaker Culture settlement in south-eastern Poland, or whether it was a structural element in other areas too. Analysis of the collected cases, representing various geographical zones, cultural traditions and time horizons, allows us to formulate a thesis that describes the transformation of large settlements (from central places to the stage of reduction and concentration) were caused by internal social conflicts, rather than by climate or economic changes.*

KEY WORDS – *Neolithic; settlement system; social crisis; Poland; conflict; central places*

Koncept 'stopnje zmanjšanja in koncentracije naselbin' pri neolitskih študijah: demografija, naselbine in družbeni konflikt

IZVLEČEK – *V članku raziskujemo pomen 'stopnje zmanjšanja in koncentracij naselbin' in njeno mesto v razvijajoči se strukturi neolitskega sistema poselitve. Razpravljamo, ali ta stopnja razvoja sistema poselitve predstavlja specifičen pojav, vezan le na evolucijo naselbin kulture lijakastih čaš na jugovzhodu Poljske, ali pa gre za strukturni element, ki se pojavlja tudi na drugih območjih. Z analizo teh zbranih primerov, ki predstavljajo različne geografske predele, kulturne tradicije in časovna obdobja, oblikujemo tezo, ki opisuje preoblikovanje velikih naselbin (iz centralnih prostorov v stopnjo zmanjšanja in koncentracije) kot posledico notranjih družbenih konfliktov, in ne kot posledico podnebnih ali gospodarskih sprememb.*

KLJUČNE BESEDE – *neolitik; naselbinski sistemi; družbena kriza; Poljska; konflikt; centralni prostor*

Introduction

Janusz Kruk and Sarunas Milisauskas, describing the central Funnel Beaker Culture (hereafter: FBC) settlement at Bronocice determined its last stage as a 'stage of reduction and concentration of settlements' (Kruk, Milisauskas 1999.174–176). Around approx. 3300 cal BC most large (central) settlements of the FBC in Central Europe disappeared. In the Bronocice region, only 12 sites of the Funnel Beaker-Baden

Culture (hereafter: FB-BC) date to the period 3300–2900/2800 cal BC. In a previous period (3700–3300 cal BC) this number reached 105. More than 50% of the entire population was concentrated at the one site of Bronocice (Kruk, Milisauskas 1999.175). In the middle of the 4th millennium BC, the region sustained a population of approx. 6200 people, and at 2900/2800 cal BC only a little more than 1000.

Ecological factors seem inadequate to explain this crisis and the loss of 75% of the population. The inhabitants continued to cultivate cereals and garden crops, and there were large enough grazing areas for cattle and sheep. Some burial data (a mass grave of 17 individuals) point to an anomalous catastrophic event, either natural (such as an epidemic) or social (a massacre). Perhaps war and the invasion of a Corded Ware Culture (hereafter: CWC) population could be a factor in this (*Kruk, Milisauskas 1999.175–176*).

While certain phenomena point to a deepening crisis and the complete disappearance of the settlement structures of the FB-BC population, they do not explain the factors that triggered the reduction phase and the onset of the crisis. The present article looks for an answer to this question. Were these environmental factors (climate changes, epidemics) or socio-cultural (wars, internal crises) ones?

To answer this question, I will analyse, in addition to Bronocice, two other cases of central settlements, where the appearance of the stage of reduction and concentration of settlements has also been observed. One is an early Eneolithic settlement of Brześć Kujawski culture (late Danubian Brześć Kujawski Culture – hereafter: BKC) at Osłonki in the Polish Low-

lands, and the other is Iwanowice (Babia Góra site) settlement of an Early Bronze Age Mierzanowice culture (hereafter: MC) from the loess uplands (Fig. 1).

Osłonki settlement – BKC (late Danubian) – Polish Lowlands (Fig. 1)

General information

The settlements at Osłonki and Brześć Kujawski are located in the central part of the Polish Lowlands on the border of two macro-regions: The Toruń-Eberswalde Glacial Valley and Great Poland-Kuyavia Lake District (*Grygiel 2004.111, 136–138*). It is a region of the Radziejów Plain covered with black soil (*Grygiel 2004.111, 136–138*). Such a geographical location facilitated the establishment of multidirectional cultural contacts.

The settlement at Osłonki was thoroughly explored in the years 1989–1994 (*Grygiel 2008.475*), and thus provides more valuable data than the settlement at Brześć Kujawski, studied in the years 1933–1939 and 1952 (*Jażdżewski 1938; Grygiel 2008.15*). The twin settlements of the BKC at Osłonki (site 1) and Brześć Kujawski (sites 3, 4 and 5) have been fully published (*Grygiel 2004.9–138; 2008*). These settlements developed during the period 4550–4150 cal BC.

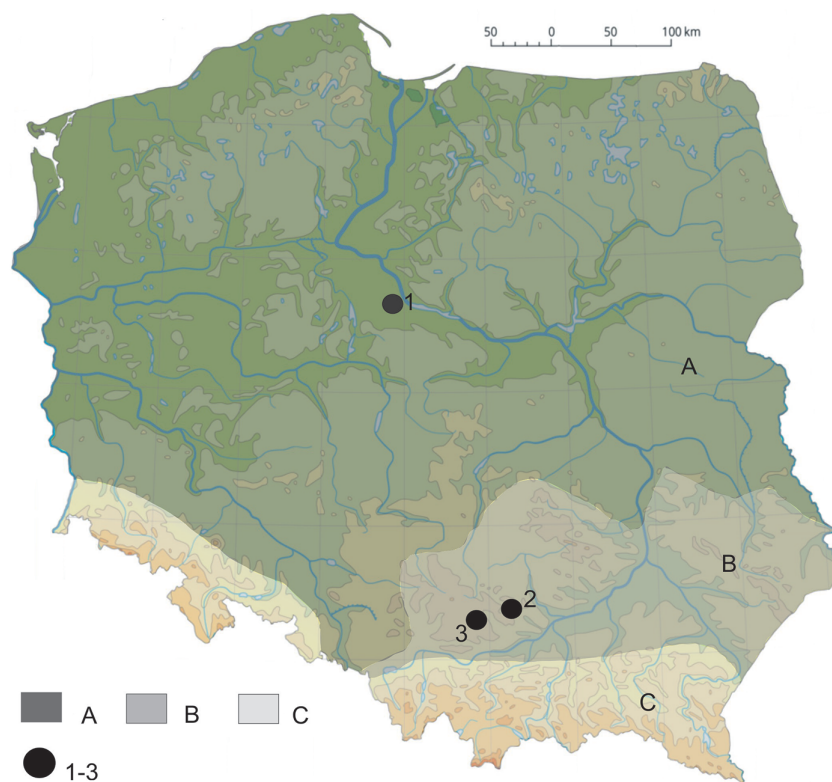


Fig. 1. Location of sites mentioned in the text: 1 Osłonki; 2 Bronocice; 3 Iwanowice; A lowlands; B loess uplands; C mountains.

The settlement micro-region at Osłonki consists of one central settlement and seven smaller satellite settlements. They are located around the central settlement on an area with a radius not exceeding 5km. At a distance of 8km to the east there is a similar microregion of the central settlement at Brześć Kujawski (*Grygiel 2008.11–13, Fig. 1*).

The settlement at Osłonki was founded on a previously uninhabited area smaller than half a hectare. In the first phase of its evolution (4550–4450 cal BC) there were several (four or five) small houses with a length of 10–12m with shallow foundation ditches. The dead were buried near their homes (*Grygiel 2008. 992, Fig. 404*).

In the period from 4450 to 4300 cal BC (the second classic phase), the settlement developed quickly, and reached its maximum size of over 2ha. Numerous large houses with a length of up to 40m were placed in two rows. Their foundation ditches were now very deep (up to 1m). According to the published map (Grygiel 2008.Fig. 404), at least 15 houses might have been inhabited at the same time.

Around 4300 cal BC (the turn of the second and third phases) several houses were burned and some inhabitants murdered. (Grygiel 2008.l.c.)

Demography

Ryszard Grygiel, the leader of the excavations at Osłonki and author of a comprehensive scientific publication on them (Grygiel 2008), has not yet presented a broader analysis of the size of the population inhabiting the settlement and the entire settlement microregion BKC at Osłonki. Throughout the development of the settlement and the microregion, the basic settlement unit was a household cluster, inhabited by a multigenerational family (see Grygiel 1986; 2008.119, 1919–1924). The published map of the settlement at Osłonki (Grygiel 2008.Fig. 404) shows that in the first phase the population of the BKC lived in four or five houses, in the second phase (classic) in 14–15 houses, and in third phase (late) in 8–9 houses. The situation on the twin settlements at Brześć Kujawski (Grygiel 2008.Fig. 7) could have been similar.

Multiplying the number of houses by the number of members of each family living in one house, we get an image of the change in the dynamics of the size of the population living at Osłonki and its approximate size in the various stages of the development of the BKC. Assuming that a multigenerational family (consisting of at least children, parents and grand-

parents) had a minimum of five members (and probably twice as many considering the large size of houses in the classic and late stages), we get the following population sizes at Osłonki: in the first phase 20–25 people, second phase 140–150, and in third phase 80–90 (Fig. 2).

Archaeological description of the BKC social crisis on central settlements

It is difficult to determine the direct cause of the great catastrophe that occurred around 4300 cal BC. At the time, there was a sudden event throughout the whole Brześć Kujawski and Osłonki region which can be seen in the evidence of numerous fires, as seen at all sites of the BKC in related to the trapezoidal houses (Grygiel 2008.1942). All the dwellings were probably damaged at the same time. This happened to the central settlements and satellite ones when the settlement microregions reached their maximal spatial range and their populations were the biggest. The attackers probably came from the periphery of the BKC (Grygiel 2008.1943).

After the attack, both central settlements (Osłonki and Brześć Kujawski) returned to their original functions. However, many of the satellite settlements and some smaller cemeteries were completely abandoned. The inhabitants began to build fortifications on both central settlements, which consisted of ditches and wooden palisades. Only a few houses continued to be used. Some crafts continued (such as the working of antlers and bones), but the import of copper and its metallurgy completely stopped. Moreover, imported chocolate and Jurassic flint were replaced by local erratic flint, although amber continued to arrive from outside the region (Grygiel 2008.1944).

Richly decorated bone ornaments also completely disappeared and were replaced by simple specimens. Profound changes appeared in burial rituals, with graves dominated by skeletons laid straight on their backs with the heads oriented to the south, instead of gender differentiated burials with bodies deposited in graves in contracted positions: men on the right side and women on the left. The graves associated with the new rite are usually discovered in various pits, including rubbish and storage pits. Animal graves also appeared for the first time (Grygiel 2008.944). As a result of internal social conflict, the communities of the BKC underwent very serious transformations. A process of change in the pottery forms and technology began. In effect the emergence of the earliest phases of the Globular Amphorae Cul-

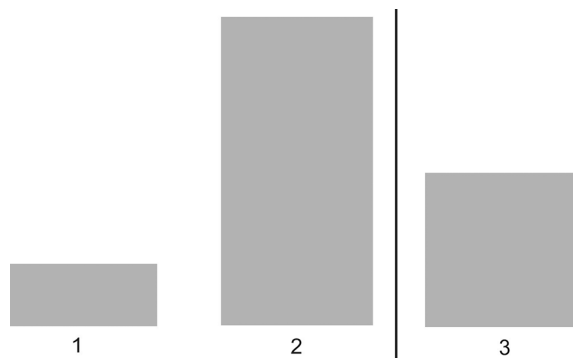


Fig. 2. Diagram of changes in the size of the population living in the settlement at Osłonki: 1 first phase; 2 second phase; 3 third phase; black vertical line – time of conflict.

ture (hereafter: GAC) took place (Czerniak 1994; Grygiel 2008).

Bronocice (FBC and FB-BC) Loess Uplands (Fig. 1)

General information

The site at Bronocice was excavated in 1974–1979 (Kruk, Milisauskas 1985:109) and produced remains from many Neolithic cultures, including FBC, Lublin-Volhynian (hereafter: L-VC), FB-BC and CWC (see Milisauskas et al. 2016:19). The site is located on the western margins of the Lesser Poland loess Uplands. It rises above the Nidzica River valley, a left tributary of the Vistula (Kruk et al. 1996:15–17).

The Bronocice settlement microregion in the time of the FBC (phases BR II and BR III) consisted of 105 sites in the area with a radius of 10km around the central settlement with an area about 52ha (Kruk et al. 1996:28–33, Fig. 7, Tab. 5). The number of FB-BC (phases BR IV and BR V) sites in this area decreased rapidly to 12 (Kruk et al. 1996:33, Fig. 8).

The sequence of FBC and FB-BC settlement and chronological stages (during 3900–2900/2800 cal BC) at Bronocice has been reported in several articles (e.g., Kruk, Milisauskas 1981) and in some monographs (Kruk et al. 1996; 2018; Kruk, Milisauskas 1999; 2018; Milisauskas et al. 2016).

Demography

Estimations of the population size in the subsequent phases of the FBC and FB-BC settlement in Bronocice (Kruk et al. 1996:36–40, 113–114, Tab. 7; Milisauskas et al. 2016, Tab. 2) were made utilizing Naroll's method (Naroll 1962). It was assumed that on average 24 people lived on 1ha of the settlement's area. From 3700 to 2900/2800 cal BC, the settlement in Bronocice was inhabited without any long breaks. In the BR II phase, the area of the settlement was 8ha. In the next BR III phase, the area of the settlement increased to 21ha. The largest size was in the BR IV phase, when the settlement reached an area of 26ha. In the last phase of occupation by the population of the FB-BC, an area of 17ha was inhabited. The number of residents on the settlement in Bronocice throughout this period ranged from 192 (BR II), through 504 (BR III) and 624 (BR IV), to 408 (BR V) (Milisauskas et al. 2016:Tab. 2).

When the aforementioned population of the settlement in Bronocice was determined at various stages of its development (Kruk et al. 1996), slightly different calculations of the duration of these phases were used than in recent publications (e.g., Milisauskas et al. 2016; Kruk et al. 2018). With the unchanged estimation of the inhabited area, the duration of consecutive phases changed significantly. We see an increase in the duration of the BR IV phase and the shortening of the duration of the BR III phase. I believe that it is necessary to re-evaluate the population of these phases again. In addition to the size of the inhabited area, the estimated size of the population must also be influenced by the number of objects from a given phase for a given period of time. Thus, extending the duration of the BR IV phase must result in a corresponding reduction in the estimated number of inhabitants, and shortening the BR III phase with a corresponding increase in that number (Fig. 3).

Archaeological description of changes at the Bronocice central settlement of the FBC and FB-BC

Probably the beginning of the site's occupation, Bronocice was connected with modest traces of the Malice Culture in the form of a few pottery redepositions and human bones (perhaps from destroyed graves) in settlements pits of the oldest FBC community in part C of the site (Milisauskas et al. 2016:59). This Malice Culture episode was older than 3900 cal BC.

During the FBC BR I occupation phase (dated to 3900–3800 cal BC; cf. Kruk, Milisauskas 2018:79–85, Tab. 19; Kruk et al. 2018, Tab. 7) there were only traces of a small settlement in part C of the site, and no burials of this culture were found dated to this period (Milisauskas et al. 2016:60, 61).

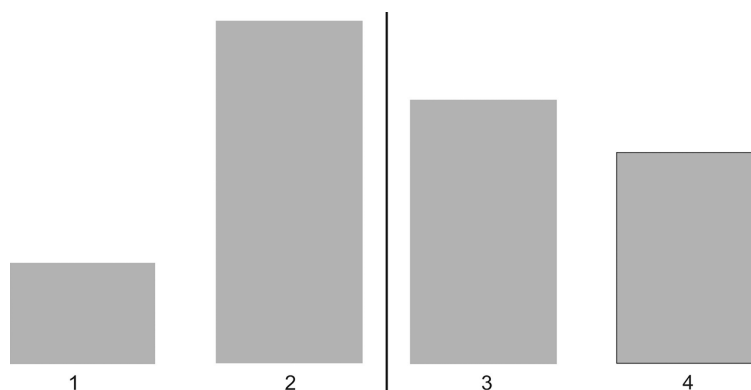


Fig. 3. Diagram of changes in the size of the population living in the settlement at Bronocice: 1 BR II phase; 2 BR III phase; 3 BR IV phase; 4 BR V phase; black vertical line – time of conflict.

During the next period (3800–3700 cal BC) the site was occupied by a L-VC community. The settlement was fortified with a ditch, earthen ramparts and wooden palisade. In some settlement pits of this culture human bones were discovered (possibly redeposits from destroyed Malice Culture graves). One double skeleton grave of L-VC was discovered on the settlement area (Milisauskas et al. 2016.89–92, Figs. 2, 3).

In the BR II and BR III phases a cemetery of the FBC was established and then used in part C of the site. At the same time the settlement area was concentrated first in part A and then in parts A and B. The coexistence of the cemetery (Part C) and settlement (parts A and B) lasted a few centuries (from 3700 to 3300 cal BC; cf. Kruk et al. 1996, Fig. 4; Milisauskas et al. 2016.62, 63).

In the next BR IV and BR V phases of the FB-BC (3300–2900 cal BC) a cemetery completely ceased to function, and in its place a kraal for cattle was established. At the same time there was a change in the pottery style, as classic FBC pottery was replaced by Baden-like wares. Graves were scattered in the area of settlement and consisted of a different set of burial traditions (Milisauskas et al. 2016.63, 64).

After the completion of the Bronocice settlement in phases BR IV and BR V, two more graves were deposited. One of them belonged to the Baden culture (hereafter: BC) and the other one to the CWC.

Iwanowice (the MC) Loess Uplands (Fig. 1)

General information

In 1967–1969 and 1971–1973 excavations at the Iwanowice, Babia Góra site were carried out (Machnikowie 1973; Kadrow 1991a.640). The site, 8ha in area, is located on the borderland between Cracow-Częstochowa and the Miechów Uplands, 20km north of Cracow on a hill spur overlooking the Dłubnia River valley. The area of the site is covered by a loess mantle (Kadrow 1991a.641).

The Iwanowice settlement microregion in the Early Bronze Age was very compact and consisted of five settlements (Iwanowice – Babia Góra I, II and III, Góra Klin and Góra Wysyłek sites) in the centre and 108 settlement traces (mainly single finds made of local flint) in the area with a radius of 10km around the central settlement (Iwanowice, Babia Góra I, II and III sites) with an area of about 3.5ha (Machnikowie, Kaczanowski 1987; Kadrow 1995.33–43, Figs. 10–13).

People first settled the Babia Góra site at Iwanowice as early as the beginning of the Neolithic until the Hallstatt period. However, the most intensive traces of occupation date back to the Early Bronze Age (2300/2200–1600 cal BC) communities of the MC (Kadrow 1991a.641). It is the largest settlement of this culture (Kadrow 1991; 1995.22–43), which was associated with an extensive cemetery of over 150 graves (Kadrow, Machnikowa, Machnik 1992).

Several assumptions were adopted with regard to the research programme. First, that the features discovered could be ordered to produce a reconstruction of some aspects of the original building complexes (referred to as ‘house clusters’).

Multifaceted analysis of ceramics from stratified sediments of trapezoidal pits (serving as cellars – cf. Kadrow 1991.62–71) and their spatial relationships made it possible to define the term ‘building phase’ as the shortest archaeologically identifiable period (60–80 years) in the development of the settlement (Kadrow 1991.76–77).

Given a suitable chronological yardstick – building phases – for transformations in the pattern of settlement on the Babia Góra site at Iwanowice, an attempt was made to reconstruct the original form and area of household clusters – the basic functional units of permanent settlement (Kadrow 1991a.647–649).

During the early MC stage (building phases Iw 1 and Iw 2) the settlement seems to have been relatively populous (with numerous house clusters) occupying a closely built up, restricted area (with small distances between house clusters). At the turn of building phases Iw 2 and Iw 3 Babia Góra site at Iwanowice was divided into two functionally different parts: a settlement and cemetery (Kadrow et al. 1995.205). Towards the end of the classic stage of the MC (building phases Iw 4 and Iw 5) the number of inhabitants declined (fewer house clusters – cf. Kadrow 1991a.Tab. 2), while the settlement spread out over a proportionally larger area (larger distances between house clusters). During phases Iw 1 – Iw 5 the settlement was inhabited by the same population, while in building phases Iw 6 and Iw 7 two different waves of settlers had arrived, continuing the traditions of different local groups of the MC from adjacent territories (Kadrow 1991a.649).

Demography

To estimate the population size of the Iwanowice Babia Góra settlement (Kadrow 1991.87–90) the

following rules were adopted: (a) minimal, functional units of stable settlement (house clusters) were inhabited by minimal units of the community (families), (b) one family consisted of 2.18 children, two parents and 0.2 grandparents (Czerniak, Piontek 1980). The obtained values (Kadrow 1991.Tab. 31) were then multiplied by a coefficient correcting the discrepancies arising from the incomplete and varying degree of investigations of the settlement. The number of inhabitants in consecutive (1–7) building phases (from 2200 to 1600 cal BC) assumed the following values: 1: 70–87, 2: 90–113, 3: 59–80, 4: 32–40, 5: 21–27, 6: 16–20 and 7: 60–75 (Kadrow 1991.Tab. 32). These figures should be treated as minimal estimations (Kadrow 1991.87), and the evaluations of the MC population size (based on settlement data – cf. Fig. 4) were confirmed by the results of the cemetery analysis (Kadrow, Machnikowa, Machnik 1992.82–84; Kadrow et al. 1995.208–210, Fig. 10).

Archaeological description of changes to the 'Babia Góra' site at Iwanowice among MC communities

The Early Bronze Age MC communities appeared at Iwanowice for the first time at about 2300 cal BC. They left traces of transitional settlements. Stable settlement was founded 100 years later and associated with the beginning of the early phase of the MC. The Babia Góra site was inhabited for a very long time, with one break at about 1800–1750 cal BC. The end of the Early Bronze Age occupation took place at 1600 cal BC (Kadrow 1991).

At about 2050 cal BC, at the turn of the early and classic phases of the MC, the space of the site underwent a serious reorganisation. At this time the central ditch described as Feature 117 appeared, which

has been dated to the same period as the beginning of the cemetery. North-east of that feature the settlement remained inhabited, while the cemetery was built at the other side of the ditch. The reorganization of the settlement area at the site was accompanied by distinct changes in certain elements of funeral rites in western Lesser Poland. Graves located at small cemeteries from the early phase usually contained one ceramic vessel, most often a mug (cf. Machnik 1978.35–40). The cemetery at Babia Góra, dated to the classic and late phases (except for grave LXXXV, the only grave from the very beginning of the classic phase), had graves with no ceramic burial goods at all (Kadrow, Machnikowa, Machnik 1992.74, Tab. XII: 1).

Changes of that kind have not been recorded in other areas of the MC, where burial goods continued to include vessels (Kadrow, Machnik 1997.Fig. 23), sometimes even more frequently than in the early phase.

Considerable changes have also been documented in animal burials at Babia Góra in Iwanowice at the turn of the early and classic phases. Thirteen burials of animals deposited in settlement pits, mostly cattle, have all been dated to the classic and late phases (Kadrow, Makowicz-Polisztot 2000.276–278).

The sudden change in the layout of the Babia Góra II site was accompanied by significant changes in the forms of ceramics, especially in their ornamentation. Ornamentation with cord impressions was abandoned in western Lesser Poland at the turn of the early and classic phases of the MC. Pots began to dominate, becoming practically the only vessel form used by inhabitants of the Babia Góra settlement in the classic phase of the MC (Kadrow 1991.63–65,

Fig. 36). Changes in the methods of production of ceramic vessels were more gradual, although by no means slow (Kadrow 1991.62–63, Fig. 36).

At the same time, the number of inhabitants of the Babia Góra settlement in Iwanowice gradually declined, while the area of the settlement remained constant. In effect, the buildings became more dispersed as the distances between households increased (Kadrow 1991.79–86). The initial regular layout, lenticular at the beginning (cf. Kadrow 1991.Fig. 52), evolved into an irre-

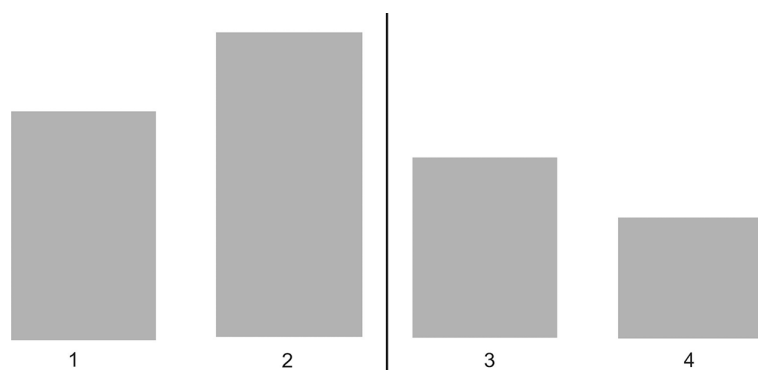


Fig. 4. Diagram of changes in the size of the population living in the settlement at Iwanowice: 1 first building phase; 2 second building phase; 3 third building phase; 4 fourth building phase; black vertical line – time of conflict.

gular arrangement resembling an amorphous cloud of households (Kadrow 1991.Fig. 53).

Triggers of settlement and demographic changes at Oślonki, Bronocice and Iwanowice

Theories to detect social crises

Among the many possible ways of interpreting the remains of material culture in terms of paleosociology, Robert Wuthnow's theory of cultural analysis (Wuthnow 1987) seems to be one of the most effective (Kadrow 2016). It enables the identification of crisis situations, usually accompanied by violence, the effect of which is a change in culture or a cultural change.

Wuthnow proposed a dynamic model of cultural structure whose central point is moral order, consisting first of all of ritual and ideology, symbols and institutions. Mutual interactions and the relationships among these elements of cultural structure determine the dynamics of moral order and, simultaneously, culture itself and social structure (Wuthnow 1987). The functioning of rituals and symbols (but not their meaning) is directly accessible for archaeological observation, while ideology and social institutions are indirectly available, because they are related to the functioning of symbols and rituals.

A diversity and intensification of ritual practices is an indicator of increasing uncertainty in the community. In turn, uncertainty is a symptom of a crisis situation. Rituals (archaeologically observable) are designed to reduce uncertainty and restore social stability. So they are archaeologically clear symptom of social crisis, which can often be accompanied by various forms of violence. Armed conflicts occur especially in a situation of deepening uncertainty when ritual practices are not able to remedy it.

Many theories posit that the outbreak of conflict results from uncertainty and disruption to the moral order (Wuthnow 1987), also called a dysfunction of the social system (Johnson 1982). The source could be external military pressure or aggression, or sometimes only infiltration of foreign people. However, these are necessary but insufficient conditions for conflict (rebellion, revolution, violence, *etc.*) to break out. Another necessary condition is the rise of a compelling leader (Weber 2002; Johnson 1982), owing his power to personal charisma.

The sources of social conflict usually lie within the community. The primary reason for sociocultural dy-

namics (conflicts, changes) is a gap between the programme and the actual implementation of moral order. In other words, social conflicts are caused by the 'natural' differences between practice and theory in social life, *i.e.* between the system of accepted norms and its everyday implementation.

To identify periods of deep internal social crises at some archaeological sites, it is also helpful to refer to Pierre Nora's (1996) idea of *Les lieux de mémoire* – 'sites of memory'.

Sites of memory are long-term points for the crystallization of collective memory and identity, constitutive for many generations. They are part of the areas social, cultural and political customs (François, Schulze 2001.686).

The most basic form of memory is the remembrance of the dead. The farther we go back in the past, the greater was the attachment to the dead and ancestors. Remembering the dead creates community, and through its relationships with the dead a community confirms its identity (Assmann 2008.76–79).

Therefore cemeteries, in particular, as sites of memory that served for every community a purpose to remember (store) and transfer key phenomena from the past to define their identity (Assmann 2008.76–79).

Social crisis on central settlements of Oślonki in the light of Robert Wuthnow's theory of cultural analysis

The roots of the events described above, *i.e.* a military crisis resulting in the destruction of the central settlements in Oślonki and in Brześć Kujawski, may be found in phases I and II of the BKC (Kadrow 2016.116).

The most important element determining the integrity and distinctiveness of the BKC was its socio-economic organisation, founded on the idea of a settlement consisting of solid trapezoid houses. This concept came from the 'Stroke-Ornamented (post-Lbk) – Rössen' environment, where one can trace their full evolution. The original, local 'invention' was a homestead (house with a yard), where the dead were buried. The already mentioned import of copper products (in the II phase) from the southwestern groups of the Lengyel culture – through the Jordanów culture – adds to the particular image of the BKC (Grygiel 2008).

At the beginning and in the early phase of the BKC, the part of the population that formed an ideological movement promoting the ideological synthesis of various cultural traditions (conservative and Neolithic in nature, as shown by longhouses, extended families living in trapezoidal houses as the main form of social organisation, burials in house yards, certain elements of ceramics) and of progressive, quite Eneolithic traditions (characterized by gender-diversified funeral rites, and by a sudden increase in the production of symbolic or prestige goods) won against other movements that supported cultural particularisms (cf. Kadrow 2016.118).

This is discernible in the organisation of central settlements surrounded by satellites and in the fact that the production, use and deposition of symbolic or prestige goods, as well as the ritualization of everyday life, was focused on the central settlements, while the satellite settlements were mostly concerned with food acquisition and production, *i.e.* agriculture and animal husbandry (Grygiel 2008; Kadrow 2016.118).

The moral order which stabilized the complex forms of social life in the classic phase of the BKC was supported by a great sociocultural effort, as evidenced by the intensity of a wide range of unified ritual activities. The activities, which legitimized and enforced the sociocultural status quo, must have been organized by social groups (extended families) who benefited from them, such as the inhabitants of the two central settlements (Kadrow 2016.118).

The intensification of the symbolic activities and the ritualization of everyday life indirectly point to the strength of particularistic decentralist tendencies still noticeable in the communities inhabiting the central settlements. They also show that the moral order of the classic BKC engendered some unrest, which is known to be a necessary though insufficient condition for crisis. Moreover, the archaeological material suggests that the new social structure, a unique original sociocultural experiment, took unstable forms which were not rooted enough in the cultural memory of the communities. It heralded inevitable internal social conflict (Kadrow 2016.118–119).

The insular character of Eneolithic settlement in a sea of conservative Neolithic communities, as well as the symptoms of social tensions described above, increased the probability of reaction and return to the egalitarian forms of sociocultural life. This led to the emergence of culturally new communities, known

as the GAC (Czerniak 1994; Grygiel 2008; Kadrow 2016.119).

Social crisis in the Bronocice central settlement of the FBC in light of Robert Wuthnow's theory of cultural analysis and Pierre Nora's idea of 'sites of memory'

On part C at Bronocice one can observe the entire sequence of mutual discontinuations of Danubian and FBC traditions. A Malice culture (Danubian) community probably first settled this place, and buried their dead here too. At the beginning of the 4th millennium BC the FBC group established a small settlement and destroyed the graves of their Danubian predecessors ('hostile' takeover = discontinuation of tradition and identity of inhabitants). Later, in the period 3800–3700 cal BC, another Danubian (L-VC) group of people entered the site and founded here a fairly large fortified settlement (a 'hostile' takeover?).

New FBC settlers (arriving at *c.* 3700 cal BC) again took the site and definitively stopped this last Danubian (L-VC) settlement episode here. They founded the burial place on the former Danubian fortified settlement (a 'hostile' takeover?).

Until 3700 cal BC there was a sequence of conflicts in Bronocice between culturally (and also ethnically?) different communities belonging to two different Danubian (southern) and FBC (northern) traditions.

The result of a merger of earlier traditions (with the dominant northern one) formed a stable social system characteristic of a unit, called by archaeologists as an 'SE group' of FBC. Stabilization of social life and lack of uncertainty in the moral order of these communities caused a low intensity of ritual activities and only very slow changes (BR II and III phases; 3700–3300 cal BC) in the style of ceramics, as well as the immutability of settlement patterns and the economic base.

In BR III phase (3500–3300 cal BC) in Bronocice appeared the first, innumerable imitations of pottery of the BC, representatives of which started to immigrate to areas located in the SW of the described settlement (Zastawny 2015.Fig. 2A). At the turn of phases BR III and BR IV (*c.* 3300 cal BC) there was a very serious reorganisation of settlement space in Part C of the Bronocice site. On the former cemetery area a kraal for cattle was established. There is no evidence of external invasion or military interven-

tion. Reorganisation of the settlement space and the accompanying change in culture (FBC pottery was replaced by FB-BC ceramic; multiplicity of forms of human burials; the dissemination of the custom of burying animals in their graves; concentration of the settlement network on a regional scale) occurred within the same community. However, the destruction of a cemetery, a very important space (site of memory) for cultivation of local traditions and identity of the community inhabiting this settlement, means that there was a break in these two spheres of culture (*i.e.* in tradition and identity).

This could only happen as a result of deep social conflict (something like a revolution or reformation). The conflict must have been building up for a long time (equal to the duration of the phase BR III). The component parts of this conflict were competing ideologies whose bearers and exponents had to be relevant institutions – created by extended families or lineages. They manifested themselves by different symbols and used them to appeal to different sources of tradition. One of the ideologies and its accompanying institutions continued the FBC traditions and the second one BC traditions, borrowed or imitated from neighbouring peoples.

The newly created socio-cultural system (FB-BC) was not as stable as the preceding system of classical FBC. Social uncertainty had to be stabilized and legitimized by intensified ritual practices (as seen in the increasing number of new forms of human and animal graves and burial rituals).

Social crisis at the ‘Babia Góra’ settlement at Iwanowice in the light of Robert Wuthnow’s theory of cultural analysis

At 2300 cal BC the area of Babia Góra in Iwanowice was briefly penetrated by small groups of people, possibly by isolated families. At 2200 cal BC, a slightly larger group, consisting of up to 10 families, established a permanent settlement there in a regular lenticular shape. The settlement was inhabited continuously for the next 350–400 years, its size and shape varying over time (Kadrow 1991. *Tabs. XLI–XLVI*).

Before the settlement was established, the dominant form of organisation over the entire area of the MC was that of small mobile groups of people (families) moving on their own within large settlement regions. Their economy was probably based on animal husbandry. The cultural specificity of these people was determined by two traditions: a local one relat-

ed to the CWC and an external one made up of elements of the Bell Beaker culture (hereafter: BBC).

The CWC tradition was related to funeral rites and vessels ornamented with cord impressions; the BBC tradition involved mugs and copper daggers as determinants of the social status of a certain group of men. The moral order of the oldest (Proto-Mierzanowice phase = building phase 0) community synthesized the social obligations (norms) defined by the ideologies of those two cultural traditions. These were dramatized in rituals, which included not only funeral rites, but also many diverse symbols, *e.g.*, ornaments on ceramics (*cf.* Kadrow 2017).

The moral order of the community in building phase 0 did not last long. Dynamic internal processes of an indeterminate nature, resulting in the establishment of large permanent settlements, sudden demographic development and accompanying changes in economy (animal husbandry enriched by agriculture) and society (dominant family groups replaced by local or village groups) must have been conditioned by the competition between two social movements promoting the ideologies mentioned above, together with the rituals that dramatized them.

In the next period (building phases 1–2 – 2200–2050 cal BC), the social movement and its ideology – drawing increasingly on and developing the CWC tradition – gradually eliminated the BBC elements. This process is noticeable in archaeological materials as a growing percentage of more and more elaborate cord ornamentation on pottery and the introduction of an original, local method of producing ceramic vessels (Kadrow 2017).

The process described above was accompanied by growing uncertainty reflected in the intensification of ritual activities, which was expressed in the increasing frequency of cord ornaments on vessels and the growing elaboration of decorative motifs made with the technique of cord impressions (Kadrow 1991.62–65, *Figs. 36–38, Tab. XXVI*).

About 2050 cal BC, the gradual evolutionary changes inside the system were suddenly and dramatically stopped. Within a short time, inhabitants of the Babia Góra settlement in Iwanowice abandoned pottery ornamentation with cord impressions and radically limited the number of vessel forms they produced and used (Kadrow 1991. *Tabs. XXIX–XXXIII*). Crucially, the inhabited area was thoroughly reorganised (building phases 3–5). The main part of the

settlement was divided into two segments: a settlement and a cemetery. Simultaneously, changes were introduced to the old rituals (Kadrow 2017).

That moment of profound changes is synchronised with the turn of the early and classic phases of the MC (the turn of building phases 2 and 3). There are no grounds for assuming that the transformations were triggered by the arrival of a large group of a new population or by armed invaders. Archaeologically observable traits of material culture and of sociocultural behaviours, such as economy, settlement rules, flint working, methods of pottery production and the vast majority of funeral rites, were mostly of a mild evolutionary kind (Kadrow 2017).

The changes, therefore, had the character of a local coup determined by internal processes, ideological in nature, caused by local, probably institutionalised social movements. The empirically proven effectiveness of those movements would be difficult to postulate without positing their necessary institutionalisation. The social movements recommended 'a return to the roots' through references to various elements of the BBC ideology, as shown by the clear predominance of undecorated pots with knobs on their necks or rims (Kadrow 1991. *Tabs. XXIX–XXXIII*). Ceramics of that type were already used at the close of the early phase (Kadrow 1991. *Tab. XXVIII*), but they had no local models. Similar forms have been noted in BBC settlement complexes in vast areas of Europe, particularly in Moravia, not very far from Iwanowice (*cf.* vessel types no. 10, 23–25, 38 in Besse 2003. *Fig. 46, 105*).

Discussion and conclusions

In recent times there is increasing evidence for global climatic changes, contrary to the opinion of Janusz Kruk expressed more than 40 years ago (Kruk 1973). Among many others, there are several examples of evidence for synchronised climate change across vast areas: a 1470-year cycle of climatic changes in the North Atlantic area (Kubatzki 2010), synchronous climatic and environmental changes in the large area of Eurasian steppe and forest-steppe belt (Kremenetski 2003), and simultaneous phases of increased fluvial activities in various types of river valleys all over Central and Eastern Europe (Kalicki 1997; 2006), to name a few (*e.g.*, Magny 1993; Dreslerova 1995 *etc.*).

Archaeologists used to look for correlations between settlement and demographic changes and climate

fluctuations. For example, the following dependency is postulated among climate and LBK-populations: periods of decreased or irregularly spaced rainfall are contemporaneous to periods of population decline, while periods of increased rainfall may have favoured population growth (Gronenborn et al. 2014). Other specialists maintain, for example, that a period of cooling c. 3825–3650 cal BC resulted in the fracturing of Eneolithic complexes in Romania and stimulated adaptation to more mobile systems of settlement and subsistence. However, a contemporaneous alternative response involved large-scale migrations to peripheral regions, including the establishment of the Tripolye giant-settlements in Central Ukraine (Diachenko, Menotti 2012; Harper 2017; Diachenko 2019).

However, in the cases described here, the chronology of social crises does not correlate exactly with either the periods of wetting and cooling of the climate, or with drier and warmer periods (Fig. 5), readable throughout the European continent (*acc. to* Kremenetski 2003; Kalicki 2006). More importantly, the crises described in this paper did not cover larger territories. They are legible only in some settlement centres, while in others the continuation of old development trends is observed. These changes are registered in various geographical, environment, cultural and chronological contexts.

The cases discussed in this article indicate that the stage of reduction and concentration of settlements in their evolution occurs only in cases of settlements which functioned as central places. The largest settlements in their own (micro-) regions (*cf.* Osłonki: Grygiel 2008. 7–9, 475–476, *Fig. 1, 401*; Bronocice: Milisauskas, Kruk 1984; Diachenko et al. 2016. *Fig. 4*; Iwanowice: Kadrow 1995. 33–45, *Fig. 11*) functioned as such. The existence of a central place is not limited only to one time horizon. The socio-cultural structures of the communities which inhabited these settlements were more complex (which does not always mean more hierarchical) in comparison with other communities in the region. Their functioning was not limited to only one environmental zone, *i.e.* to loess uplands.

The transition from the stage of central places to the stage of reduction and concentration of settlements always happened during the time of maximal demographic development (Figs. 2–4). In all of the described cases this transition was provoked by social conflicts. The emergence, development and fall of these sites were not related to climate changes (Fig. 5).

There is a connection between the depth of a crisis and the severity of the social conflict and its effect in the form of cultural change or change in culture. In the case of the acute and bloody conflict in Osłonki, the effect was a cultural change, *i.e.* a transition from the BKC into GAC. In both the other, milder conflict cases, the effect was a change in culture (Bronocice case – transition from classic FBC into FB-BC; Iwanowice case – transition from early to classic phase of MC).

The correlation of the process generating the stage of reduction and concentration of settlements with population growth, the intensification of ritual practices and signs of the crisis and the resulting depopulation and cultural change has been observed in

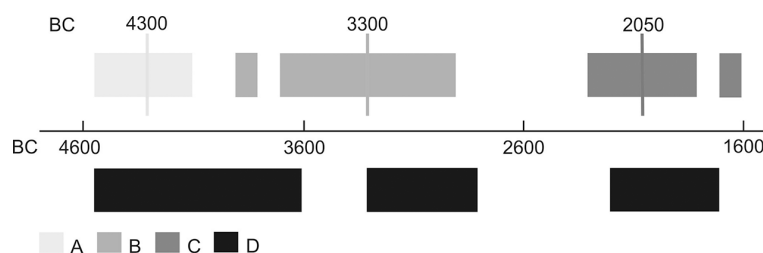


Fig. 5. Synchronization of chronological development of: A BKC on the settlement at Osłonki; B TRB on the settlement in Bronocice; C MC on the settlement in Iwanowice with D periods of an increase of fluvial activities of Central European rivers (acc. to Kalicki 2006).

the Rzeszów Neolithic settlement region in south-eastern Poland (Kadrow 2020). A similar course and character of evolution may also be detected in the socio-cultural process in Okolište in Bosnia (*e.g.*, Arponen et al. 2015; Müller 2016), although that study was carried out in the spirit of a theory different to the one presented in this article.

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