Mr. Blademan. Macrolithic technology – Eneolithic vocabulary and metaphors

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ABSTRACT – *The Eneolithic period witnessed a technological breakthrough of a significance comparable to that of the technological revolution in historical times, accompanied by a matching revolution in social and economic relationships. This transition no doubt led also to the creation of new and momentous metaphors, which in their turn triggered new senses and planes of communication. It goes without saying that the Eneolithic technology that had the greatest potential for metaphors promoting new ways of looking at the world was metallurgy. Nevertheless, before Eneolithic communities came to fully appreciate the properties of metal, many of their number resorted to an idiosyncratic flint technology to produce macrolithic implements. It seems that the production and exchange of macrolithic artefacts led to the development of a new vocabulary and grammar that served, among other things, to describe the social inequalities discernible in Eneolithic communities.*

IZVLEČEK – *V obdobju eneolitika je prišlo do tehnološkega preboja, ki je po pomenu primerljiv s tehnološko revolucijo v zgodovinskih časih, skupaj z ustrezno revolucijo v družbenih in ekonomskih odnosih. Ta prehod je nedvomno pripeljal tudi do nastanka novih in pomembnih metafor, ki so po drugi strani sprožile nove pomene in ravni komunikacije. Ni potrebno posebej poudarjati, da je eneolitska tehnologija, ki je imela največji potencial za metafore, ki so spodbujale nove poglede na svet, bila prav metalurgija. Preden so eneolitske skupnosti pričele v celoti ceniti lastnosti kovine, so se mnoge izmed njih zatekle k idiosinkratični tehnologiji kremena za izdelavo makrolitskih orodij. Zdi se, da je proizvodnja in izmenjava makrolitskih artefaktov pripeljala do razvoja novega besedišča in slovnice, ki sta med drugim služila za opisovanje družbene neenakosti, ki so vidne v eneolitskih skupnostih.*

KEY WORDS – *macrolithic technology; metrological concept; vocabulary; Eneolithic; Central Europe*

Introduction: the impact of technology on vocabulary development

The words and metaphors we use to describe the reality around us are not accidental creations, although we rarely pause to think where they come from. The philosopher Richard Rorty treats vocabulary as a contingency, as something that happens to people (much like a mutation) in the course of their complex history and which is not readily attributable to a single source (*Rorty 1989*). Rorty is, of course, right when he says that it is not easy to indicate any one source of a vocabulary – of 'romantic vocabulary' (*i.e.,* the vocabulary of Romanticizm), for example. That said, an exploration of the process of vocabulary emergence might perhaps be a less hopeless endeavour. And what if we went back in time even further and took a look at the development of the mechanistic worldview and vocabulary that was the target of the Romantics' criticism? I believe that in this case, the very name of this paradigm and manner of describing the world already speaks volumes about its origin.

There are many who would link the mechanistic paradigm with the development of Newtonian physics, but in fact the roots of the mechanistic vocabulary

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go much deeper (*Berryman 2009*). It is highly probable that an important contributing factor in its emergence was the invention of the mechanical clock. Consider, for example, this employment of the clock metaphor by Kepler, who in 1650 summed up his research project in astronomy as follows: My aim is to show that the heavenly *machine* is not a kind of divine, live being, but a kind of *clockwork*, insofar as nearly all the manifold motions are caused by a most simple, magnetic, and material force, just as all motions of the *clock* are caused by a simple weight. And I also show how these physical causes are to be given numerical and geometrical expression (after *Koestler 1989.345*; the emphasis is mine).

In this passage, Kepler defined the essence of scientific revolution, a concept that was later to be elaborated by Galileo and Descartes and completed by Newton. Kepler's metaphor was wonderful and highly appealing to many of the thinkers of his day. Soon thereafter, this pattern of thought came to be applied to all of nature in its vast complexity and to humans. One of the most vehement proponents of this way of thinking was Descartes, who viewed the material world as a machine and nature as something governed by the laws of mechanics. Everything that was part of the material world was to be explained in terms of systems and the movements of the various discernible elements. A new paradigm was created which went on to become a guiding light for all scientific observations and to underlie most scientific theories dealing with natural phenomena right up to the 20th century, when theoretical physics again started changing the picture of things. Descartes put in place a general framework of scientific thought and came up with a theory of nature as a perfect machine operating according to mathematical rules. How did all this come about?

The clock, a machine that measures time, had inspired many enlightened minds and altered the lives of ordinary town dwellers since the Middle Ages. Thanks to clocks, medieval towns emerged as centres of authority and production, contrasting with rural communities which lived in tune with natural cycles (*Le Goff 1980*). Clocks did not appear out of nothing, however. They were descendants of other machines – mills and windmills, which helped elevate European culture to the rank of world leader in economy and technology (*Gimpel 1992*). The clock was but a prominent example of the machine technology which co-shaped the modern humanistic worldview.

Nowadays, we tend to overlook that in the past, machine technology was the source of key metaphors describing reality, people and society. As demonstrated by Jonathan Sawday in his most recent book, diverse devices, sometimes highly complex and greatly boosting the power of human muscles, were part of the everyday environment of crafts-persons and engineers since the Middle Ages, and virtually throughout the continent. Historical records, the lives of Renaissance engineers and philosophers, literary works and paintings dating from that period all contain evidence of the increasingly prevalent discourse on the idea of mechanisation, on the precise regulation of human actions, and even on the idea of artificial entities devoid of soul and yet acting exactly like human beings. As a consequence, the idea of clock and machine took firm root in European political, aesthetic, and philosophical thought (*Sawday 2007*).

Thanks to developments in machine technology – medieval mills, and later clocks, being prominent elements thereof – philosophers and scientists, and eventually ordinary people, came to believe that they were describing the world around them much better, with greater precision and more effectively that their ancestors, who had employed an archaic vocabulary. Today, we are likewise convinced that the Renaissance or Enlightenment vocabulary is not adequte in many areas, that it has become anachronistic. What is at work here is a basic principle governing complex historical processes: the replacement of an existing vocabulary with a newer one which, as we come to realise sooner or later, is also inadequate as a means of describing reality. In this sense, vocabulary is a contingency as described by Rorty. It appears that we are constantly seeking a better vocabulary and never feel satisfied with the results of our quest.

Metaphors

The words and metaphors we use to describe the universe have a direct influence on our actions. Consider, for example, the popular metaphor that time is money. How did this become part of our culture? This saying is attributed to Benjamin Franklin, who supposedly advised a young merchant in this way. Without going into details, we can safely assume that this metaphor could have emerged only in specific conditions – when the passage of time came to be associated with the monetary economy. In order for this to happen, money had to exist, and an opinion prevalent in society on the value of time gauged in relation to the value of money. Time had to acquire a certain value which allowed it to be associated with money. In a way, time assumed a concrete form subordinated to human actions and came to be seen as useful or otherwise to people, and this development had to take place in specific socio-economic conditions. This is why we now understand and experience time as something that may be invested, planned, squandered, saved, *etc*. (*Lakoff and Johnson 2003.8–9*). Needless to say, a metaphor of this kind occurring as a mutation would stand little chance of being accepted in a Pygmy or Stone Age society. Bearing in mind the preceding remarks on the mechanistic vocabulary, it is now clearer that it has more in common with machine technology than we normally assume.

Metaphors are "*fundamental mechanisms of the mind*" and they create social reality. George Lakoff and Mark Johnson argue that metaphors, usually combining to form networks of metaphorical texts and concepts, may function like road signs, guiding our future actions, which then, in their turn, may (or may not) correspond with our metaphors. Accordingly, if someone raised in the Western culture tells me that I am 'squandering my time', I should be prodded into action. Otherwise, I will not educate myself properly, find an attractive job, earn money, establish a family, buy a house, a car, a wide-screen TV or home cinema; I will not go on vacation – put simply, I will ruin my life! (*cf.* the 'time is money' metaphor.) A feedback mechanism is thus in operation here. If our actions conform to the metaphors we use, the potency of the latter will increase while we experience complete and satisfactory lives in tune with what we say about the world and how we perceive it. In this sense, metaphors may even be treated as self-fulfilling prophecies (*Lakoff and Johnson 2003.156*).

Blades 'made to measure': the issue of new Eneolithic technologies

The above inquiries into the nature of vocabulary inspired me to consider the issue in the context of prehistoric Europe. The Eneolithic period on this continent witnessed a technological breakthrough of a significance comparable to that of the technological revolution in historical times, accompanied by a matching revolution in social and economic relationships. No doubt this transition also led to the creation of new and momentous metaphors which in their turn triggered new senses and planes of communication. It goes without saying that the Eneolithic technology with the greatest potential for metaphors promoting new ways of looking at the world was metallurgy. Nevertheless, before the Eneolithic communities came to fully appreciate the properties of metal, many of their number resorted to an idiosyncratic flint technology, producing macrolithic implements. We must bear in mind that the intense development of the novel copper technology coincided with the peak period of this specific flint-working tradition. This intensification of flint technology usage may be interpreted as a specific response to the new metal technology to a limited extent only, and there is much to suggest that it was the other side of the same coin – of the production of catchy metaphors.

The Balkans

The ever intensifying activities of specialists (flint-workers/metallurgists) are best visible in the relics of the Balkan Eneolithic communities of the mid-5th millennium BC which are described in the literature as comprising the Varna culture. In addition to yielding metal assemblages of a richness quite extraordinary for the times, the Varna sites contained the first examples of macrolithic blades (also dubbed 'long blades' in the literature), this idiosyncratic invention of the Copper Age. It is here that the special flint-working techniques of production of this exceptional class of tools developed alongside intense copper production activities.

The macrolithic tools were detached from suitably prepared flint nodules using pressure techniques. While these techniques were known already in the Palaeolithic, new varieties now emerged, probably relying on special devices increasing the pressure applied to flint cores. Researchers and experimenters exploring this issue tend to agree that macrolithic blades could not have been produced using only the strength of human arms (*Manolakakis 2005; Pelegrin 2006; Migal 2006*). In order to strike off a blade of the required length, pressure had to be applied to the core with such precision and force as to be beyond the capabilities of a single person. The production of 40-cm blades thus required special devices comprising a vice and a lever or a press of some kind.

Numerous researchers studying the Copper Age in Bulgaria suggest unequivocally that blade dimensions were of major significance. The length of blades recovered from graves increases in step with the affluence of burials. The presence of long blades in rich graves, contrasted with the many discoveries of less affluent or downright poor burials containing fragments which may be treated as blade imitations, clearly shows blade length to have been a characteristic with a special value for Eneolithic communities in Bulgaria (*Manolakakis 2005.230*). Tsoni Tsonev (*2004*) believes we ought to assume that members of Eneolithic communities had unequal access to the blade distribution system. This author believes that the macrolithic blades underscored the distinct lifestyles of their owners, and thus emphasised social inequalities. The owners of these blades and the tools made from them sanctioned their own social status by maintaining ties with the relevant production workshops – that is to say, with specialists who must have been very highly valued. The owners may also have controlled the blade production and distribution system itself. The subsequent redistribution and circulation of these artefacts could have then created subordination relationships and favoured the emergence of certain 'social identification groups'. Social evolution of this kind could have proceeded along the lines of the patron/client systems frequently described in ethnological literature (*cf. Douglas 1958*). The macrolithic blades may well have played a central role in a system of this kind.

North of the Balkans

In slightly later times the production of macrolithic blades was taken up, alongside intense metallurgical production, by communities inhabiting the Carpathian Valley and territories further north. It is believed that these were more mobile communities, relying considerably on animal husbandry. The best known and at the same time largest cemeteries from this period include Tiszapolgár-Basatanya in Hungary and Tibava in eastern Slovakia. The burial rites in these cemeteries were clearly dichotomous, reflecting the sex of the deceased. Men were buried in a slightly flexed position on their right sides, while the women rested on their left, although occasional departures from this rule were recorded in later periods. There were other burial rite features in addition to these cardinal ones. The male burials contain characteristic objects such as copper and lithic adzes and flint axes, albeit these are not found very often: copper adzes were recovered from one in sixteen male burials, with axes being slightly more frequent (*Lichter 2004.282*). Copper and gold ornaments are to be found in male and female burials alike.

Macrolithic flint tools were also characteristic of Tiszapolgár male burials in these cemeteries. Around one in five of these finds, made from imported Volhynian flint, are relatively large specimens, exceeding 10cm in length. Most of the macrolithic finds recovered from burial sites had been severely fragmented before being deposited in the graves. This is not to say, however, that the graves in question were modestly furnished. On the contrary, they were rich in metal artefacts and other valuable objects such as adzes, axes, wonderfully ornamented ceramics, and even gold. Let us take a closer look at them.

The most important thing to note is the distinct correlation between the numbers of blades in inhumations from that period with the abundance of other grave goods or, in other words, with the relative richness of the graves' furnishings (Fig. 1). While the rich graves yielded much greater numbers of blades, these were fragments rather than whole specimens. If we consider blade length distributions in rich and poor graves, the picture of blade fragmentation in the latter is not that clear. The blades in those graves represent the medium-sized categories, 5–8 and 10–14cm in length. The corresponding situation in rich graves is more clear-cut. These yielded very short fragments, 1–4cm in length, medium-sized specimens 7–10cm long, and 'decent' macrolithic blades measuring 16–22cm. Analyses show that classical burial characteristics such as ceramics quantities and numbers of artefact categories are correlated with the numbers of blades and blade fragments, but that there is absolutely no correlation with the lengths of the latter finds. The distribution of blade lengths presents a complex picture (Fig. 2).

These observations suggest that the metric characteristics of blades were subject to a specific selection process in the Eneolithic communities inhabiting the Carpathians, in the context of the social differences within these communities which are discernible in grave furnishings. The selection was related to the age of the deceased and the visible differences in the opulence of grave goods. One of the graves in Tibava (Slovakia) yielded 25 blade fragments of various lengths; this happened to be one of the richest of all the graves of the community in question, also containing gold objects, a copper adze, copper bracelets, and other artefacts (*Šiška 1964*).

So what exactly were the macrolithic blades found in graves left by the communities in the Carpathian Valley? Their interpretation as merely prestige objects could indeed explain some of the behaviours apparent in the material culture of the Balkan communities, but it is less helpful when we turn to the

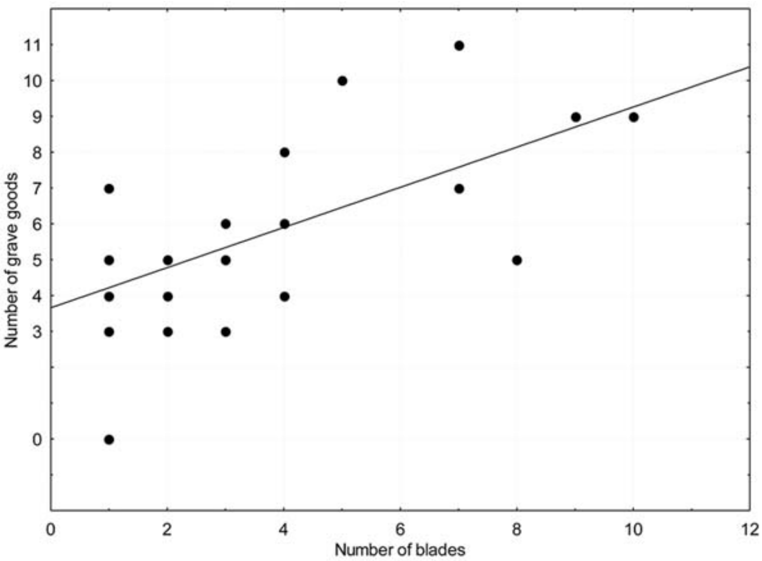

Fig. 1. Scatter diagram showing the relationship between numbers of blades and numbers of goods categories in Tiszapolgár graves in the Basatanya cemetery.

Carpathians, since it is the poor graves there which contain complete macrolithic blades, with the rich inhumations yielding only fragments of such artefacts. The occurrence of macrolithic blades in Varna did indeed correspond with rich burials. The Varna blades were longer and more regular in shape than similar specimens recovered further north in Europe. They were also distinct in that many of them had no traces of use. Researchers speculate that they were produced for use in burial rituals alone (*Manolakakis 2005.303*). The key to understanding the various relationships we are observing appears to be the phenomenon of blade fragmentation.

What is the purpose of fragmentation?

Fragmentation practices are in fact so widespread in Eneolithic cultures that we can regard them as a *signum temporis*, alongside a number of socio-economic transformations described by many authors. Chapman discussed this phenomenon in the context of Eneolithic materials from south-eastern Europe, contrasting two seemingly opposite trends – enchaining and accumulation – and examining their intensity in the prehistory of the region in question. The author perceives fragmentation as a special vehicle of social practice consisting in the forging and upholding of social ties: "*It has been argued that, throughout the Neolithic and Copper Age, the dominant form of social relations was constituted by relations of enchainment – whether through genealogies or exchange networks – which were underpinned by analogous social practices involving artefact fragmentation (...) The enchainment of social relations using fragmentary objects is the only hypothesis which attempts to explain the widespread distribution of fragments of objects*" (*Chapman 2000.74*). Relations of enchainment and accumulation, however, are in Chapman's study connected to objects made of clay and copper. The fragmented spondylus shell rings from cemeteries like Varna and Durankulak, which are supposed to reveal enchained relations constitute another example "*linking the domain of the living and the domain of the dead*" (*Chapman, Gaydarska and Slavchev 2008.158*).

Paradoxically, the phenomenon of fragmentation is more readily discernible in the macrolithic flint industries of Eneolithic cultures such as the Tiszapolgár, the Lublin-Volhynian, the Funnel Beaker, or the Globular Amphorae; this is because of the different technological properties of the raw materials involved. In one of her studies of macrolithic blades, Zakościelna turned her attention to the fragmentation of these artefacts in Lublin-Vohlynian culture. She immediately noticed that the blades had been frag-

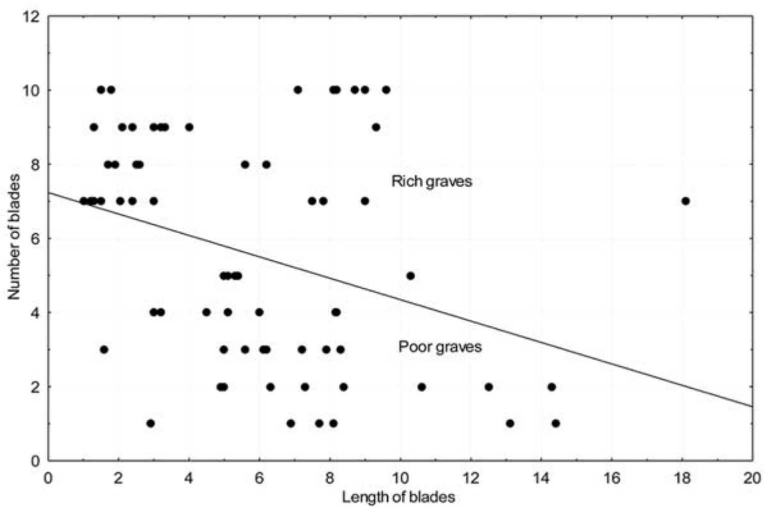

Fig. 2. Scatter diagram showing the relationship between numbers of blades and blades length in Tiszapolgár graves in the Basatanya cemetery.

mented in accordance with clear-cut rules, but based on the materials in hand, she could not determine whether they were divided into three or four fragments. Could both methods have been employed simultaneously? We know that blades of this kind were used and often refashioned, and this hinders precise observations of blade fragmentation in assemblages recovered from the settlements studied (*Zakościelna 1996*).

Dividing a long blade into four fragments appears to make more sense from the economic point of view. This can be done simply be snapping a blade in half, and then again halving the two fragments. The blade fragments thus obtained can still be used to produce substantial tools measuring 4–6cm of a kind that were universally used throughout the Younger Stone Age. In fact, most end-scrapers, a very popular implement used by Eneolithic people, were of this size. It was also possible to snap off the distal or proximal end of a blade, thus shortening it somewhat, but still leaving an implement more than 10cm long.

Eneolithic graves known from Volhynia, the region exporting flint to the Carpathian Valley, also contain fragmented blades resembling those recovered from the mentioned Tiszapolgár cemeteries in terms of structure. However, this observation needs to be elaborated on. Comparisons of inventories from the two regions clearly show differences in this respect: small blade fragments visibly predominate in Hungarian cemeteries, while larger fragments prevail in Volhynian cemeteries. There are, of course, diverse other cultural differences between the two traditions noted in the specialist literature, but both communities employed identical dimensional classes of blades – the only difference being that the respective burials of the two traditions contained these implements in reverse proportions. One cannot avoid the impression here that although the two cultures employed the same method of selecting metric parameters of blades, they performed this selection 'from different viewpoints' as it were (Fig. 3, Tab. 1).

One common feature of the two communities is the identical approach to blade fragmentation. Statistical analyses of the lengths of blade fragments recovered from cemeteries of these communities show that a division into four parts was the preferred option (*Dzbyński 2008.Fig. 44, 45*). Based on the figures in Table 1, we can assume, for example, that this dialectic approach to fragmentation could have been due to the different contexts in which the exchange of flint raw materials or other goods took place. Andrew Sherratt (*1982*) suggests that an exchange network of the centre-peripheries type functioned in the Carpathian Valley, in which sheep played an important role. This type of exchange is also apparent in the case of imports of good-quality Volhynian flint (Tab. 1).

New words and metaphors

From the observations so far, it would appear that the macrolithisation of flint tools in Eneolithic communities in Europe was the result of an increasing manipulation of blade length within important social communication contexts. While in the previous period, tools were made from blades which were small from the outset (4–6cm), later we see evidence of a widespread practice involving the proportional fragmentation of macrolithic blades on the one hand and the selection of blades according to their metric characteristics on the other. Let us now consider macrolithic blade fragmentation in the context of vocabulary, which is what we are attempting to explore in this work.

The production of macrolithic blades along with all the related issues, such as the organisation of tools and blanks production, the fragmentation and repeated refashioning thereof, and selection according to metric characteristics – all of this was no doubt reflected in linguistic communication or, strictly speaking, in what the philosopher Jürgen Habermas (*1984*) referred to as linguistic coming to understanding. In the Eneolithic vocabulary, there must have evolved words, concepts, and grammars that served processes which involved manipulations of blade tools that were much more complex than before. It is likely that there was a way of distinguishing between the macrolithic and the non-macrolithic, and we can also assume that there emerged a new linguistic system of coming to understanding that served to handle the entire process of manipulating macrolithic blades – a new vocabulary which must have introduced designates of basic division principles into the existing system of linguistic communication,

Carpathian Valley/ Tiszapolgár culture	Volhyn/Lublin-Volhynian culture
import	export
centre	periphery
small (even?) fragments	large (odd?) fragments

Tab. 1. Elements of the dialectical relationship between the Tiszapolgár and Lublin-Volhynian cultures (**Dzbyński 2008.134*****).***

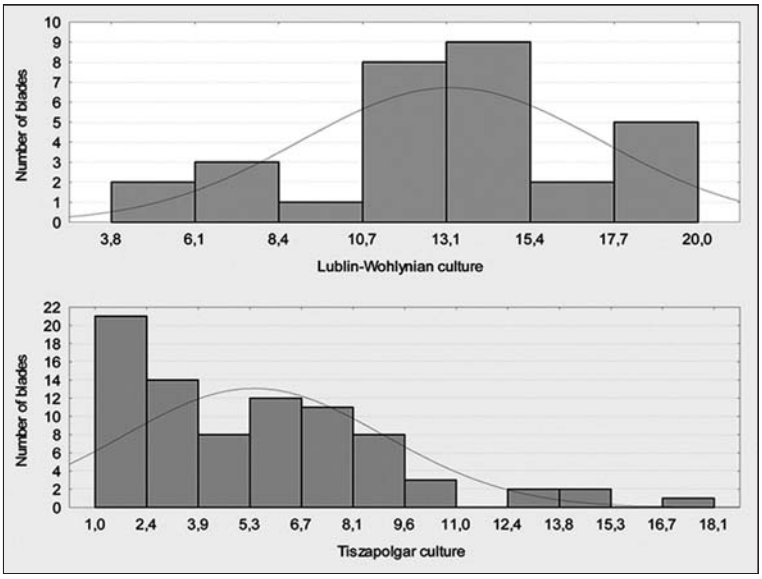

Fig. 3. Histogram comparison of blade lengths in the Lublin-Volhynian (top) and Tiszapolgár (bottom) cultures.

such as the concepts of quarter, half, three-quarters, *etc*. The archaic model of communication involving the rooting of exchange activities in ritual and narration alone ceased to suffice, and the simple comprehension of the principles of proportion, *i.e.,* the rational concept of measure, emerged as a new and extremely important plane of communication. It would therefore appear that in the Eneolithic, macrolithic blades were not just tools, but also – or perhaps first and foremost – special manifestations of precisely formulated messages serving to depart, in certain situations, from interminable verbosity, references to mythology, *etc*., by employing measures and numbers. In other words, the macrolithic technology, being an idiosyncratic product of the activity of specialists, became a vehicle for numerical and metrological messages previously unknown in this part of Europe.

The metaphor of the blade

Helena Knuttson (*2003*) noted that Paleolithic and Mesolithic blades were treated quite differently from blades dating to later periods. She proposed the following model of evolution of the blades' significance in Mesolithic and Neolithic communities in Europe. During the Palaeolithic and Mesolithic in Europe, blades which were used on an everyday basis to perform ordinary chores were deposited in graves as individual or collective property. The significance of these artefacts appears to have changed in the Neolithic, when blades came to represent the "*most important tasks"* or those (no less respected) relating to *"tasks brought by the ancestors*", namely agricultural activities. Now, if they are not found in graves, they are deposited in the ground in a special manner ensuring that the end product tends to become separated from production traces (*Knutsson 2003*). In fact, these tendencies are apparent in deposits dating from that period.

Bearing in mind the way in which blades were treated, Knutsson suggests that in the Eneolithic they were perceived and used as specialised products, manufactured in a systematic manner in a distinct socio-cultural context (in specialised settlements), which is why they served as important symbols among grave goods, representing the desires of the buried individuals and their loved ones. Knutsson develops this idea, proposing that these blades, distributed over a large area, could have served not only as tools used in agricultural production but also as a kind of 'metaphor' for the idea of agriculture. In light of what has been said so far in this study, one might also add that the blades could have simultaneously served as a metaphor for personal success.

If we were to assume that the social reception of macrolithic products was to a certain extent abstract, we would also have to see this process as indicative of an increasing rationalisation of the Eneolithic communities' universe. This model of thought may very well serve to explain the sublimation of the blades' meaning (their symbolisation due to increasingly abstract contexts of use) and the emergence of a new semantic field taken up by a certain abstract concept – a metaphor capable of communicating contents which were immanently tied to the desires of the Eneolithic people.

We must bear in mind that the first and foremost reason for the intense interest in macrolithic artefacts produced by specialists was metal. In the Eneolithic, metallurgists and flint-workers performed largely identical roles. Budziszewski (*2000*) demonstrates that in the Eneolithic, both flint production and metallurgy lost their significance as 'universal social indicators'. While specialised production centers may have operated within diverse cultures and communities at different times and in different places and home production was susceptible to different trends marked by an increasing reliance on local raw material sources, the phenomenon of flint production traditions typical of particular societies was replaced by numerous local variants, often displaying considerable degrees of variation. This new quality in flint production organisation and in the use of flint tools which were now being repeatedly refashioned, no longer fits the traditional concept of flint industries characteristic of specific communities or cultures, and the structure of flint production organisation becomes identical with that of metal production organisation. The new organisational model also requires a new methodological approach (*Budziszewski 2000.326*).

One solution here may be the acknowledgment that Budziszewski's outline of the evolution of flint economy also reflects a social evolution involving the emergence of new area of rationalised social communication in which arguments, norms, measures and metaphors of supra-regional significance played a major role. Both the copper and macrolithic artefacts were bearers of messages of these kinds, which forced individuals wishing to participate in social life and in exchanges of valuable objects to transcend the local mythological and narrative traditions which were dominant features of hunter-gatherer communities. Now it was no longer enough to be familiar with the mythology and traditions of one's own community to take part in the exchange of goods – one also had to know how to measure, count and calculate.

That said, more time had to pass in regions where metal became a permanent feature of culture and social discourse before there developed more rational concepts, better suited to the specific properties of metal, namely abstract measures. Macrolithic flint artefacts blocked this avenue of development – since stone does not lend itself to treatment in terms of weight proportions – but they served a very useful role in the intermediate stage marked everywhere by the fragmentation of blades and other macrolithic artefacts. While there is no doubt that accompanying the blades was a wide range of concepts and emotions relating to the new technology and exclusivity, the fact that the blades could be measured in the context of social relationships meant that these artefacts acquired new, previously unknown values. One must assume that the macrolithic artefacts were also elements of the extraordinarily elaborate mythologies which did not disappear immediately with the advent of the Eneolithic, but which had ceased to be the only reference available. Abstraction in the lives of hunter-gatherer communities took the form of analogising symbols and symbolic graphic thought. The macrolithic artefacts, however, are clear evidence of the emergence of a hitherto unknown manner of abstract thought which definitively ceased to rely on images of any kind and which underlies mathematical thought as we know it today. Macrolithic artefacts also mark the first stage of reality valuation in terms of media, *i.e.,* rationally measurable and calculable terms, a process which eventually led to the creation of money (*Dzbyński 2008.101–103*). In the initial stage of the development of metallurgy in Europe, before the emergence of the concept of abstract metal measure, these artefacts were a characteristic bridge between two manners of perception: they continued to be measurable in a tangible fashion in times when the weight of metal was still a mystery. Until rational methods of assessing the value of metal using standard-weight bars were developed, metal was subjected to intense fragmentation, especially in regions where copper artefacts were produced, which is not so much evidence of an increased intensity in ritual activities as of intensely developing discourse, which led to a more rational perception of the essence of metal towards the end of the Eneolithic period (*cf. Dzbyński 2008.238–243*). In Europe, metal bars were already in widespread use by the early stages of the Bronze Age, with macrolithic artefacts remaining as a kind of alter ego of metal.

Let us take a look at the macrolithic blade. In terms of shape, it resembles a thin strip of matter which is roughly identical when viewed from any angle. Because of the production technology involved, these blades were much simpler than blades produced using home techniques; they were not curved and their distal end resembled the butt end, since the pressure technique used did not create a distinct thickening of the latter. The form of these blades was simple, homogeneous and geometrised. The mental image of this type of artefact would be similar to that of a 'bar' (Fig. 4).

Mr. Blademan: new vocabulary – new power relationships

It seems logical to assume that the employment of metrological messages was not without effect on what these messages referred to, or on the context in which macrolithic artefacts frequently occurred. As we could see, these messages referred to, first and foremost, people and described interpersonal relationships. It seems that the production and exchange of macrolithic artefacts led to the development of a new vocabulary and grammar serving, among other things, to describe the social inequalities discernible in Eneolithic communities. We observe numerous changes in the social structures of the period: the already mentioned escalation of social inequalities, the disintegration of large families, the emergence of inter-group hierarchies and individualised exchange relationships, the appearance of personal property, *etc.* (*Sherratt 1997*). All of these changes may be seen as consequences of departures from the prevailing archaic worldview, in which the participation of humans and things in culture was conditional on their inclusion in the structure of a mythological-narrative order. The measures and numbers which were being implemented in socio-economic relationships with ever-increasing force were the media which disrupted the old social fabric and helped weave a new one. For instance, the macrolithic artefacts could have communicated – or indeed described in a concrete manner – the calibre and importance of their owners, which in turn could have described (literally or metaphorically) the owners' rank within Eneolithic communities. In this way, the new metaphors began to give shape to a new society. This was a system using a hierarchy of measures. In other words, bearing in mind the suggestions above, we can imagine that macrolithic blades could have introduced to society a system of concepts and metaphors relating to social inequality. A new form of expressing inequality was born.

In the early stages of Neolithisation, long-range exchanges of exclusive goods and flint artefacts were very much a part of ritual or gifts exchanges (*Chapman, Gaydarska and Slavchev 2008; Müller, Herrera and Knossalla 1996; Zimmermann 1995*). A reverse mechanism came into play in the case of the macrolithic blade technology. Even if we make the reasonable assumption that a blade of this kind was a vehicle for narrative content (in which case, one had to be familiar with the myths and rituals of a given tribe in order to use it and take part in exchanges involving it), the diverse possibilities of manipulating its length in interpersonal contacts lent it a new medial content, an added value as it were, which could have altered the contexts of its use so quickly and effectively that myths and rituals could no longer have kept up with the pace of change. This is why we observe such diverse applications of the blade fragments deposited in graves across such a wide spectrum of Eneolithic communities. Exchanges of blades were less and less often elements of ritual and gifts exchange ceremonies, and more and more often elements of transactions involving numerical calculations. Exchanges of the latter kind were conducive to individualisation, which is why we see more and more of the latter in the Eneolithic, accompanied by an increasing activity of younger individuals. Mr. Blademan – a producer, disposer and the principal figure in the exchange system – became an active and creative element of the social structure.

An interesting example in the above context are those graves of Tiszapolgár culture from Veľké Raškovce and Tibava which contained flint nodules (*Lichardus-Itten 1999*). These were the richest graves, containing numerous ceramic vessels, copper artefacts, and status symbols like copper axes. The flint nodules, from Vohlynia, the area of Lublin-Vohlynian culture, symbolised wealth, as well as connections to the desired raw material. In the framework of this paper, one can add that the flint nodules also represented an enormous amount of flint blades, the kind of quantity which is virtually uncountable and which in our times until quite lately functioned in the metaphorical sphere for a millionaire (*Canetti 1960*).

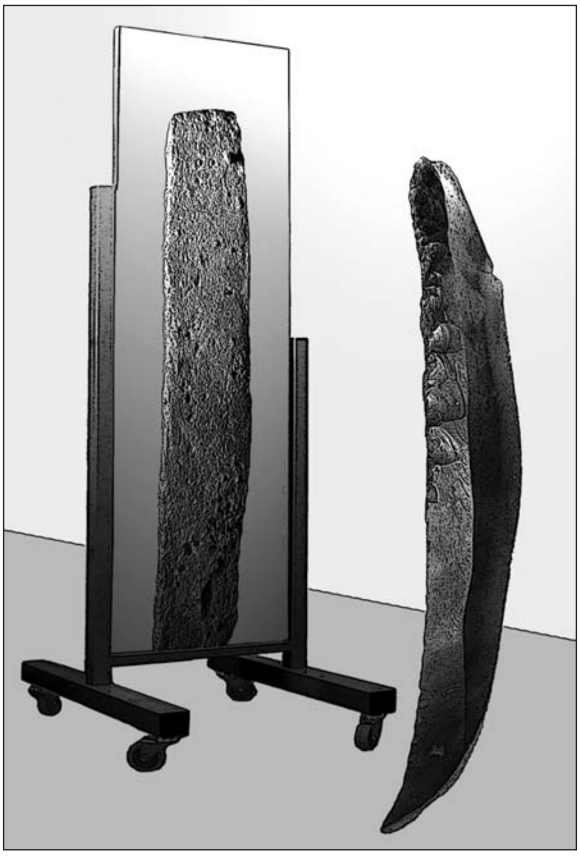

Fig. 4. Macrolithic blade could be viewed as standardised portion of valuable material, presenting thus a prototype of a metal bar.

The macrolithisation of flint tools was not restricted to Central and Southern Europe, but was a much more far-reaching phenomenon, which makes it a characteristic sign of the times. Macrolithic blades had also been produced since the beginning of the Neolithic in the Near East, where they are known as Canaanite blades, and in Greece, but little is known about them. Implements of this kind are also known from the Iberian Peninsula, Sardinia and Malta. Similar activities are also in evidence in western Europe. Today's France was inhabited in the Eneolithic by Chassey communities, which also included groups of specialised craftsmen exploiting flint in subterranean mines. Workshops producing macrolithic blades have been discovered in Grand-Pressigny in France. These produced implements which were subsequently distributed throughout the area which is today's France, Holland and Switzerland. Flint extraction using complex mining methods was a characteristic feature of this period. In places where metal was hard or even impossible to come by for reasons which are not entirely clear, people specialised exclusively in flint mining and the production of idiosyncratic objects of special significance, such as macrolithic blades or axes. To conclude, let us point out once again that in terms of impact on the development of vocabulary and metaphors, this technology represented a dead end, since at that point in time, the future already belonged to metallurgy and, later still, to machine technology. But for Eneolithic Europe, macrolithic technology was the very part of the cognitive development process – in which the material culture played a defining role – that was about to alter the ancient narrative mode of communication into a more rational one, based on number and measure.

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