

Clay tokens – accounting before writing in Eurasia

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ABSTRACT – *A number of small ceramic and stone objects of rather uniform shape, which have been interpreted in Near and Middle Eastern archaeological contexts as counters used for calculating quantities of goods in systems of exchange are discussed in European interpretative contexts of the transition to farming and the secondary products scenario.*

POVZETEK – *V artefaktnih zbirah, ki jih evropska prazgodovinska arheologija označuje kot pečatnike, ušesne čepke, amulete, miniaturne figurice, gumbce itd., je kar nekaj drobnih keramičnih in kamnitih predmetov zelo enotnih oblik, ki so v bližnjevzhodnih neolitskih kontekstih interpretirani kot plačilni žetoni. Žetoni naj bi najprej pomenili vrsto in količino blaga, nato številke, enice, desetice in šesdesetice. Žetone v obliki stožcev, valjev in miniaturnih posod obravnavamo v evropskih kontekstih prehoda na kmetovanje in uporabe sekundarnih produktov.*

INTRODUCTION

In artefact assemblages designated by European archaeologists as seals (*Cornaggia Castiglione 1956; Makkay 1984; Ruttkay 1993(1994)*), there are a number of small ceramic and stone objects of rather uniform shape which have been interpreted in Near and Middle Eastern archaeological contexts as counters used for calculating quantities of goods in systems of exchange, and mnemonic devices for recording information (*Schmandt-Besserat 1977; 1985; 1992a, b; 1997a*). This article presents clay tokens in the context of the transition to farming and secondary products scenario.

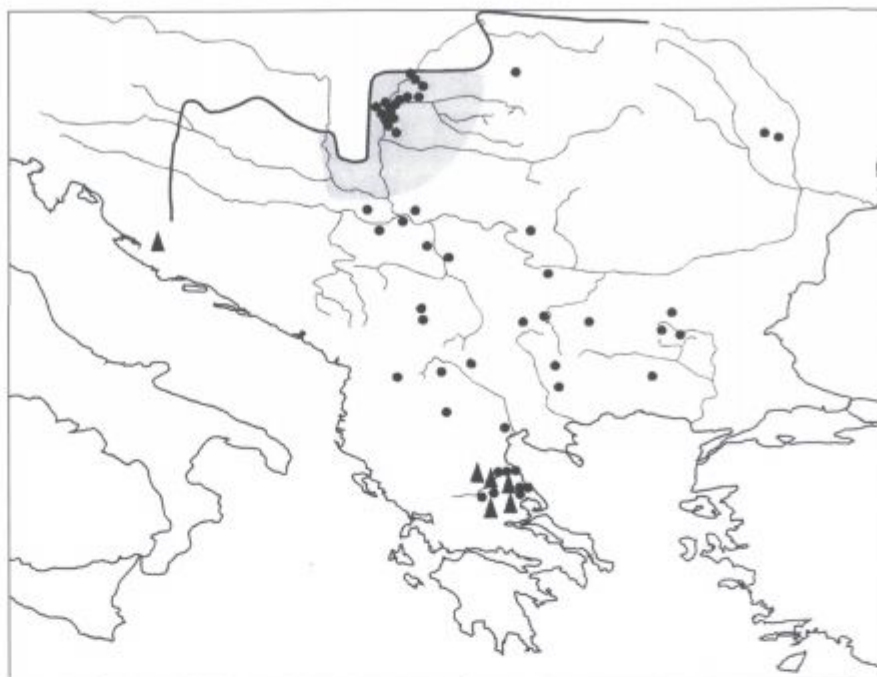
THE INTERPRETATION OF TOKENS IN THE CONTEXT OF THE TRANSITION TO AGRICULTURE IN EUROPE

In European Neolithic studies the interpretation of presumed seals, connected with the old axiom *ex oriente lux*, was already established at the beginning of this century (*Childe 1929.414*). Now the phenomenon of clay seals in European Early Neolithic cultures of Proto-Sesklo, Karanovo I-II and Starčevo-Körös, is linked to the process of Neolithisation in

south-eastern Europe (*Makkay 1984.73–84*). Explanations with a predominantly diffusionist paradigm are based on two hypotheses. The typological hypothesis claims that the Early Neolithic clay seals from Macedonian Nea Nikomedea are comparable to Anatolian seals in Çatalhöyük VI-II (*Makkay 1974.131–154; 1984.72–84,100–101; Kircho 1989.123; Onasoglou 1996.163*). The second hypothesis, which is based on distribution, says that the appearance of the first seals in Europe can be related to the expansion of the oldest pottery to Macedonia, Thessaly and to the Balkans; and that, due to its geographical position, a key role was played by Nea Nikomedea in Macedonia. Apparently rather obvious is its position between the oldest centres for the making of clay seals in Çatalhöyük and Hacilar in Anatolia on one side, and the settlements of the Karanovo and Körös-Starčevo cultures in the Balkans and eastern part of the Carpathian Basin on the other (*Makkay 1984.37, 77–86, 101*).

What needs to be particularly noted in this interpretative context are two arguments which hold that, due to incomparable form and unclear chronological position, the Thessalian stone seals cannot be placed

Map 1. The distribution of Early Neolithic "stamp seals" (●) (after Makkay 1984) and, tokens (▲) documented in Arggissa, Souphli Magula, Achilleion, Sesklo, Gentiki and Vrbica. The "northern boundary of the Starčevo-Körös (shaded)-Criş complex" was defined by Kalicz (1990. Taf. 1. 1; 1993. Fig. 2).



into the above-mentioned clay seals group (Makkay 1984. 79–80; Onassoglou 1996. 163). Concerning the distribution of the oldest seals, we cannot agree with the evaluation that early farming groups from the Konya basin (Çatalhöyük, Can Hasan and Suberde) migrated at the head of a wave-of-advance into the Thessalian plain. Van Andel & Runnels (1995. 481–500) stated that settlers gradually occupied only the fertile flood plains of rivers and lakes, similar to the environment in the Konya basin. They propose that the periodically flooded sites in Thessaly were colonised first (9000 BP), and after more than a thousand years farmers leapt to the next such environment in Macedonia, Thrace (7800 BP), and Pannonian plain (7500 BP). This explanation was also rejected by Wilkie and Savina (1997. 201–207).

Although a hypothesis on a correlation between the diffusion of agriculture and seal distribution remains, a few obvious facts, which we believe place the Early Neolithic seals in another interpretative context, still need to be emphasised. In the context of the European Early Neolithic, it is impossible to place any of the seals in the oldest phase. Their dating to the Early Neolithic is only approximate; nevertheless, we know that in different geo-cultural areas this period had a different chronological structure (Budja 1992. 97–98). It is also important to understand that in Thessaly and Macedonia reliable stratigraphical positions are known only for seals from Nea Nikomedeia, and even these are not dated before the Proto-Sesklo phase (Onassoglou 1996. 163, 331–334). Something similar holds for the clay seals in the

eastern, central and northern Balkans. The cultural and chronological label Karanovo I–II means that we can speak only of the latter part of the Early and earlier part of the Middle Neolithic (Todorova, Vajsov 1993. 75–77, Tab. 10; Todorova 1995. 83–85). Even more imprecise is the chronological division of seals in the Körös and Starčevo cultures. The fact that these cultures denote the Middle Neolithic period cannot be overlooked (Garašanin 1979. 142, 212; Benac, Garašanin, Srejšević 1979. 27; Kalicz 1990. 89–91). Above all, we cannot overlook the Proto-Starčevo I, II (Srejšević 1971. 1–19), Proto-Körös (Kalicz 1990. 89–91) and the "Early" and "Monochrome" phases in the context of the "Early Neolithic complex" of the Eastern Balkans, defined for quite some time, in which seals are not documented (Todorova, Vajsov 1993. 74–75, 94–97; Todorova 1995. 83).

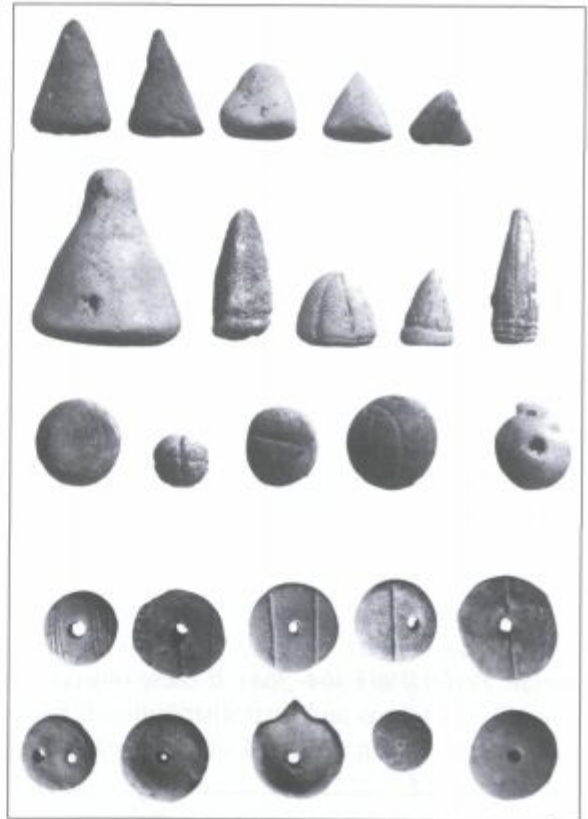
In the distribution of the oldest clay seals in the Balkans we cannot distinguish the expected zones of density which could be linked to a "modified version of the wave-of-advance model of demic diffusion", and an agricultural frontier moving from south to north (Ammerman, Cavalli Sforza 1984; Cavalli Sforza & Cavalli Sforza 1995. 134–140, 147–157; Cavalli Sforza 1996. 52–52, 61–65). Even more, the greatest concentration of Early Neolithic clay seals has been documented in the Tisza region in the Carpathian Basin (Makkay 1984. Map on p. 158), at the northernmost part of the Early Neolithic Körös-Starčevo-Criş complex (Map 1), designated by Kalicz (1990; 1993; 1998). It is also highly surprising to see that the seals have been documented only in set-

tlement contexts of the Kőrös culture along the Tisza river since, according to Kalicz's definition, the entire area of the northern border of the Kőrös-Starčevo-Çriş complex is to be understood as a frontier zone, a zone where the processes of interaction between farming and foraging communities consisting of different forms of contact and material and social exchanges are hypothesised (Zvelebil 1994(1995).107–152; 1998.9–27).

On the other hand, artefacts, which can be interpreted as tokens appear in the Early Neolithic in the south, in the Mediterranean region. With only one exception (Talalay 1993.45–46), until recently their identification and interpretation have been connected exclusively with the Near and Middle East (Schmandt-Besserat 1985.149–154; 1992a; 1997a.151–156). These are plain tokens which are mainly geometric in form: cones, spheres, lenticular discs, cylinders and tetrahedrons (Pl. 1); there are also naturalistic forms such as vessels and animals. The tokens had two main functions from the beginning, when they served as counters to calculate quantities of goods and, as mnemonic devices used to store data. Counting and data storage with tokens began in the eighth millennium BC in open-air settlements where subsistence was based on the raising of cereals. Their first purpose was to record quantities of the traditional Near Eastern staples like grain and small stock, and there is some evidence that the counters were usually discarded during summer, after the harvest. In the fourth millennium, BC when assemblages of complex tokens appear, they kept track of manufactured goods in large centres. Tokens, together with other status symbols, are sometimes included in the burials of prestigious individuals, suggesting that they were used by the elite, which controlled real goods and the economy of redistribution.

The appearance of the first token assemblages in 8000–7500 BC is interpreted as the appearance of a system of counting and recording goods in the processes of the transition to farming. In other words, the token system met the accounting needs brought about by agriculture, and data storage can be considered as directly related to the rise of a household economy and a social elite. This idea is based on the fact that the creation of the token system correlates with a new settlement pattern characterised by larger communities, and with the advent of a ranked society characterised by a new type of leadership overseeing community resources. In Mureybet there is no evidence for the use of counters in the two ear-

liest Natufian phases of the site, in about 8500–8000 BC, when it was a small compound of half a hectare. Tokens occur in the third phase, ca. 8000–7500 BC, when the hamlet had grown to become a village covering 2 or 3 hectares. It is estimated that the community of Mureybet III exceeded the number of individuals manageable in an egalitarian system. The synchronic occurrence of tokens and plant domestication in the post-Natufian period demonstrates that the new economy based on agriculture created a need for accounting. In fact, in each of the five sites that yielded the earliest tokens (Mureybet III, Tepe Asiab, Ganj Dareh E, Tell Aswad I and Cheikh Hassan), the invention of clay counters was consistently related to evidence of harvesting. The link between cereal consumption and recording grain quantities explains the fact that spheres, cones and flat disks, probably representing measures of cereals, were among the most common Early Neolithic tokens. Although the archaeological evidence is elusive, it is hypothesised that the presence of cylinders and lenticular disks stood for numbers of animals in the token assemblages of Cheikh Hassan, Mureybet and Tepe Asiab. Plain tokens continued to be used in the Near East to the very end of the system in the third millennium. The counter continued to exist, and the



Pl. 1. Susa. Tokens assemblage: cones, spheres and disks (after Schmandt-Besserat 1992a. Fig. 36. 1. 2. 3; 1997a. Fig.2).

system worked according to the most simple and basic principle of a one-to-one correspondence which consisted in matching each unit of a set to be recorded with a token. There were seemingly only a few tokens that stood for a collection of items, such as a lentoid disc which probably represented a group of perhaps 10 animals. The token system did not allow the abstract expression of numbers. There was no token for "one," "two" and "three" independently of the commodity counted. It is worth noting that the token clusters were always composed of several types of counter (Schmandt-Besserat 1985.149-150, 152; 1992a.33-48, 166-178; 1997a.151-156).

It is rather obvious that tokens have been a neglected subject in European Neolithic and Halkolithic studies. In various publications they are described as "stamp seals", "seals", "clay cones", "clay tablets", "miniature clay objects", "miniature clay figurines", "small discs", "buttons", "decorative and other objects" and "ear studs", "nose plugs" or "ear plugs" (Wijnen 1981.46; Makkay 1984; Papathanassopoulos 1996.330-333; Theocharis 1973.299, 301, Fig. 212, 238, 270; Müller 1994.218; Demoule, Perlès 1993.364-368). Due to a taphonomic filter, which marginalised their interpretative significance to the level of decorative objects, these artefacts were not included in analyses of the system of exchange and organisation of production in the Mediterranean Neolithic (Perlès 1992.115-164) or in analyses of the processes of Neolithization.

We first turn our attention to the stone and clay "ear plugs" documented in the Thessalian Early Neolithic. It needs to be pointed out, however, that both their use and provenance are hotly debated subjects, yet to be resolved. Something similar holds for their chronological positions. It is still not clear whether in the settlement palimpsests they first occur in the Pre-ceramic or in the Achilleion phase of the Early Neolithic; while the basic question of whether the Pre-ceramic Neolithic in Greece can actually be defined remains unanswered (Bloedow 1991.2-43; Vitelli 1993.39-40). However, the objects are documented in the initial Neolithic phases in Thessaly in a time span between 6800 BC and 5800 BC (Demoule, Perlès 1993.364-368). If these objects are identified as tokens and their distribution is taken into account, we can also speak of the appearance of

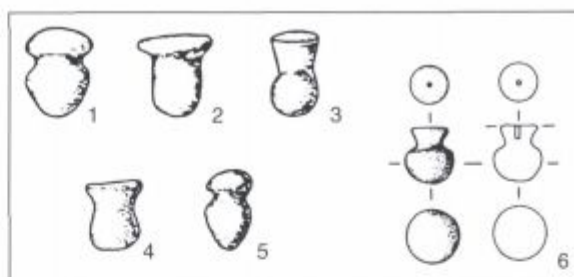


Fig. 1. Stone and clay tokens, "recovered from the Early Neolithic I strata at Sesklo" (1-5, after Wijnen 1981.46, 47, Fig. 14. 20-24) and Vrbica (6, after Müller 1994. Taf. 74. 5).

a system of counting and record-keeping in the processes of the transition to farming in Mediterranean Early Neolithic settlement contexts. Nevertheless, the basic supposition that these artefacts, documented in Argissa, Souphli Magula, Achilleion, Sesklo, Gentici and Vrbica (Demoule, Perlès 1993. Fig. 4.15-16; Müller 1994.218-219) (Fig. 1) are comparable to vessel-type tokens (Fig. 2), as defined in a typological series by Schmandt-Besserat (1992a.226-227, 13:3, 5, 15, 16, 26; 1992b.xiii-xiv) must also be true. Due to the greater legitimacy of our typology, let us state that in the Greek Neolithic, vessel-type tokens are not an isolated phenomenon. Disc-type tokens 3:12, 15, 56, cones 1:3, cylinders 4:20A, ovoids 6:19, and quadrangles 7:6, 7, 28-32 (Schmandt-Besserat 1992a.203, 1:3; 212, 4:20A; 217, 6:19; 218, 7:6, 7; 219, 7:28-32) also appear as "decorative and other objects" or "rectangular solids of unknown use" in Neolithic settlement contexts in the Peloponnese (Theocharis 1973. Fig. 271; Gimbutas, Winn, Shimabuku, 1989.257; Papathanassopoulos 1996. 332. Cat. No. 275) and the Balkans (Čohadžiev 1997.56, Fig. 60.15. 198. 1, 4. 199.3, 6).

Vessel-type tokens are interesting because of three interpretative postulates. The first is based on their distribution in the Balkans, which extends as far as Dalmatia in the central Adriatic (Map 1). The westernmost example is documented in the context of the Impresso-cardium culture (Impresso A) in Vrbica (Müller 1994.218-219, Taf. 74.5). Unfortunately, we cannot include stone spike artefacts from Podgorie I at Prespan Lake in Albania (Korkuti 1995. Taf. 8.c-d) in this typological context, though Müller tries through these to establish a link with the Thessalian artefacts (O.c. 218)¹. Something similar holds for an

1 The distribution of artefacts in the form of spikes is obviously not a local phenomenon, defined in a short period of time. An identical artefact is also documented in the Eneolithic horizon of the Slatino settlement in Bulgaria. That this is not a coincidence is shown by the presence of disc-type tokens 3: 12, 15 and cylinders (twisted) 4:30, 32 after Schmandt-Besserat (1992a.208, 213). They were published as "objects of unclear significance" (Čohadžiev 1997.56, Fig. 60.15, 198. 1-2, 4, 6).

artefact, a supposed ear (lip) plug, in the context of Körös culture, referred to by Makkay (1974:150; 1984:81). Nevertheless, a typological link between the Albania and Greece in Early Neolithic remains. A similar clay seal, comparable to Thessalian (Korkuti 1995. Taf. 15. 12, 14–16), was documented in the Early Neolithic settlement deposit in Vashtëmi. On the other hand, clay statuettes (O.c. Taf. 8. a–b; 14.2) were documented in both the Podgorie and Vashtëmi settlement and, in Franchthi cave deposits. Matching artefacts have been interpreted in Franchthi cave in the Peloponnese as tokens designed either as contractual devices or as identifying tokens between individuals or groups which symbolised the obligations of an agreement, friendship or common bond. It is hypothesised that in the context of inter-settlement contact in the Peloponnese, various types of bonds among communities would have been beneficial during the Neolithic and that contractual devices or identifying tokens could have been used in a variety of contexts. They may have been used as tokens in a “down the line” mode of exchange or, perhaps, to identify messengers between villages, particularly in times of crisis, or even as markers of inter-village marital connections (Talalay 1993:45–46).

The second is linked to the idea that among the many types and subtypes of tokens only four were recovered in sepultures. Among them, miniature vessels are identified. It was recently stated that the ritual of depositing in burials tokens of special types, material and number, gives a valuable insight into

the important role of counters as status symbols. The fact that tokens occur only in the graves of prestigious near-eastern individuals points to their economic significance, which may imply that the tokens were a means of controlling goods in the hands of a powerful elite in redistribution centres (Shmandt-Besserat 1992a:101–107,167–183).

The third postulate diminishes the significance of the secondary centre of Neolithisation in southern Italy, which supposedly caused demic diffusion and the expansion of agriculture across the Adriatic to the eastern Adriatic coast (Müller 1994:273,274; Chapman, Müller 1990:128,129,132; Chapman 1994:143,144). The distribution of tokens links the eastern Adriatic coast with Thessaly and not with Apulia.

THE COMPLEX TOKENS AND SECONDARY PRODUCTS SCENARIO

The second part of this paper presents tokens which are discussed as “small clay cones” in the context of “conical clay stamp seals with circular bases” and “clay cylinders” (Makkay 1984). This discussion is linked to a thesis on a supposed discontinuity in the use of seals in the Middle Neolithic and their redistribution in the Late Neolithic. The appearance of the new cone and cylinder types in south-eastern Europe was therefore to prove the second Anatolian influence in the Late Neolithic (Makkay 1984:83–98). This can be easily correlated to Sherratt’s thesis on the so-called second diffusion of technological inno-

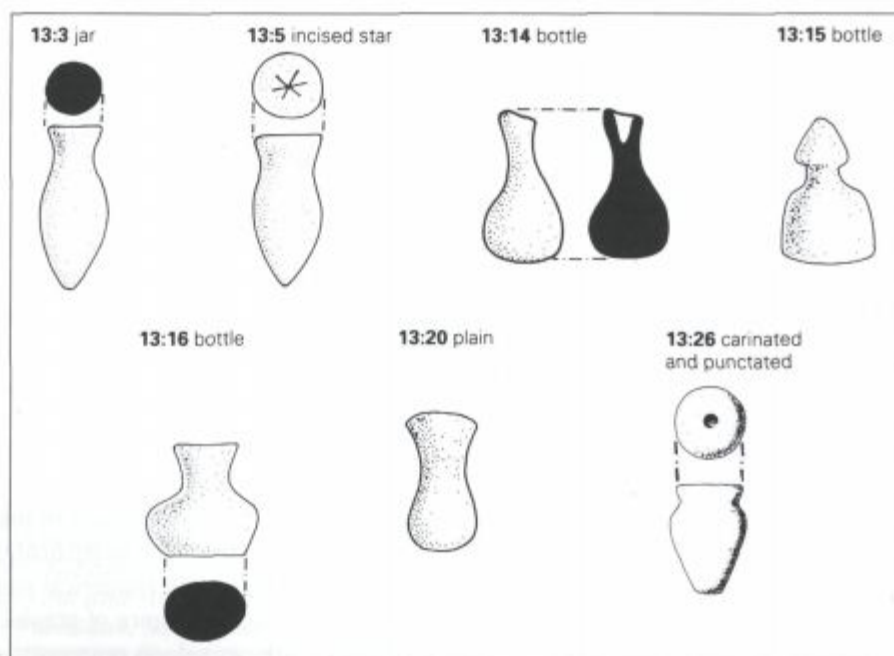


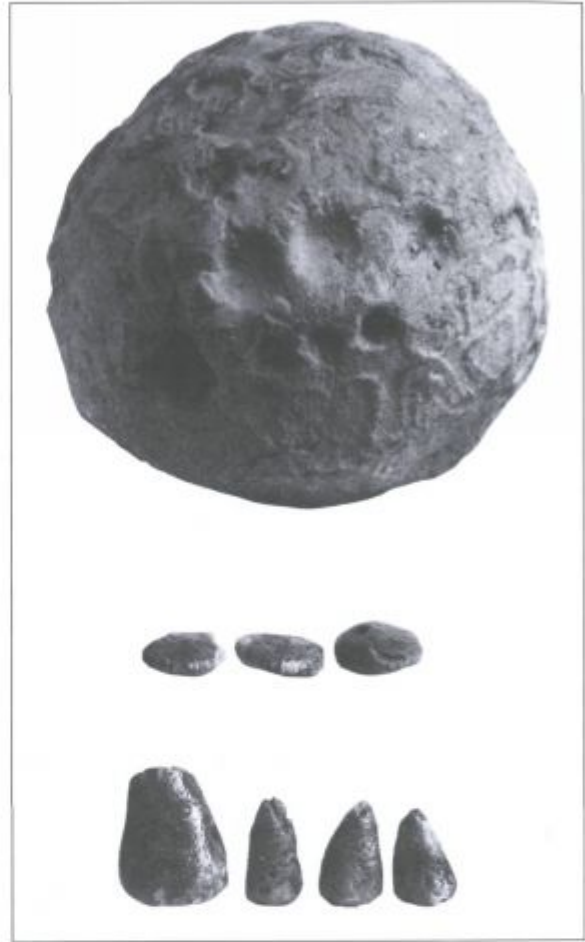
Fig. 2. Tokens, type 13: vessels (after Schmandt-Besserat 1992a:226–27. 13: 3, 5, 14, 15, 16, 20, 26).

vations from the Near East and the secondary products "revolution" or "scenario" in the fourth millennium BC in Eurasia (Sherratt 1981.261-305; 1997a. 1-15; 1992a.6-34; Chapman 1982(1983).107-122).

We have already mentioned that plain tokens continued to be used in the Near and Middle East to the middle of third millennium. In the sixth millennium, tokens are recurrently found in public buildings. The clusters of tokens found in situ usually range between a dozen to 75 artefacts, which shows that the counters were never kept in large quantities. It is hypothesised that the counters were mostly discarded during the summer, after the harvest, suggesting that an elite who controlled a redistributive economy used them.

In the early fourth millennium BC "complex tokens" appeared in large centres, and the quantum jump in the number of token types and subtypes seems to indicate a concern for more precise data. These tokens, which included many new forms and were characterised by having incised lines and punctuation, presumably corresponded with the creation of workshops, and the more diversified urban economy that followed required more accounting techniques. The evolution of the token system seems to reflect an ever increasing need for accuracy. This is exemplified, for example, by tokens dealing with livestock: the early plain cylinders and lentoid disks apparently stood for "heads of livestock", whereas the fourth millennium complex tokens indicated the breed "fat-tail sheep", the sex "ewe" and the age, "lamb" (Shmandt-Besserat 1997a.153).

According to Schmandt-Besserat (1992a.49-128) it was not a coincidence that the complex tokens phenomenon occurred during the formation of states. In all the major ancient Near Eastern cities such as Uruk, Susa, Chogha Mish and Habuba Kabira, the complex counters occur in levels characterised by seals and seal impressions featuring the ruler, and by pottery which probably served as grain measures. The administrative centres that yield complex tokens were the seats of the same bureaucracy, housed in similar buildings, using the same administrative devices: complex tokens, seals and grain measures and, most importantly, they were headed by the same powerful ruler. Two methods of storing tokens in archives were devised at the beginning of the fourth Millennium BC. The first consisted of enclosing tokens in clay envelopes (Pl. 2); the second, of tying perforated tokens with string. Both of them insured that groups of tokens representing one ac-



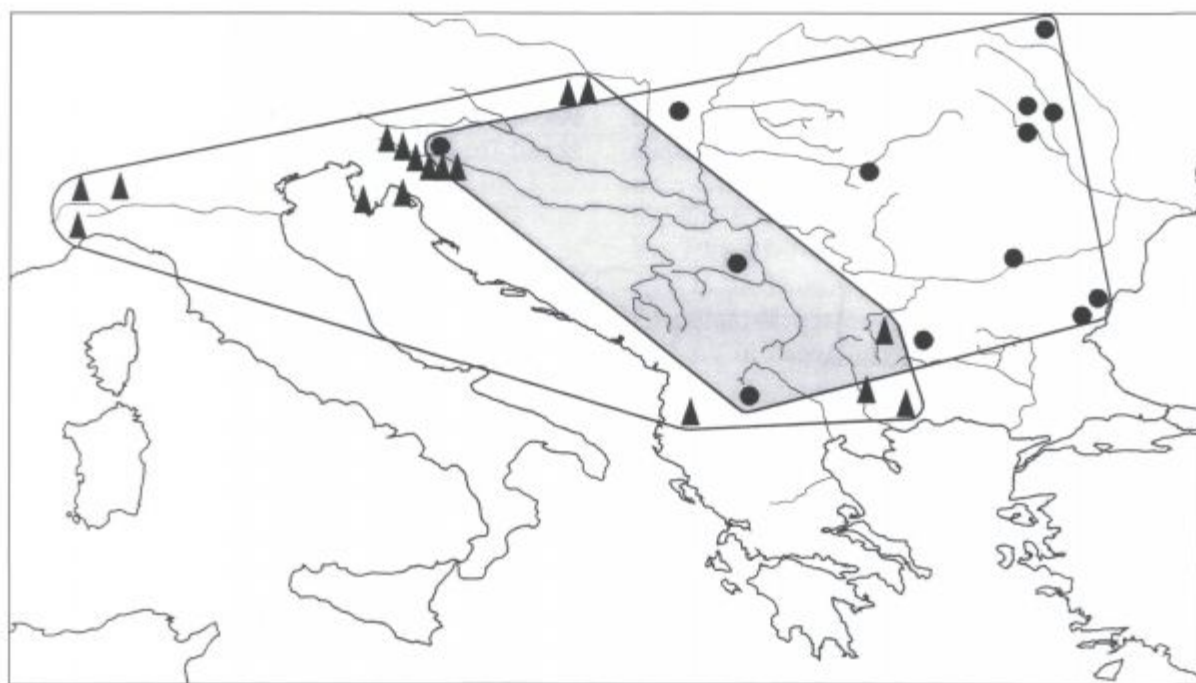
Pl. 2. Susa. Bulla bearing impressed markings corresponding to the tokens inside (after Schmandt-Besserat 1992a. Fig. 73; 1997a. Fig.3).

count were securely held together and that the transaction was identified by seal impressions. Accountants indicated the shape and number of tokens enclosed by imprinting each token on the outside surface of the envelope before enclosing it. The bullae provided the great advantage of securing the tokens tightly and presented a surface where seals could be used for authentication. Their disadvantage was that they completely hid the tokens, so any verification meant breaking the bullae. To overcome this difficulty some bullae have signs impressed on the outer surface, recording not only the numbers, but also the shape of tokens inside: circular impressions for discs and spheres, conical impressions for cones. The innovation was of great convenience, as it allowed one to "read" at all times the amount and kind of tokens without breaking the bulla. It seems that only a restricted number of token shapes are represented in the bullae, in particular those which can be paralleled with numerical signs. It is hypothesised that the appearance of graphic symbols on the surface of the envelope represents the transition between to-

kens and the first system of writing in the context of the evolution from tokens to markings on envelopes and impressed signs on tablets. Although impressed signs on the tablets still perpetuated the shape of the tokens, they assumed a new function, identified as “Whereas the markings on envelopes repeated only the message encoded in the tokens held inside, the signs impressed on the tablets were the message” (O. c. 129). The first group of impressed tablets has been dated to 3500 BC. In the course of time, solid clay tablets bearing impressed signs replaced the hollow envelopes holding tokens. Most importantly, the evolution from tokens to markings on envelopes and impressed signs on tablets should be understood as the forerunners of the Sumerian pictographic script (Shmandt-Besserat 1992a.129–165).

In the context of the secondary products scenario, the fourth millennium BC saw a series of changes which were in large part a consequence of the processes of the transition to agriculture that happened some five millennia earlier. According to Andrew Sherratt, the scenario is based on two premises. First, cereal grains themselves would at first have been “luxury” items of trade, that perceived quite differently from the staple commodity they were to

become. The diffusion of cultivated cereals and animal domesticates would have been “a social process of economic transaction and negotiation and not just a passive spread”. The expansion of cereal cultivation “around the inner rim of the Fertile Crescent” led to a process of diversification and interaction, which by 4000 BC had been objectified in new plant and animal products, inventions often capable of being stored or processed in large quantities. Some of these were new tree crops: the olive, fig and almond in the Levant, the pomegranate and vine in south-eastern Anatolia, and wool-bearing sheep, which seem to have had their origin in the Kermanshah region in western Iran. Two new “micro-domesticates” *Lactobacillus* and *Saccharomyces* made possible the production of cheese, yoghurt, leavened bread and beer. Second, the increasing networking of the Levant and Mesopotamia into a regional interaction zone led to a fundamental transformation in the way of life. The concentration of contacts and traffic into a few principal communication channels along the great rivers, the expansion of irrigated farming and the increasing role of added-value production, basically in the form of textiles gave rise to a contrast between a manufacturing core and a hinterland supplying raw materials which altered the economic and political character of the



Map 2. The distribution of Late Neolithic and Early Eneolithic clay tokens, cones (●) and cylinders (▲) (after Budja 1992. Karta 2). Overlapping distributions are shaded. Cones: Luka Vrublevetaja, Frumușica-Ce-tățuia, Hăbășești, Izvoare, Sultana, Ezerovo-Varna, Usoe, Plovdiv-Jasa tepe, Tordos, Porodin-Tumba, Grivac, Hódmezővásárhely-Vata and Moverna vas. Cylinders: Moverna vas, Zorenci, Pusti gradec, Limska gradina, Dietenberg, San Valeriano, Santa Maria, Maliq, Sitagroi, Dikili Tash, Bikovo, Gradec pri Mirni, Vorganska peč, Drulovka, Notranje Gorice, St. Stefan ob Stainz and Arene Candide.

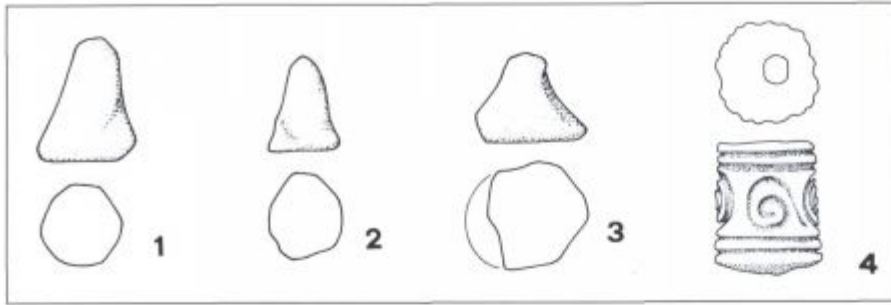


Fig. 3. Token assemblage from Moverna vas.

interaction. Within the core area this process produced an intensification of technological and manufacturing activities which, in turn, led to the active establishment of colonial stations to exploit the raw material sources. This expansion also involved the appearance of new agrarian centres, which rapidly developed into independent centres of activity with their own peripheries (Sherratt 1997a.6-11). In the secondary products scenario it was in the fourth millennium that the secondary products and secondary consumption patterns reached Europe in the context of a massive extension of the contact-radius on an inter-regional scale. The identified constituent elements of the diffusion to Europe are ox-traction and the plough, wool, milking, and innovations in copper metallurgy (Barber 1991.93-95, 99-100; Sherratt 1997a.11-15; 1997b.203-210).

Having thought about the system of counting in fourth millennium BC "spheres, cones, discs and cylinders, which are among the simplest shapes, represented the most common staples and in particular, grain and small stock" and "that these staples

were represented by the same token shapes from Syria to Iran" (Schmandt-Besserat 1985.152). Since cereals and small stock remained the basis of the economy of the entire region during the Neolithic and Chalcolithic, it is possible that the simplest shapes of tokens retained the same meaning in the token system of counting over the millennia (O. c. 151-152).

In the European interpretative contexts the identical cones were identified as "small conical objects" and "small clay cones" embedded within the Late Neolithic typological series, consisting of conical clay stamp seals with flat oval and circular ornamented bases and clay cylinders. Regional distribution of typological series served to prove the discontinuity in the use of seals in the central Balkans and eastern part of the Carpathian Basin. New forms of seals apparently proved their re-expansion in the Late Neolithic in the context of a new cultural impulse from Anatolia (Makkay 1984.82, 85-98, 100).

Discontinuity correlates with the geneses of the Vinča and Tisza cultures, while the distribution of new

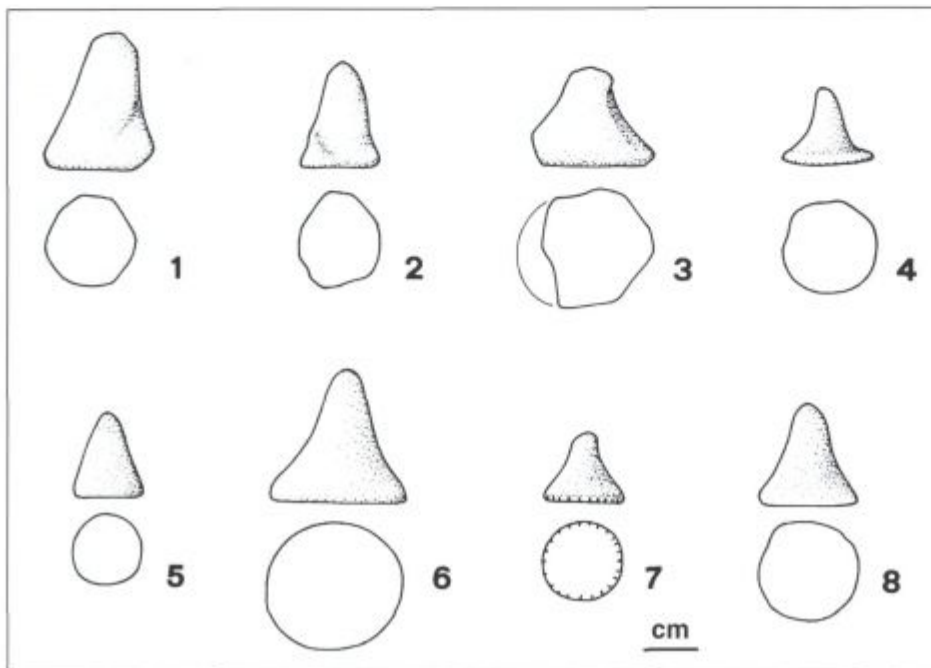


Fig. 4a. Clay cones. 1-3 Moverna vas, 4 Hódmezővásárhely-Vata, 5 Porodin-Tumba, 6 Plovdiv-Jassa tepe, 7 Izvoare, 8 Ezerovo-Varna (after Budja 1992. Sl. 2).

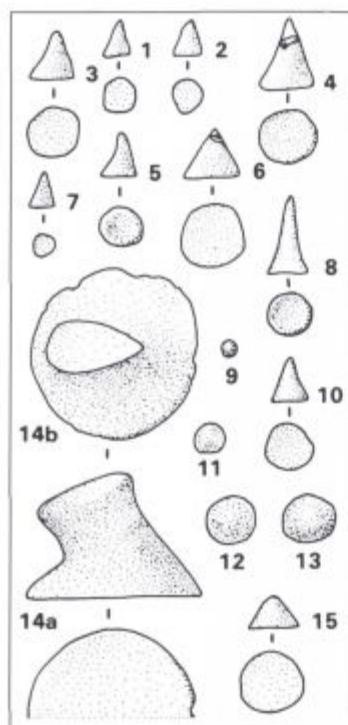


Fig. 4b. Clay cones. Usoe (after Todorova, Vajsov 1993. *Ris.* 201).

Moldavia and Besarabia) conical clay stamp seals with flat, oval and circular ornamented bases are documented. Presumably these seals are not related to any of the seals from the Early Neolithic in either typological or developmental terms (Makkay *o.c.* 1984.84–98,158). Makkay connects the distribution with a new, second, cultural and developmental impulse from Anatolia, but this time through Thrace, not Thessaly, since here a thesis on discontinuity cannot be proved and “Bulgaria was likely to have been the first recipient of such influences, including stamp seals” (*o.c.* 1984.89).

This series of presumed seals is also distributed through central European cultural complexes in the Late Neolithic and Early Eneolithic (Ruttkey 1993 (1994).221–238). At this point Makkay’s judgement that neither the Early nor the Middle Neolithic in central Europe have documented seals could be restated. They appear in the Late Neolithic, but only in the areas of painted pottery cultural groups (Lengyel complex). Such the geo-cultural limiting of distribution therefore determined a hypothesis on the transfer of seals from Gumelnița culture through the “eastern group of painted pottery” (Cucuteni-Tripolje) to the “western group of painted pottery” (Lengyel complex) (Makkay 1984.85–88).

types of clay seals in the Late Neolithic is connected with Gumelnița and Cucuteni cultures. Apart from a few exceptions, there are no records of Middle and Late Neolithic seals in the territory of the first two cultures. Considering that an explicit concentration of seals in the Early Neolithic existed in the same area (the Körös-Starčevo cultural complex), the change is obvious. However, only by neglecting the chronological correction already mentioned before relating to the division of the Early and Middle Neolithic (Budja 1992.98) can we take this change into account.

On the other hand, Makkay’s map shows a new distribution of presumed seals in areas which have no other record of Early Neolithic seals. In the area of the Karanovo III, Gumelnița and Cucuteni cultures (Thrace, the Lower Danube, the Eastern Carpathians,

In the central European series, there are also ornamented clay cylinders (Budja 1992.99–105, Ruttkey 1993(1994).221–238). Although special attention has been paid to them in Neolithic studies on long distance cross-cultural connections for quite some time, their significance has always been limited by a hypothesised gradual expansion from Anatolia (Makkay 1984.93–101) or through it (Hood 1973.192–195) to the Balkans, and from there to the area of the culture of square-mouthed pottery in Liguria and Piedmont in Italy. The regions were interpreted as

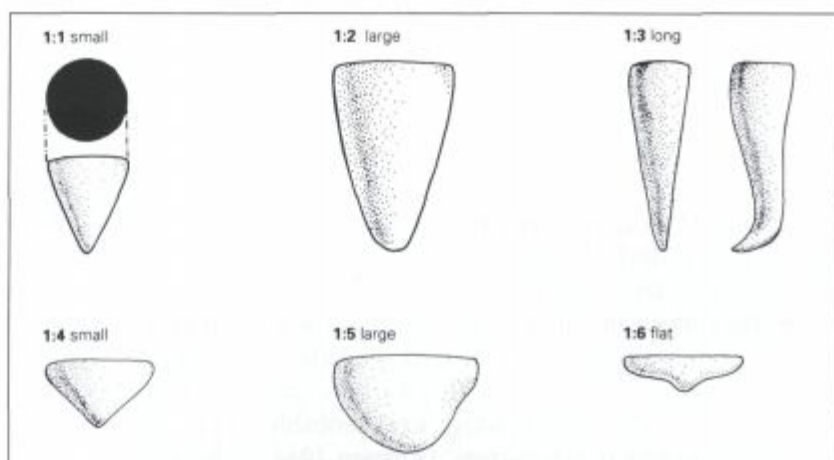


Fig. 5. Tokens, type 1: cones (after Schmandt-Besserat 1992a.203.1:1–3).

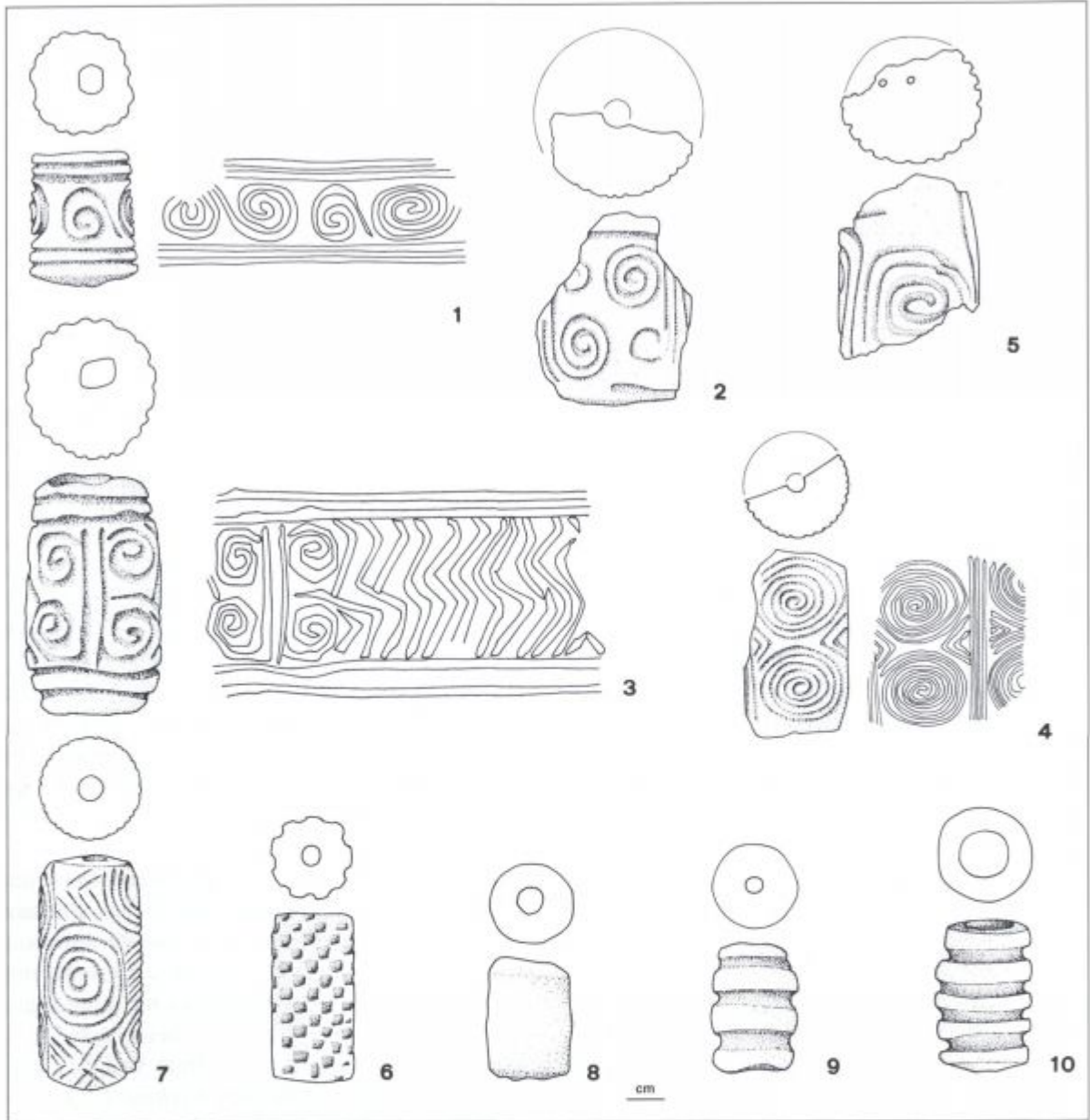


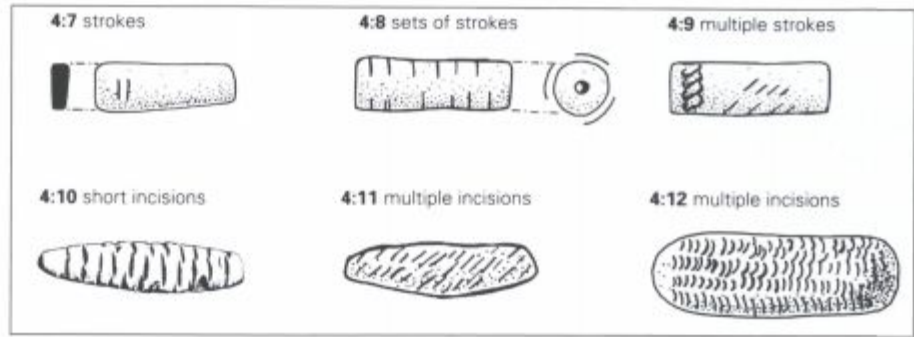
Fig. 6. Clay cylinders. 1 Moverna vas, 2 Zorenci, 3-4 Pusti gradec, 5-6 Limska gradina, 7 Dietenberg, 8 Gradec pri Mirni, 9-10 Drulovka (after Budja 1992. Sl.3).

the westernmost geo-cultural area reached by clay cylinders "in the context of Balkan ideological characteristics" in the Late Neolithic (Barfield 1972.199; Bagolini, Biagi 1985.54-55; Bagolini, Barfield 1991.290).

In this context we need to face three interpretative snares, two of which are linked to the typology and distribution of clay cylinders within the Early Neolithic Körös culture, the third to their dating. Due to their large dimensions, the perforated artefacts of cylindrical shape have been identified by the primary author as "clay weights which were probably used for the sinking of fishing-nets" (Kutzia 1944.

Pl. 1.10. 45. 9,12-16; 1947. 8; Makkay 1984.93. note 121). Other authors introduce a typological taphonomic filter and identify them as "clay cylinder seals" (Hood 1973.194. Pl. 5), but they overlook the fact that cylindrical weights were four to six times larger than clay cylinders and that 239 of them were discovered only in the Óbessenyő site (Kutzia 1947.8. note 41). A chronological snare lurks in the estimate that European clay cylinders were 1500 years older than those in the Near East (Ruttkay 1993(1994).230-233, 236). If this were true, there is a certain correspondence between such an interpretation and the claim that "European civilisation between 6500 and 3500 BC was not a provincial

Fig. 7. Tokens, type 4: cylinders (after Schmandt-Besserat 1992a.212, 4: 8, 10–12).



reflection of Near Eastern civilisation, absorbing its achievements through diffusion and periodic invasion, but a distinct culture developing a unique identity" (Gimbutas 1989.13). The dating is based on cigar-shaped cylinders, which are supposed to be the oldest (ca. 5000 BC), and which apparently appeared both in Aegean Macedonia (Sitagroi) as well as in Italic Liguria (Arene Candide) (Ruttkay 1993(1994). 236). We already mentioned that cigar-shaped cylinders, type 4:10–12, in the Middle East form a constituent part of both the plain and complex token assemblages (8000–2000 BC) (Schmandt-Besserat 1992a.17–29, 33–59).

What needs to be emphasised at this point is that a group of clay cones was already defined within the European Late Neolithic series of presumed seals, and treated in the context of long-distance cross-cul-

tural contacts (Budja 1992.98–105. Sl. 2. Karta 2). The opinion of the catalogue's author can nevertheless be restated, as it says that "these peculiar, small, conical objects cannot be regarded as stamps and probably served some other function" (Makkay 1984.22, 45, 84–92).

Clay cones have already been treated together with clay cylinders (Fig. 3), since they were discovered in the same stratigraphic context of the settlement deposit in Moverná vas. We realised that our options for an objective explanation of their distribution were limited, even if the seals and their symbols are understood as a preserved form of continuous recording of behavioural patterns of the Neolithic and Eneolithic communities, defined by Bailey as "linear chrono-types" connected with permanent economic activities and a stable social organisation (Bailey

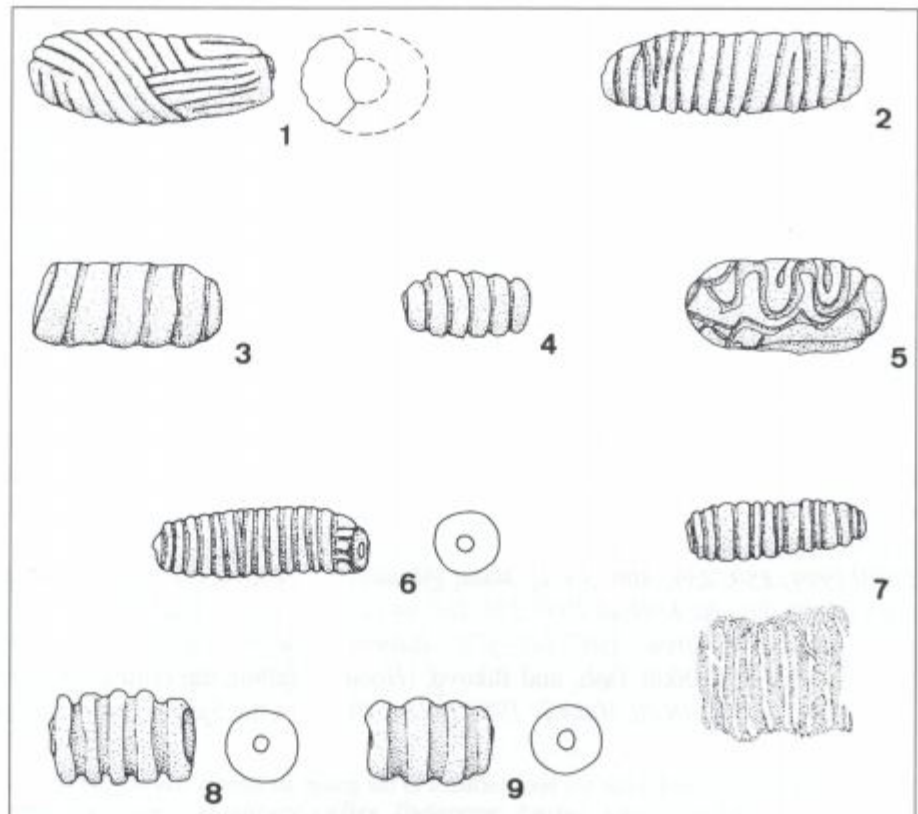


Fig. 8. "Zigarrenförmige" clay cylinders. 1 St. Stefan ob Stainz, 2–5 Arene Candide, 6. No-tranje gorice, 7 Sitagroi, 8–9 Drulovka, (after Ruttkay 1993 (1994). Abb. 4).

1993.204–222). Their distribution was linked to the idea of secondary products and given a special significance in explanations connecting them to the formation of a social élite and the establishment of redistribution centres, the exchange of goods, and trade over long distances or, perhaps, to the expansion of technology of extraction and processing of copper ore (Budja 1992.99,101–103. Sl.4).

This time the group of clay cones (Fig. 4a, b) moulded so that the diameter of the bottom surface, which is undecorated, is no larger than the height of the cone, are defined as tokens of cone type 1:1 (isosceles), which were used as counters to keep records of goods (Shmandt-Besserat 1992a.17–24, 203; 1992b.ix,xxvi) (Fig. 5). The group consists of cones documented in Late Neolithic contexts in Moverna vas, Hódmezővásárhely-Vata, Porodin-Tumba, Grivac, Ezero-Varna, Plovdiv-Jassa Tepe, Usœ, Tordos, Frumușica-Cețașua, Hăbășești, Izvoare, Sultana, Luka Vrublevetskaja (Budja 1992.99. Sl.2; Makkay 1984. Cat. Nr. 66, 68–75, 84, 85, 99, 103, 187, 191, 255; Todorova, Vajsov 1993.212–213. Sl. 201). According to the available data, fifteen were found in Usœ, thirteen in Frumușica-Cețașua, seven in Izvoare (one of them marble), three in Moverna vas, and one in each remaining site.

We include clay cylinders in the interpretative context because one of them (Fig. 3. 4; 6. 1) was found in Moverna vas in the same stratigraphic context of the Late Neolithic settlement deposit together with three cones. We believe that this is a token assemblage, dated to between 4360–4033 BC (OxA4626) (Budja 1993/94.20. Fig. 5).

In the group of clay cylinders we include decorated and undecorated cylinders (Fig. 6). According to Shmandt-Besserat (1992a.17–24, 212–213; 1992b.xi, xxv) they are comparable to types 4:8, 4:10 and 4:19 and, according to Ruttkay (1993(1994).230–233, Abb.4: 1–9) to “Zigarrenförmige Rollstempel”. The group consists of ornamented clay cylinders from Moverna vas, Zorenci, Pusti gradec, Limska gradina (Budja 1992.99–102. Sl. 3.1–6), Dietsenberg, San Valeriano, Santa Maria (O.c. Sl. 3.7; Ruttkay 1993(1994).230, 234, Abb. 3:1,2), Maliq (Makkay 1984.32–34. Fig. 26; Korkuti 1995.220, Taf. 94.22–23), Sitagroi (Renfrew 1987.341–374, Makkay 1984.54, Fig. 25), Dikili Tash, and Bikovo, (Hood 1973.193–194. Fig. 18,20; Makkay 1984.13–14, 19.

Fig. 9. *Vorganska peč* (after Müller 1994. Taf. 52).

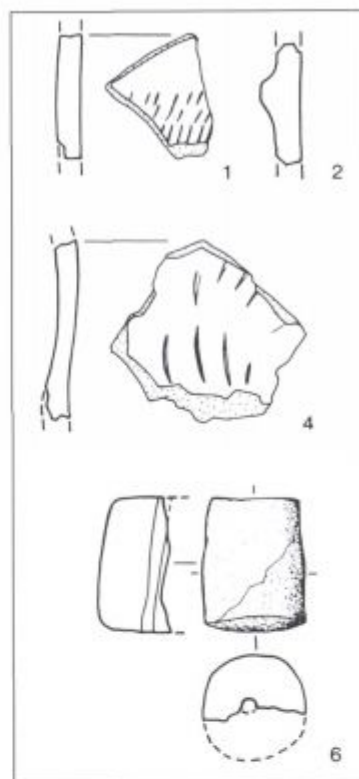


Fig. 25–26). Two, from Gradec near Mirna and Vorganska peč are not decorated (Budja 1992.104. Sl. 3.8; Müller 1994.138,313, Taf. 52. 6). According to Ruttkay, artefacts from Drulovka, Notranje Gorice, St. Stefan near Stainz and Arene Candide, belong in the cigar-shaped clay cylinder group (Budja 1992.104, Sl. 3. 9–10; Ruttkay 1993(1994).230. Abb. 4: 1–9) (Fig. 8)².

Chronologically, the clay cylinder assemblage is much less narrowly limited compared to clay cones. The oldest cylinder from Vorganska peč is dated within the Early Neolithic Impresso B level (Müller 1994.138,313) (Fig. 9). Among the youngest, Early Eneolithic, are two cylinders from Maliq (Korkuti 1995.216) and another from Dietsenberg (Ruttkay 1993(1994).230).

An analysis of the regional distribution of token assemblages has shown an interesting pattern, similar to that of the Early Neolithic, as discussed at the beginning of this paper. The distributions of cones and cylinders in the major part of their distributive range exclude each other, and overlap only in the areas of the western Dinaric (Bela krajina), Thrace (along the central stream of the Maritza river) and in the Šarsko-Pindos Mountains (Map 2). These are

² A clay cylinder from Tordos has not been included in the group. Its identity has still not been confirmed (Makkay 1984.60–61. Fig. 25.6).

the areas with obvious concentrations in the number of tokens, as well as in individual sites within the region (Budja 1992.104). In the eastern Balkans the distribution of cones corresponds with the distribution of zoomorphic figurine assemblages which, compared to anthropomorphic examples, is not very common (Todorova, Vajsov 1993.211. *Ris.* 198–200) (Fig. 10). Although it is suggested that the Neolithic assemblages of zoomorphic figurines in the Near East could be related to magic as was described in the cuneiform text (Schmandt-Besserat 1997b.48–58), we believe the concentrations of tokens and zoomorphic figurines along the transhumance routes in Pindos Mountains, Thessaly, Thrace and Rhodope Mountains are not coincidental (Beuermann 1967. 120–140.162–173).

CONCLUSION

Artefacts have been discovered in European Neolithic settlement contexts which, due to a taphonomic filter at different interpretative levels, assumed and retained the significance of marginal objects that in principle could be included neither in an analysis of the “Neolithization of Europe”, nor any other cross-cultural relations in Eurasia. If we decide to include

them, they can operate only at the level of determining typological links with Anatolia.

A different story emerges when these objects are interpreted as tokens, where certain forms presumably first signified goods (e.g. wheat, sheep, wool bales) and then numbers (one, ten, sixty) (Schmandt-Besserat 1992a). What is important here are the hollow clay balls in which clay tokens were kept, since certain figures which corresponded to the shapes on tokens kept in them were sometimes imprinted on their surface. The most important and most recent of them is a bulla found in the city of Nuzi (Iraq). The Nuzi bulla was found to contain 48 small objects, described as “pebbles” in the report. Unfortunately, the shapes of the “pebbles” were not described at all in the archaeological report. Unfortunately, they were later separated from their bulla and now they can no longer be identified. The surface of the bullae do not bear impressions that could be correlated to tokens. The bulla had the unique feature of a lengthy cuneiform surface inscription in Akkadian which referred to the “pebbles” as *abnu*. The translation of the inscription is as follows: *21 ewes that have lambed, 6 female lambs, 8 full-grown rams, 4 male lambs, 6 nanny goats that have kidded, 1 billy goat, 2 female kids. Seal of Ziqarru (the shepherd).*

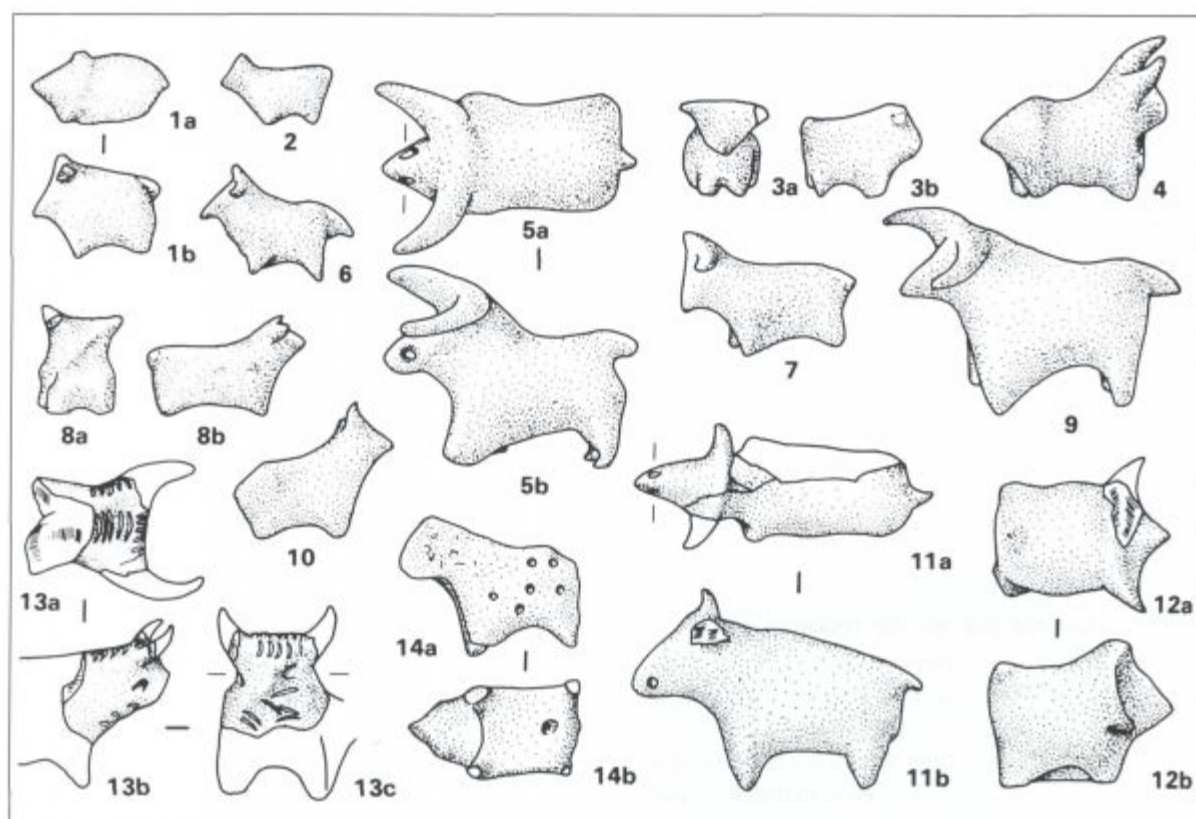


Fig. 10. Zoomorphic figurines in Usoe assemblage (after Todorova, Vajsov 1993. *Ris.*189).

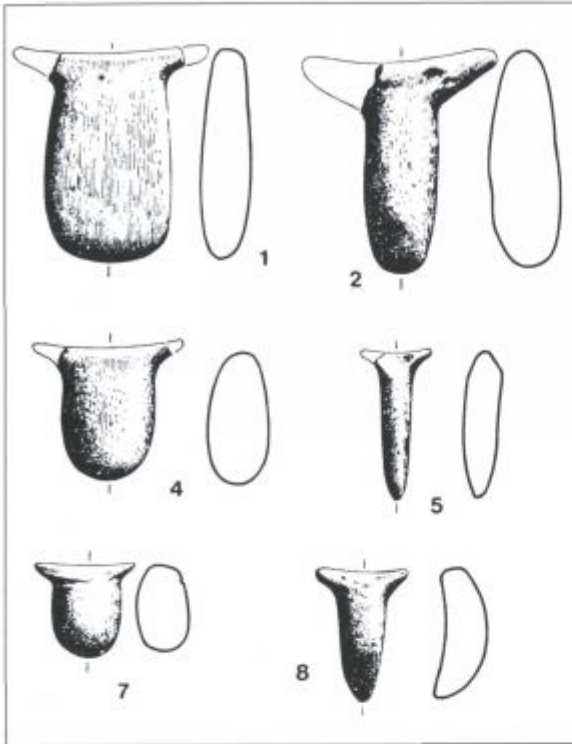


Fig.11. Token (?) assemblage in Knjepište in the Djerdap region (after Stanković, 1989/90(1991). T.1).

The total number of animals is 48, and there is no doubt that the *abnu* were counters (tokens) representing the animals of a herd. These texts suggest the existence of a system in Nuzi of keeping herd records by means of small counters. Each animal was represented by a small object or *abnu* and deposited in a receptacle, such as a pot or bulla, bearing a mention such as lambs, ewes, rams, billy goats, nanny goats, etc. New *abnu* would be deposited when new animals were born or passed into a new category. They would be removed when an animal was traded, or was slaughtered for food or sacrifice. According to Schmandt-Beserat, the bulla could be interpreted as a transfer of *abnu* from one account to another, if the bullae were used in an accounting system employing tokens to record transactions. The producer consigned goods to a middleman with a bulla containing a number of tokens corresponding to the consignment. In later periods the bulla was duly sealed for authentication. By breaking the bulla and counting the tokens, the recipient of the consignment could check the accuracy of the shipment upon arrival (Schmandt-Beserat 1977.61–66).

The system of counting and record keeping for goods and trading over long distances demanded considerable standardisation of tokens and symbols, as they needed to be understandable to everyone. With the

help of tokens in the form of vessels, clay cones and cylinders, this paper attempts to stress that south-eastern Europe was also included in this system during the Early Neolithic. We also believe that European Neolithic cultures developed their own types of tokens, and these cannot be compared typologically with those from Anatolia and the Middle East. We could perhaps recognise them by their extremely standardised forms (Fig. 11). We should not be disturbed by their being interpreted as zoomorphic clay amulets (Stanković 1989/90(1991).35–42; Matsanova 1996.108,109. Tab. 9). What is important is that they are documented in the Early Neolithic along the Danube, in areas settled by foraging groups before farmers.

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