

Spatial distribution of ceramic attributes on unused artifacts deposited in settlement context

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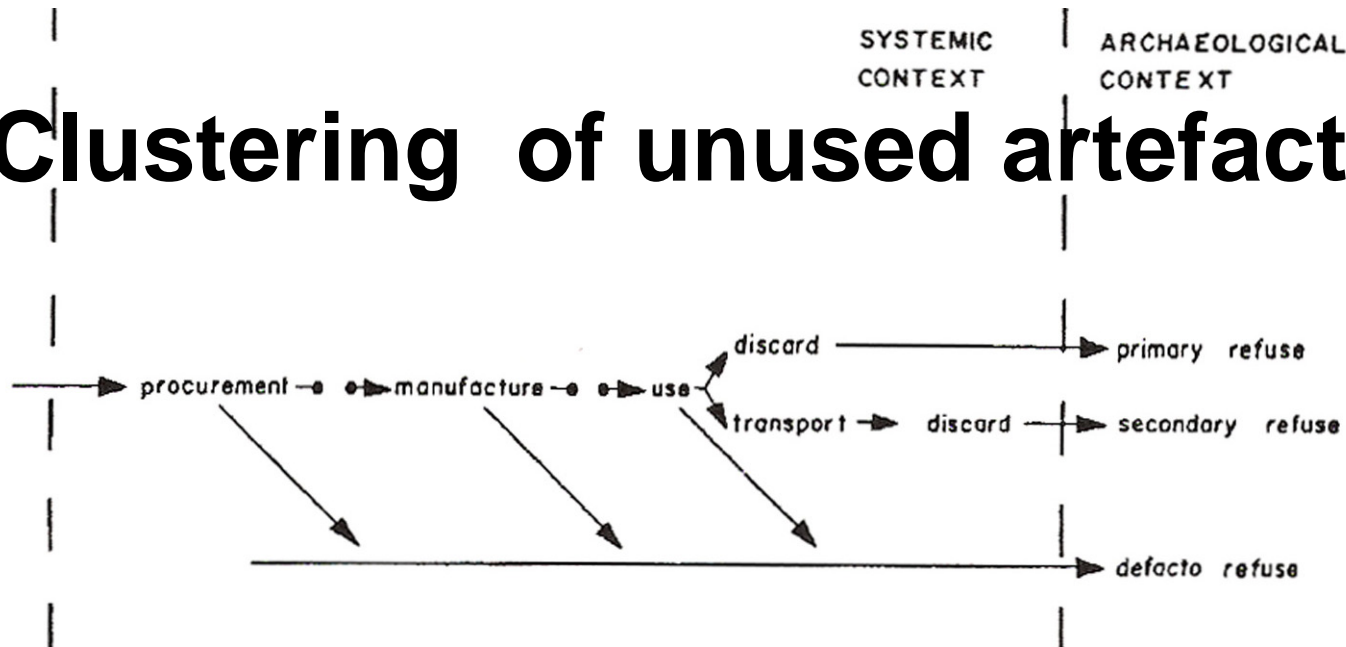
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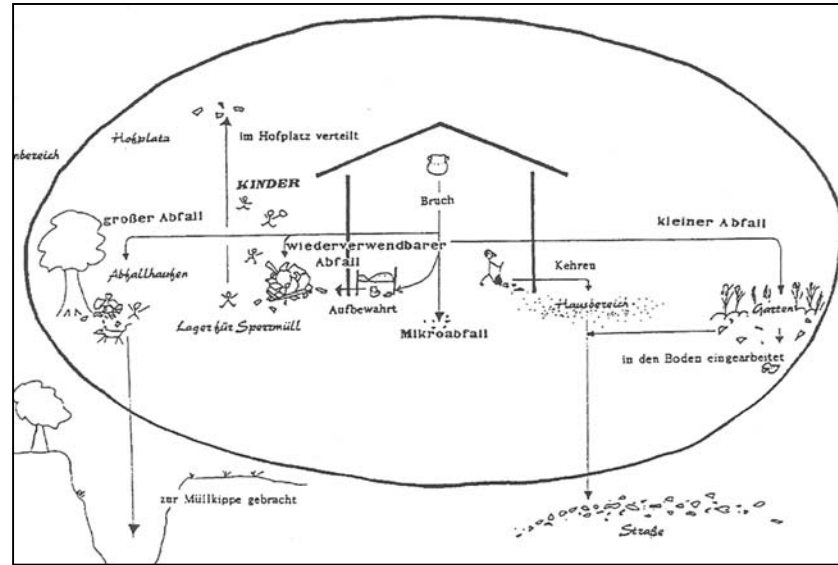
The settlement refuse is considered as a specific artefact and it can be analyzed using the same attributes characterising their original systemic contents. The structural values of attributes are not biased by structural changes of artefacts in the refuse contexts. Each attribute has its own prevailing meaning that can be interpreted during the spatial analysis of the refuse. Microspatial analysis of the one site situation is an important step for any systemic reconstruction of the archaeological finds.

Clustering of unused artefacts



- M. Schiffer prefers random process in forming of settlement waste, that forms in all phases of artifact's life and that passes through both culturally determined and also natural transformations. He presented the initial model of archaeological waste (Schiffer 1972, 162; 1987) that was influenced mostly by paleontologic taphonomy. (Sommer 1991, 75)
- Natural transformations suppose a predictable result the cultural are a result of human activity, which becomes evident mostly in clustering of artifacts. (Nash – Petraglia 1987, 187). There is no understandable border between natural and cultural process.

Deposition of artefactual fragments



- The over average amount of artifacts in clearly synchronic objects we call the *accumulation of waste*. We can expect uneven accumulation of waste on Neolithic sites.
- Even though their surface layer is archaeologically unnoticeable, the irregular quantities of waste in pits could be also explained by irregularities in spatial distribution of waste. These irregularities correspond to cultural and social patterns, according to which is the settlement area divided into different spaces that have a different status of utilization and maintenance.

Strucutred deposition

The theory of structured deposition supposes that all fragments of unused artifacts were intentionally deposited in designated places.

The structured deposition expresses clustering of artifacts as a consequence of formalized and repeated activities. It can be a result of a ritual but also of house - keeping activities, which are not straightly distinguishable among archaeological artifacts. Their difference lies rather in their scale than form. (Richards – Thomas 1984, 215)

There is an opinion that we cannot classify fragments of prehistoric artifacts as waste. The term “waste” originated in the 20th century, and it has nothing in common with former prehistoric society and its application is confusing.

All put away artifacts stayed part of the prehistoric household. (Chapmann 2000, 63) In addition to that the artifacts were intentionally deposited into different pits during their life cycle.

Models of spatial deposition

- The theoretical frame of spacial analysis of artifacts is on a specific site formed by the *situational analysis*, which provides a set and clear frame to multiple relations between artifacts and contexts. Such frame is defined by three basic points of view: the *formal*, the *functional* and the *symbolic dimension* of deposited remains. It is possible to depict these dimensions by the GIS methods, when the digitalized plan of the site is linked to the database of descriptions.
- We are looking for answers on questions such as:
- Which original activities can we delimit inside the settlement area?
- How do they correspond with special characteristics of different houses?
- What settlement tradition have they formed and in which ways has this tradition changed?

The ceramic waste in Bylany

Formal features of waste

- Quantity (total amount)
- Fragmentarization (index of fragmentariness = nr. of fragments/nr. of individuals)
- Dimension (index of weight = weight g. / nr. of fragments)
- Morphology (index of density = nr. / volume of context) /first applied in Bylany by Last as attribute A/
- Segmentarization (according to parts of vessels. Vessel = rim, side, bottom)

We distinguish three main categories of features due to their meaning:

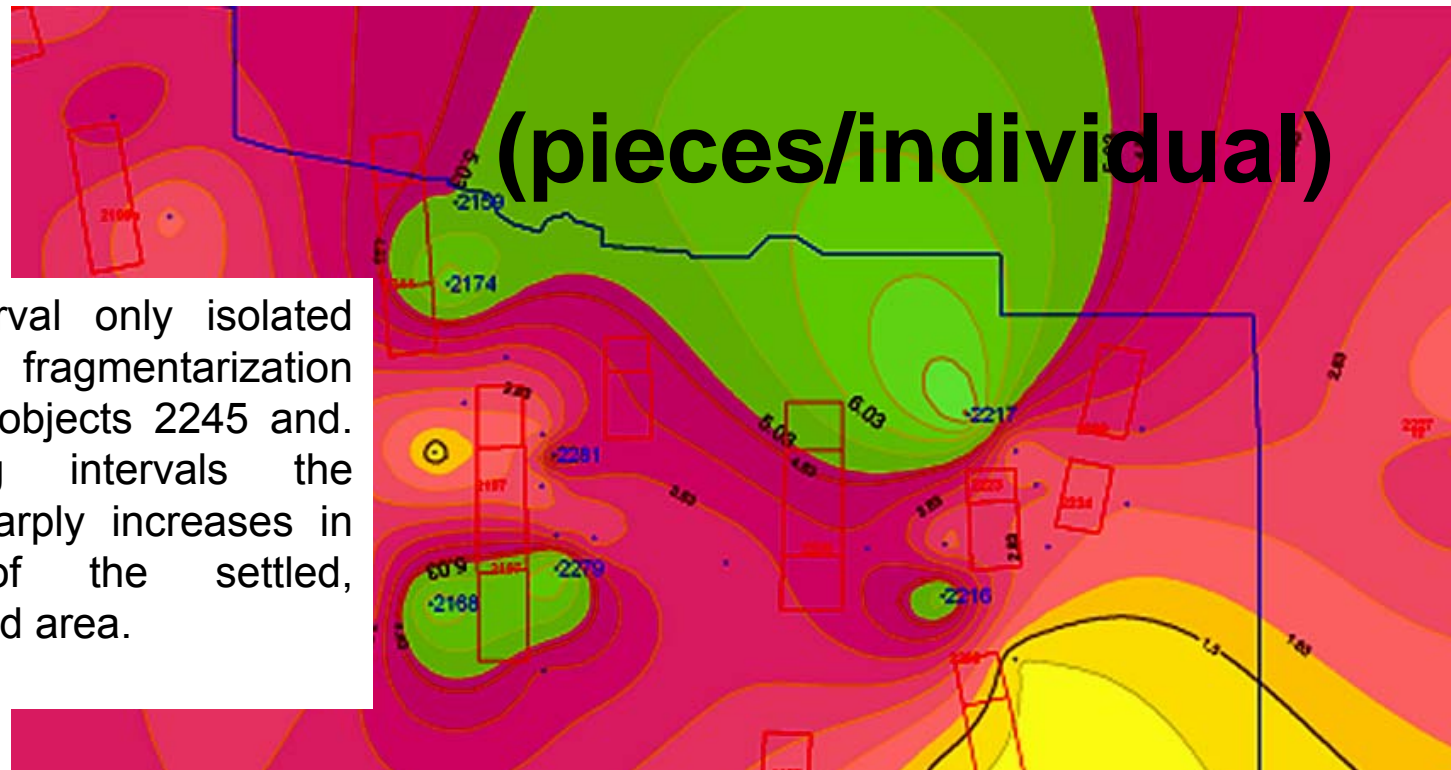
Formal features are given by size and shape of artifacts.

Functional features are given due to the original function of the artifacts. They are defined mainly by the functional sets of pottery.

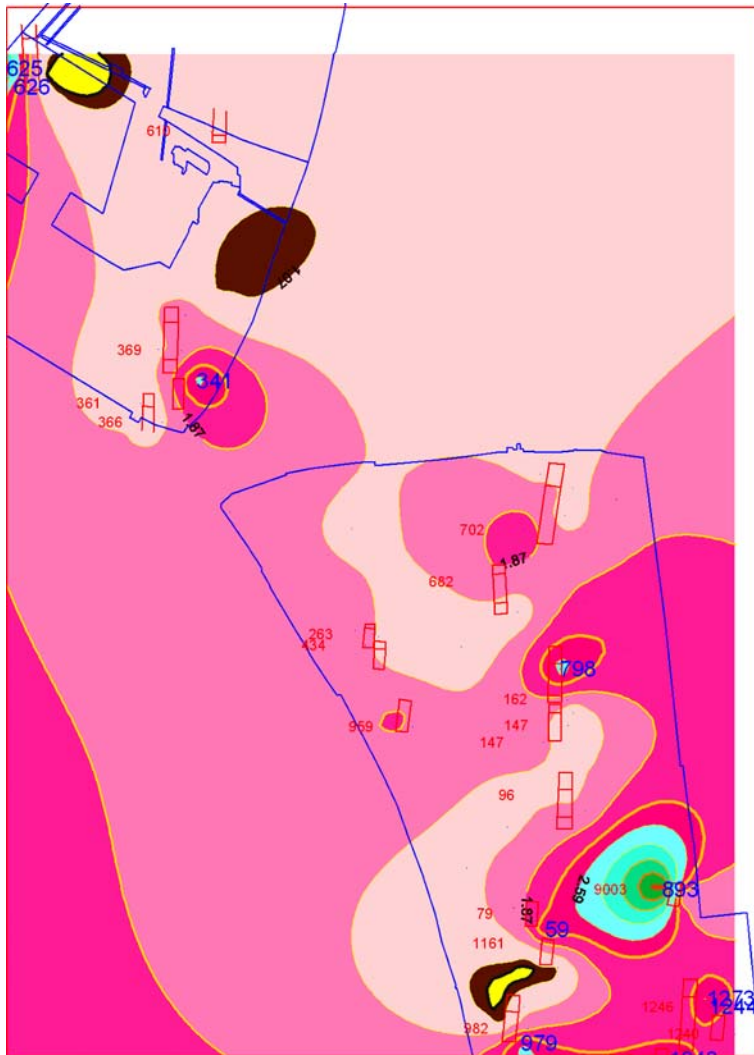
Symbolic features, e.g. categories or prototypes of pottery, or symbolic dimension of a decoration.

Fragmentarization

In separate intervals we have quantified the average values of fragmentarization, which form a range, given by the decisive divergence from the arithmetic average. Spaces with higher index should represent intentionally deposited fragments. In most intervals these spaces are isolated areas inside houses and they repeat more often in their marginal parts.

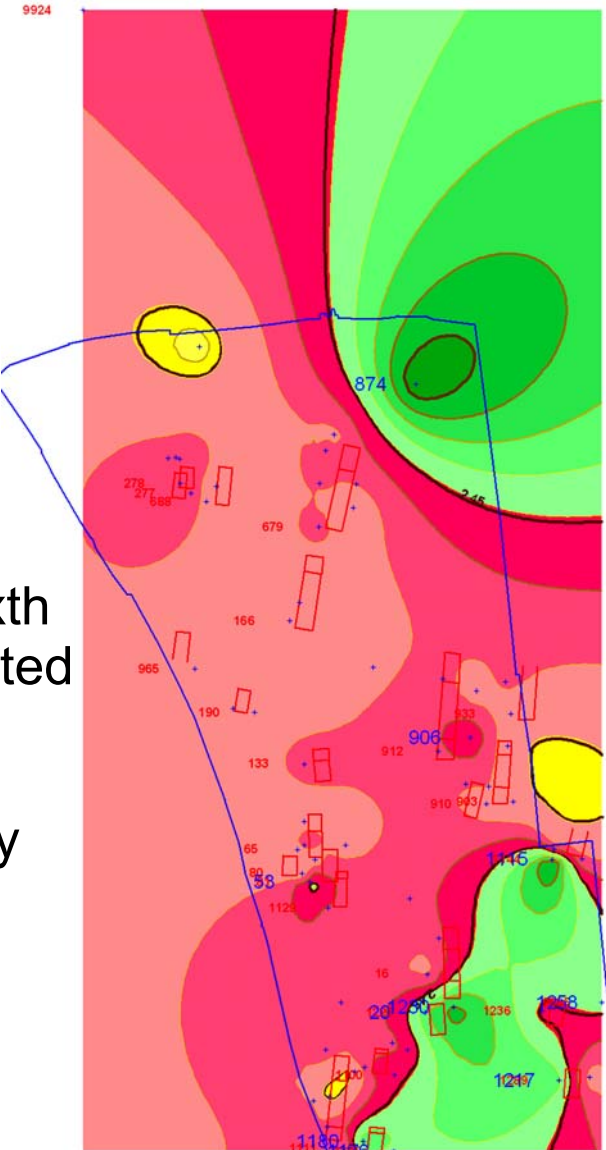


Fragmentarization



Formal attributes

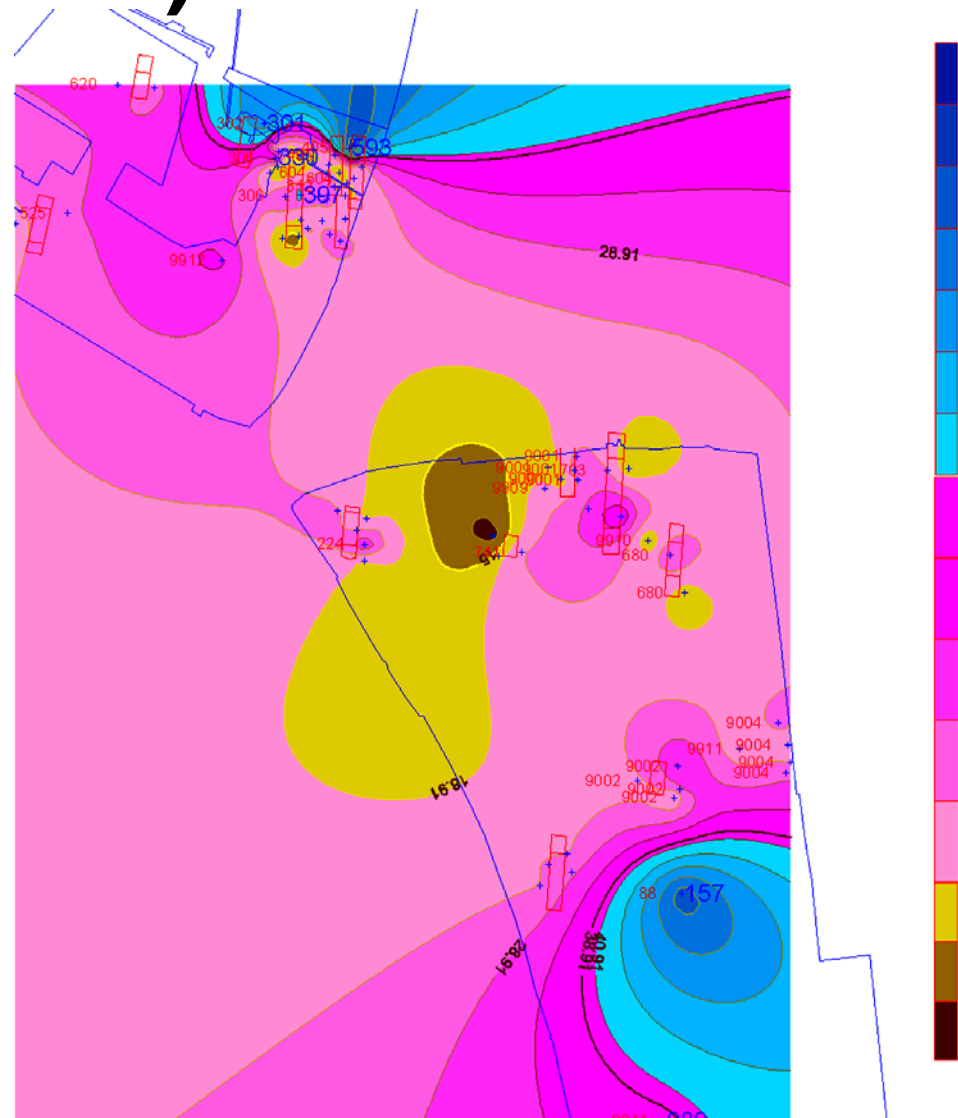
In the fifth and sixth intervals only isolated areas of increased fragmentarization emerge, defined by objects 893.



Dimension (total weight/number of pieces)

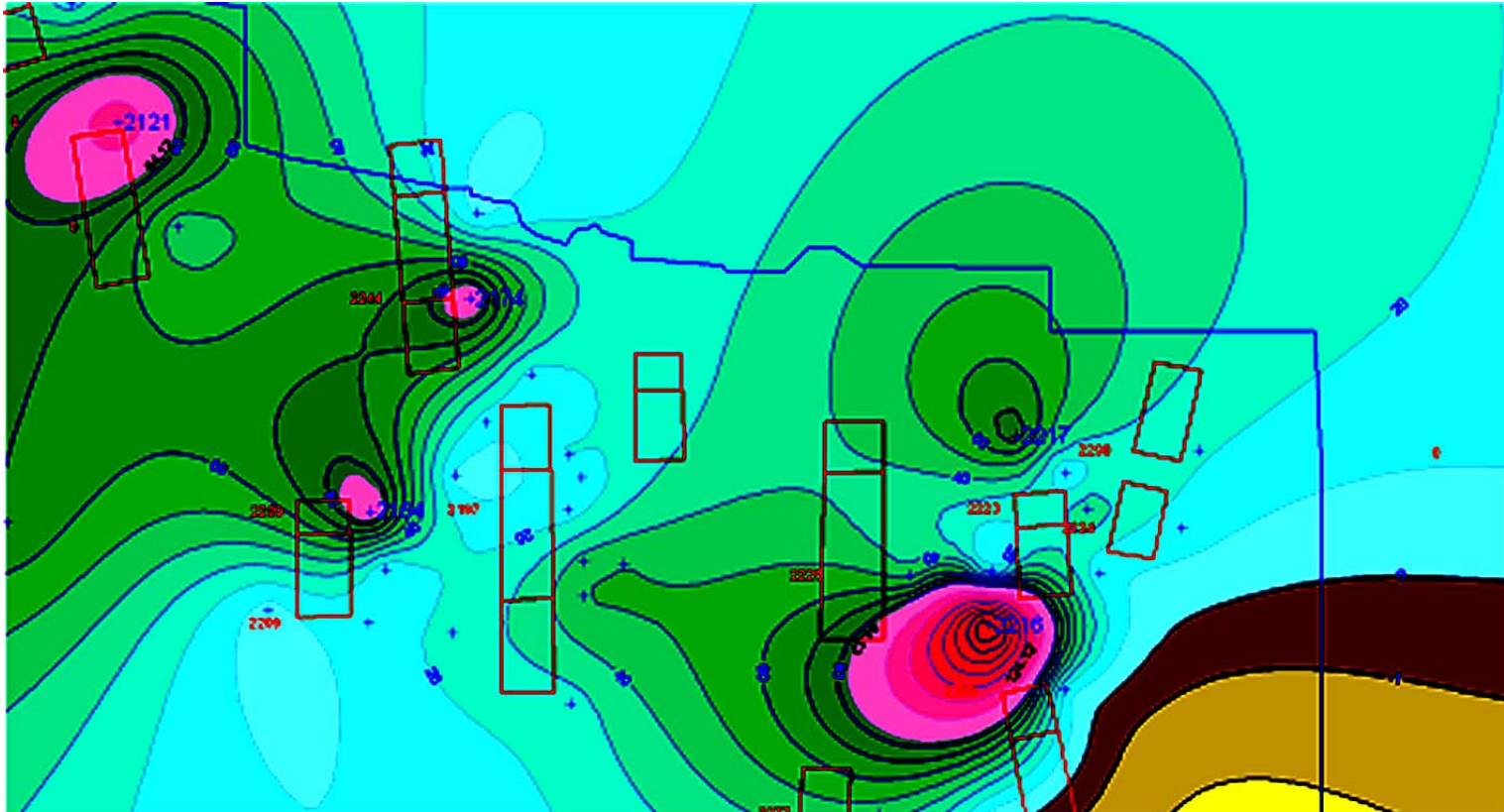
- The dimension of fragments is higher in periferic areas either on the whole site as in the third interval or within the local used spaces as in the fourth to six intervals.

Formal attributes



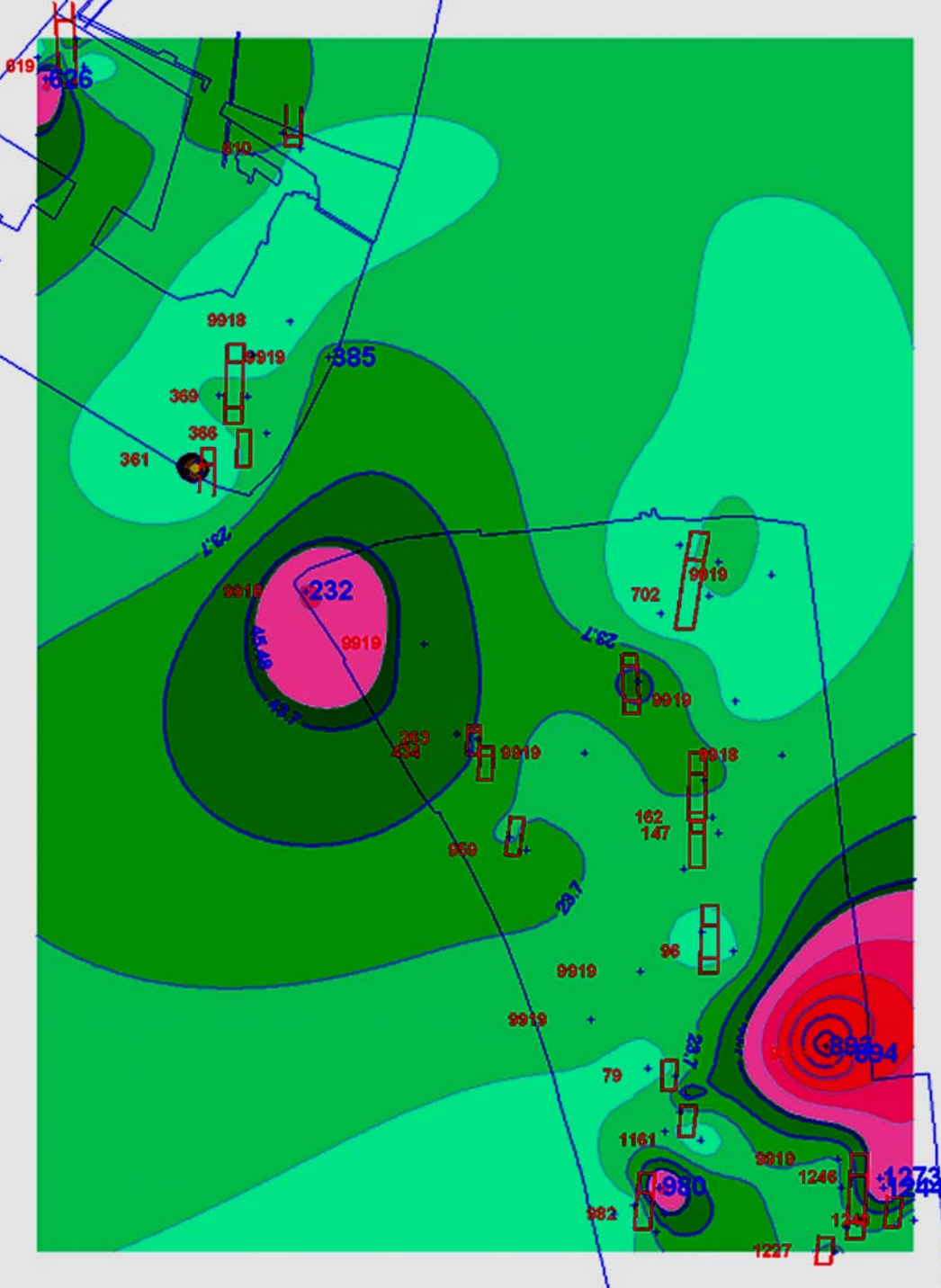
Morphology (density: piece/m³)

In separate intervals dominate the areas in the closest surrounding of the houses. In the first and second intervals we talk about the pits on the eastern and possibly on the northern side.



Formal attributes

Morfology

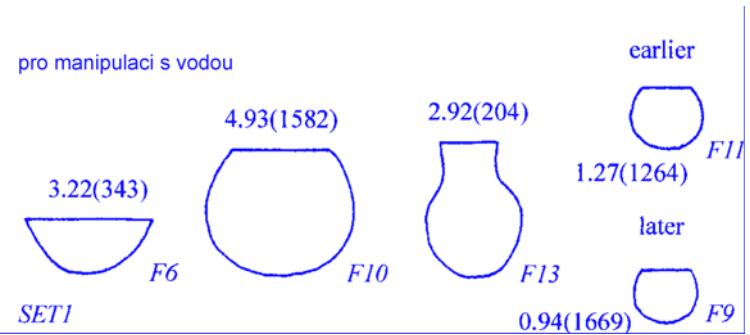


In the third through the sixth intervals dominate areas between the houses, and possibly objects on the edge of the settled area.

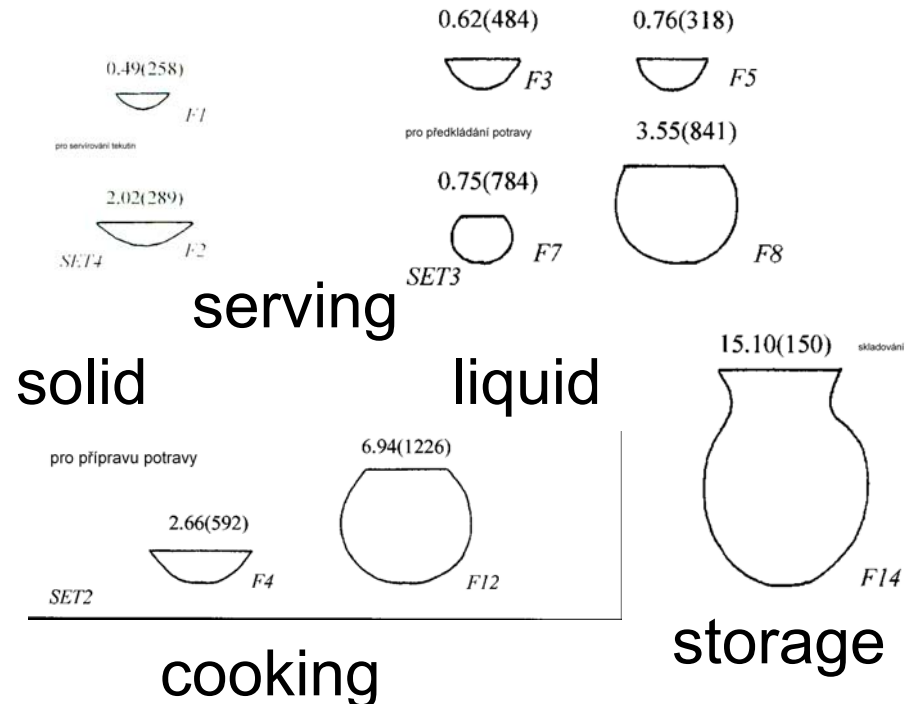
Formal attributes

The ceramic waste in Bylany

- *Functional features of waste*
- Specialization (functional sets of vessels)
- Demography (durability)
- Technology (fine/rough)
- Decorativeness (LO – PO – TO – NO)

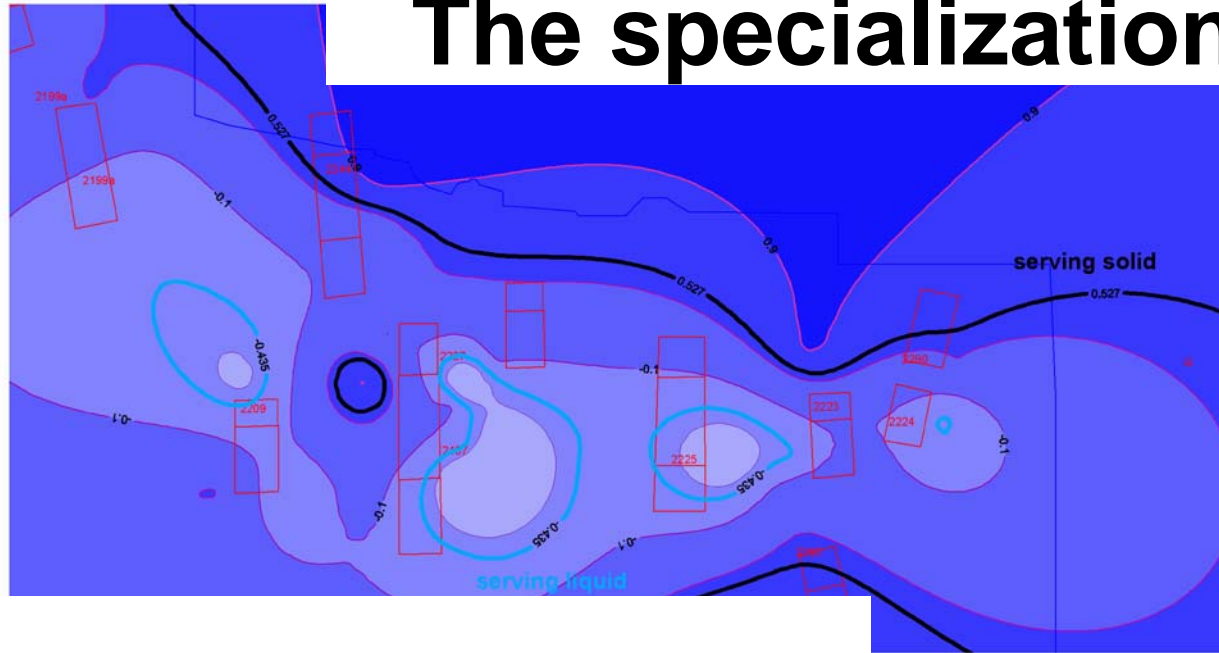


Water manipulation



Functional attributes

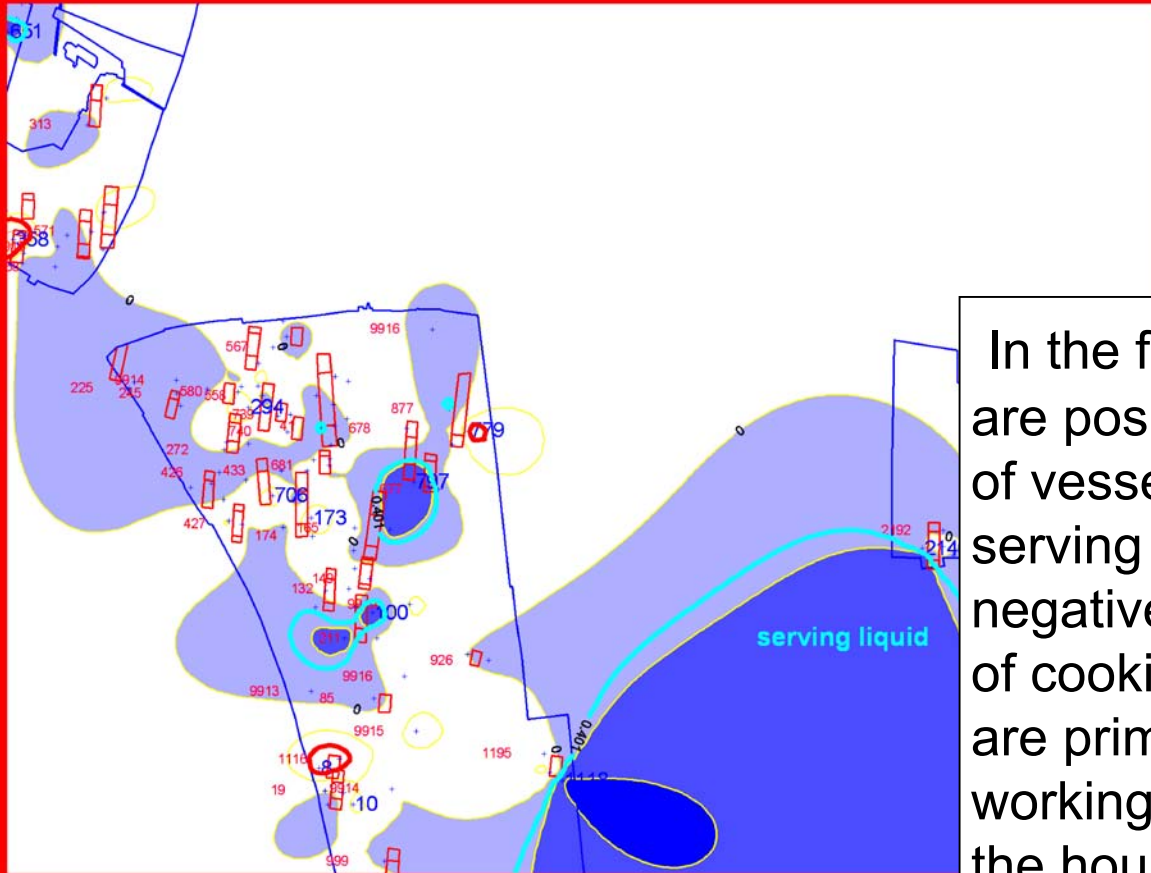
The specialization of shapes



- Spatial distribution of the first factor delimits in two earliest intervals rather continuous areas over the whole settled space. They are then delimited by the isoline of positive score for vessels used for serving solid (SESO) food.

Functional attributes

The specialization of shapes



In the fourth interval there are positive values for set of vessels used for serving liquid food and negative values for the set of cooking vessels, which are primarily connected to working areas in front of the houses, secondarily to working areas next to the walls of some houses (877) or behind the houses (1116).

Functional attributes

Use life of the shapes

We can mark the set for long-term storage as vessels with longest life-span, because it contains only large bottle-like stationary storage vessels. On the other hand, we describe the set of cooking vessels as vessels with shortest life-span, because these shapes were regularly exposed to temperature shocks, what has highly decreased their technological solidity. The third or fourth factor from the correspondence analysis of functional sets corresponds to this proposition. The spacial display of these factors is patterning the life-span on the site area.

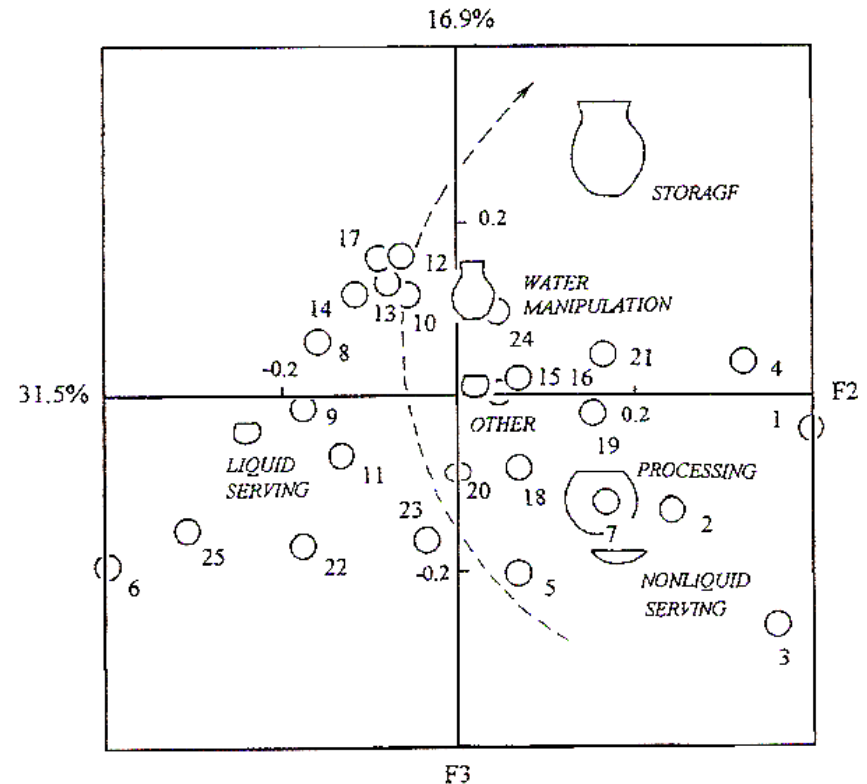
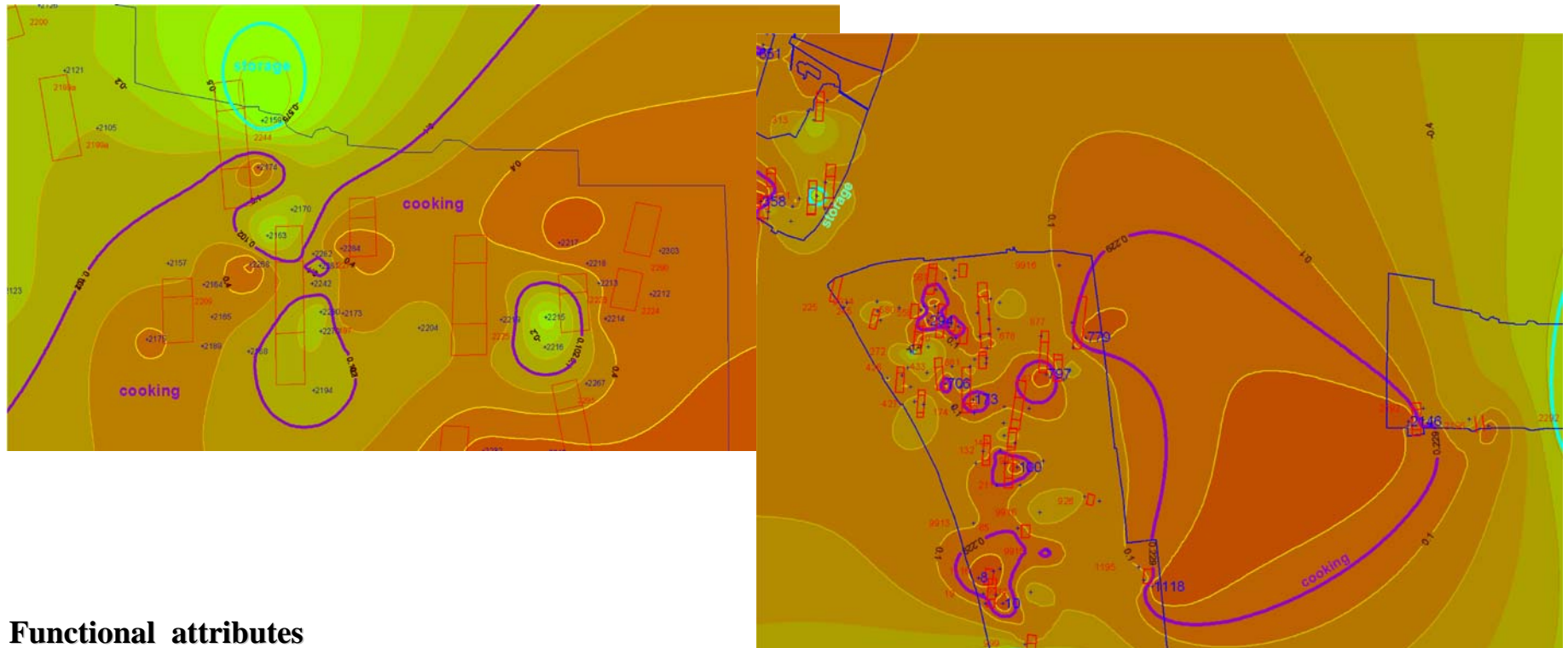


Fig. 4.5.7.a. Functional groups within the phases (factor 2 = structural?, factor 3 = life-span). The arrow indicates the trend from vessels with a short life-span to vessels with a longer life-span. - Funkční skupiny v prostoru fází (faktor 2 = strukturální?, faktor 3 = životnost). Šipka naznačuje trend od nádob s krátkou životností k nádobám s delší životností.

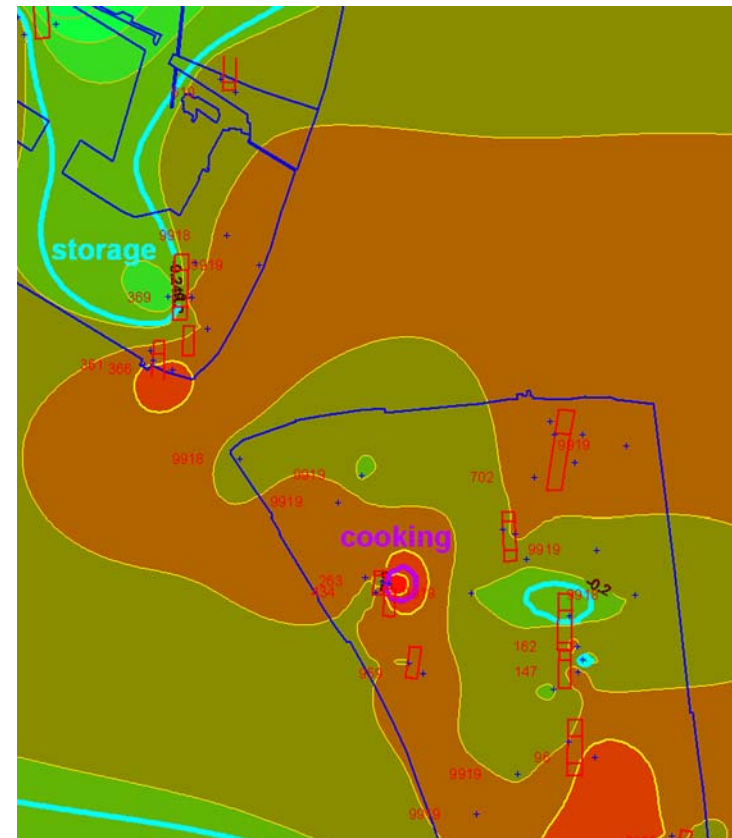
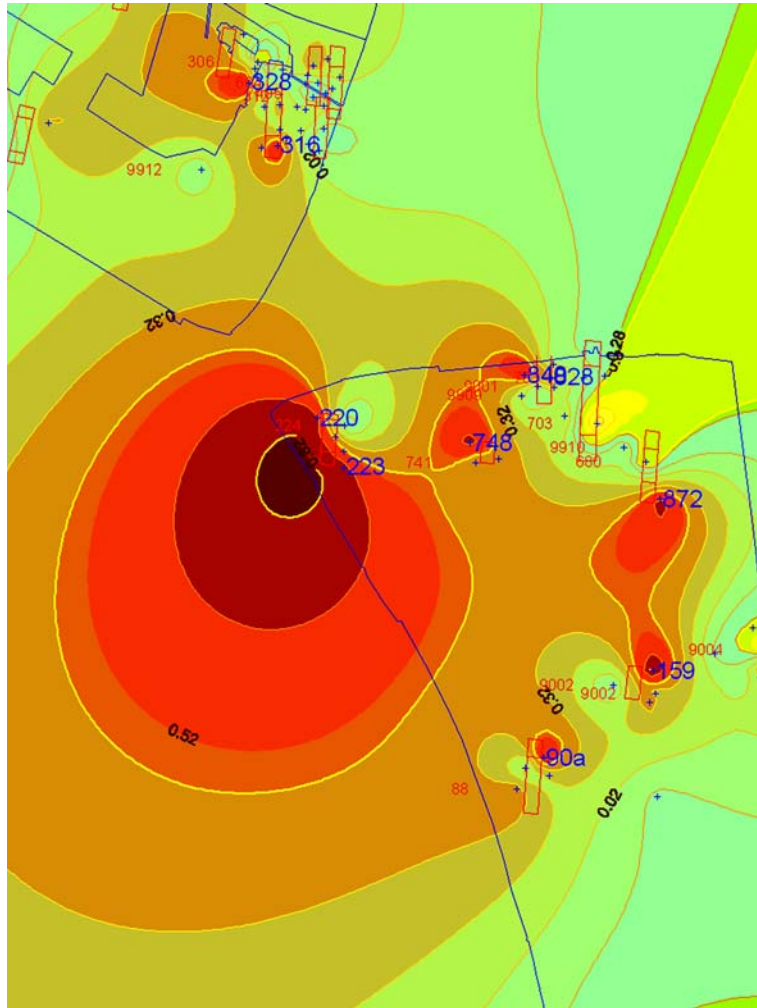
Use life of the shapes

In first a second intervals the area with shortest durability includes great part of living space, while a large inner area, delimited by vessels with longest durability, forms the third interval. In fourths and sixths intervals is the space of residential area delimited by several smaller areas of cooking vessels, in the fifth interval by the storage vessels on the contrary.



Functional attributes

Use life of the shapes

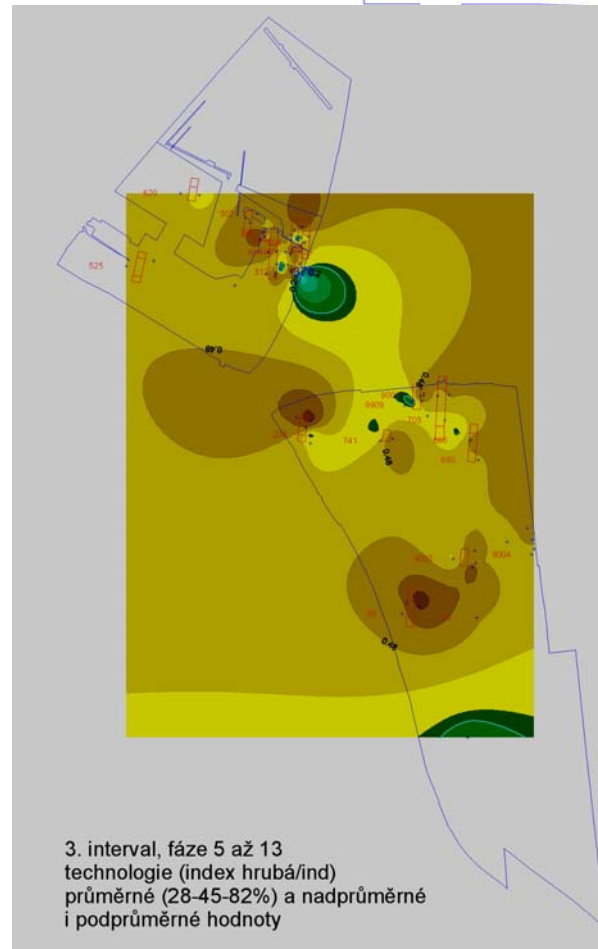
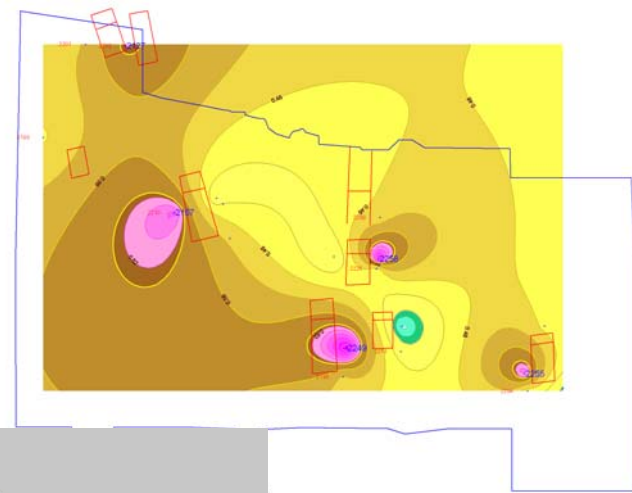


The increased accent on storing in vessels especially in the third interval could correspond with very positive values of qualitative indexes for chipped industry and for house constructions of this interval (Pavlu 2000, 270). If we wanted to extend the interpretation, we could describe the third interval as economically most successful period of the whole duration of the settlement.

Functional attributes

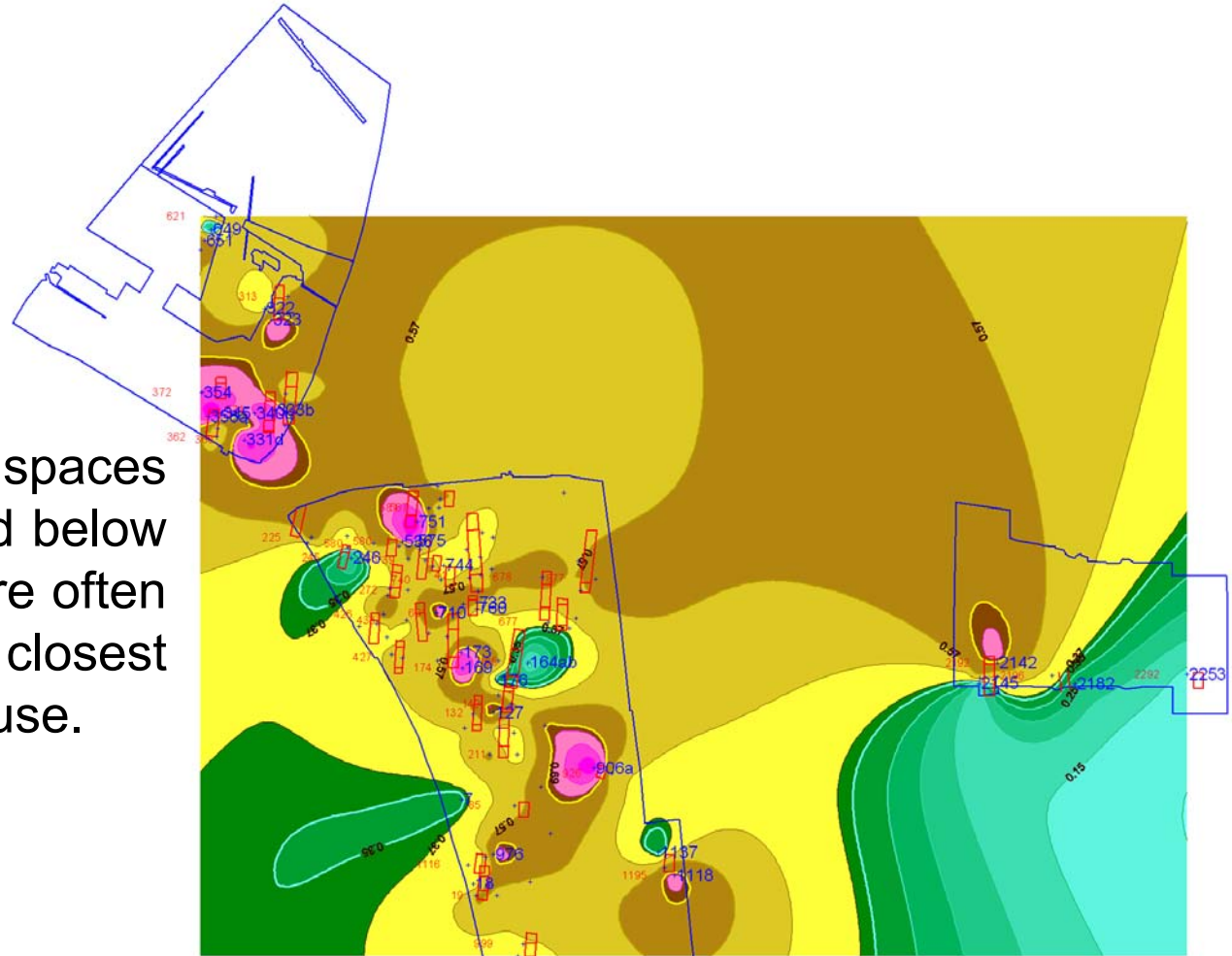
Technology

- In first and second intervals, the areas delimited by over average values of the index concentrate along the sides of some houses, more often on their eastern sides. They don't almost express themselves in the third interval, though.



Functional attributes

Technology



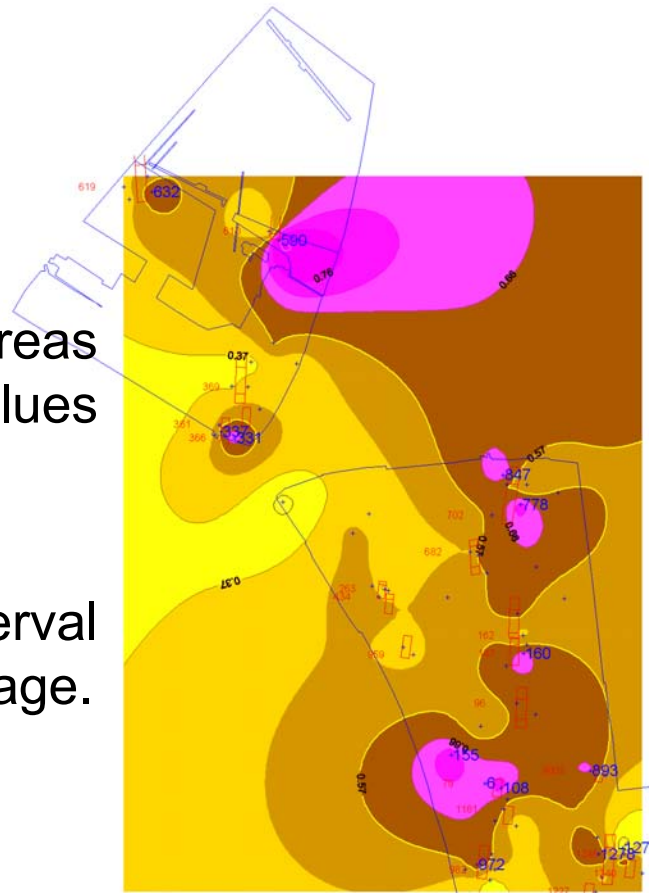
4. interval, fáze 13 až 17
technologie (index hrubá/ind)
průměrné (37-53-69%) a nadprůměrné
i podprůměrné hodnoty

Functional attributes

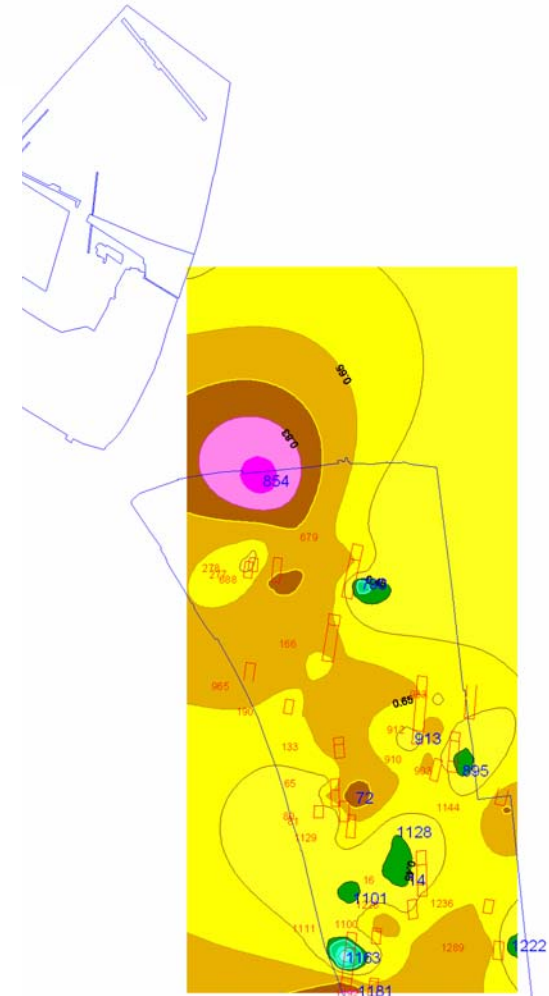
- In the fourth interval spaces with over average and below average alternate more often out of the closest surrounding of the house.

Technology

- In the fifth interval areas with over average values dominate.
- In the sixth interval dominate the below average.



5. interval, fáze 18 až 20
technologie (index hrubá/ind)
průměrné (40-53-66%) a nadprůměrné
i podprůměrné hodnoty



interval, fáze 21 až 25
technologie (index hrubá/ind)
iměrné (45-59-83%) a nadprůměrné
odprůměrné hodnoty

Functional attributes

The ceramic waste in Bylany

Symbolic features of waste

- *Psychology (prototypes)*
- *Sociology (motives)*

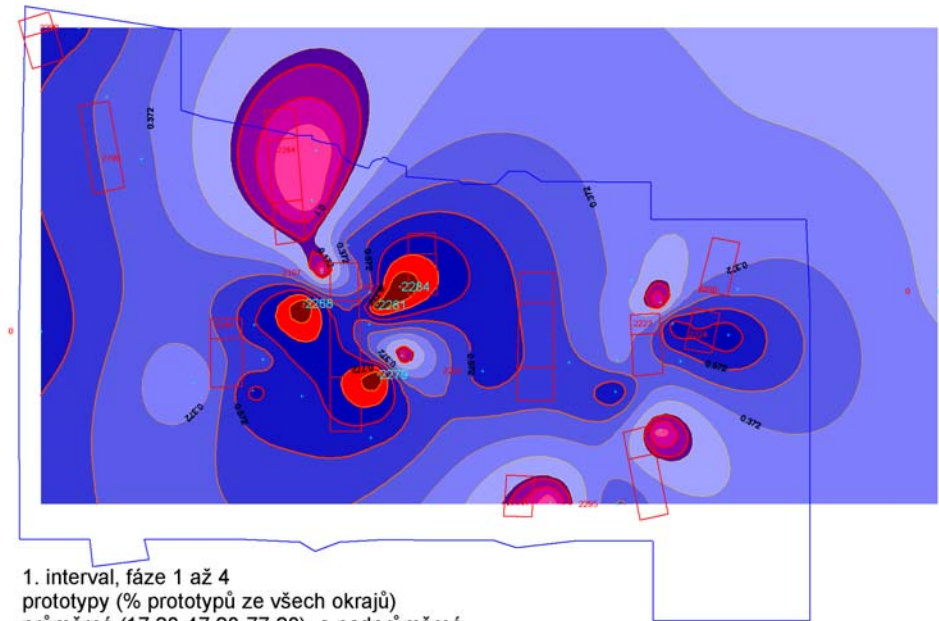
- Functional and symbolic dimensions of preserved waste are mutually interconnected. Waste is the material expression of working areas. It is a result of the effort to keep the living space empty and clean (Last 1998, 19), but we cannot evaluate it from our modern view of cleanness (Hodder, Present Past).

C	4	6	8	10	12	14	16	18	20	22 mm
4	2	3								
6		23	59	4						
8			56	184	46	1				
10				54	385	195	4			
12					31	289	155	1	1	
14						11	128	8		
16							6	16	1	
18								2	2	
20									1	N=2

Fig. 4.7.1.b. Prototypes of hemispherical vessels (A-SHASI7, B-SHASI9, C-SHASI11). - Prototypy polokulovitých nádob.

Prototypes

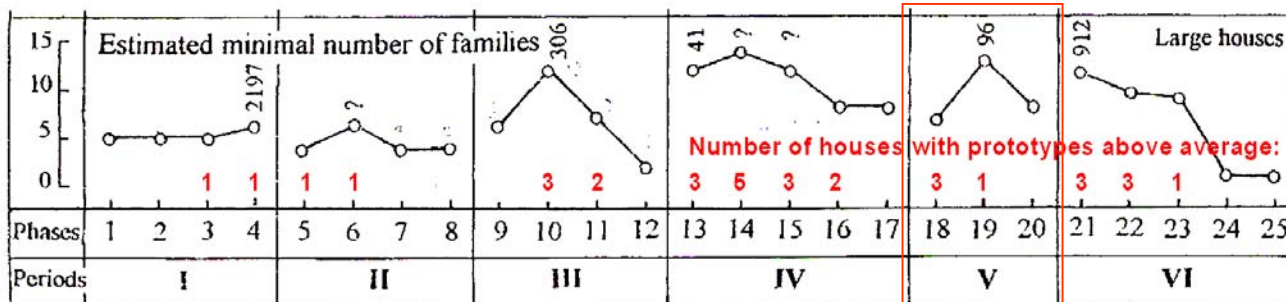
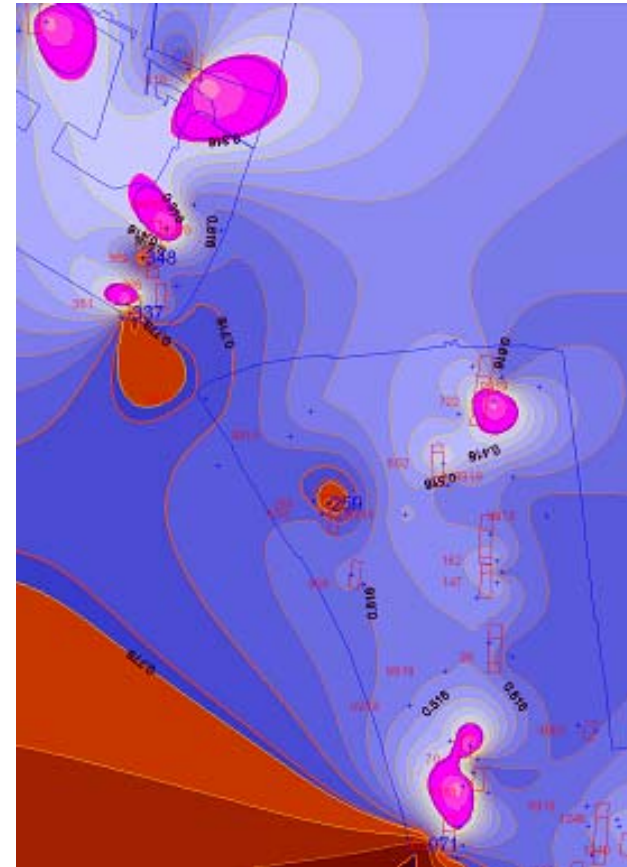
We managed to quantify the representation of specific combinations in the theoretical matrix of the height-width index for each functional group of vessels separately. Categories, in which the artifacts were represented by an over average number of pieces, were marked as prototypes. In the collection of rim fragments the presence of a prototype was described, aside from codes “none” and “unknown”. The index of prototypes was calculated as the ratio of proven fragments of prototypes to all rim fragments in examined collection. The average number of prototypes oscillates within the bounds of intervals between 41 – 61%.



We can understand prototypes and their spatial distribution as an expression of different social status of populations of contemporary economic systems. In the first interval, the highest values concentrate around the house 2227 (3rd phase) and 2197 (4th phase).

Prototypes

- In the fifth interval we find higher values of prototypes near houses 263, 369 and 982 (18th phase) and also near the house number 337 (19th phase). In general it is only few such houses here, on the contrary more places with a below average occurrence of prototypes emerge.
- Houses with a higher percentage of prototypes are mostly missing in final phases of intervals but their amount increases regularly in correlation with higher estimation (Pavlů 2000, 270) of number of families per phase (10, 13 – 15, 18, 21, 22). The only exception is phase 19, where we would expect higher number of houses containing prototypes. That could be explained as temporal drop of overall level of



CONCLUSIONS

*We describe the preserved remains of artifacts as waste in broader sense. It is possible to consider it as an artifact of its own type and analyze it with the help of the same attributes, which characterize artifacts in their original systemic content.

*Each attribute has its own prevalent importance, which enables interpretation of its spatial distribution, based on spacial analysis.

*The values of one dimensional attributes or factors of multidimensional attributes in the settlement area form their own patterns and enable an interpretation of their meaning referring to other contexts. The spatial distribution of above average values is considered as the most diagnostic.

*Microspatial analysis in contexts of one settlement is an important step towards reconstruction of original systemic composition of archaeological artifacts.