

Patterns of settlement discard

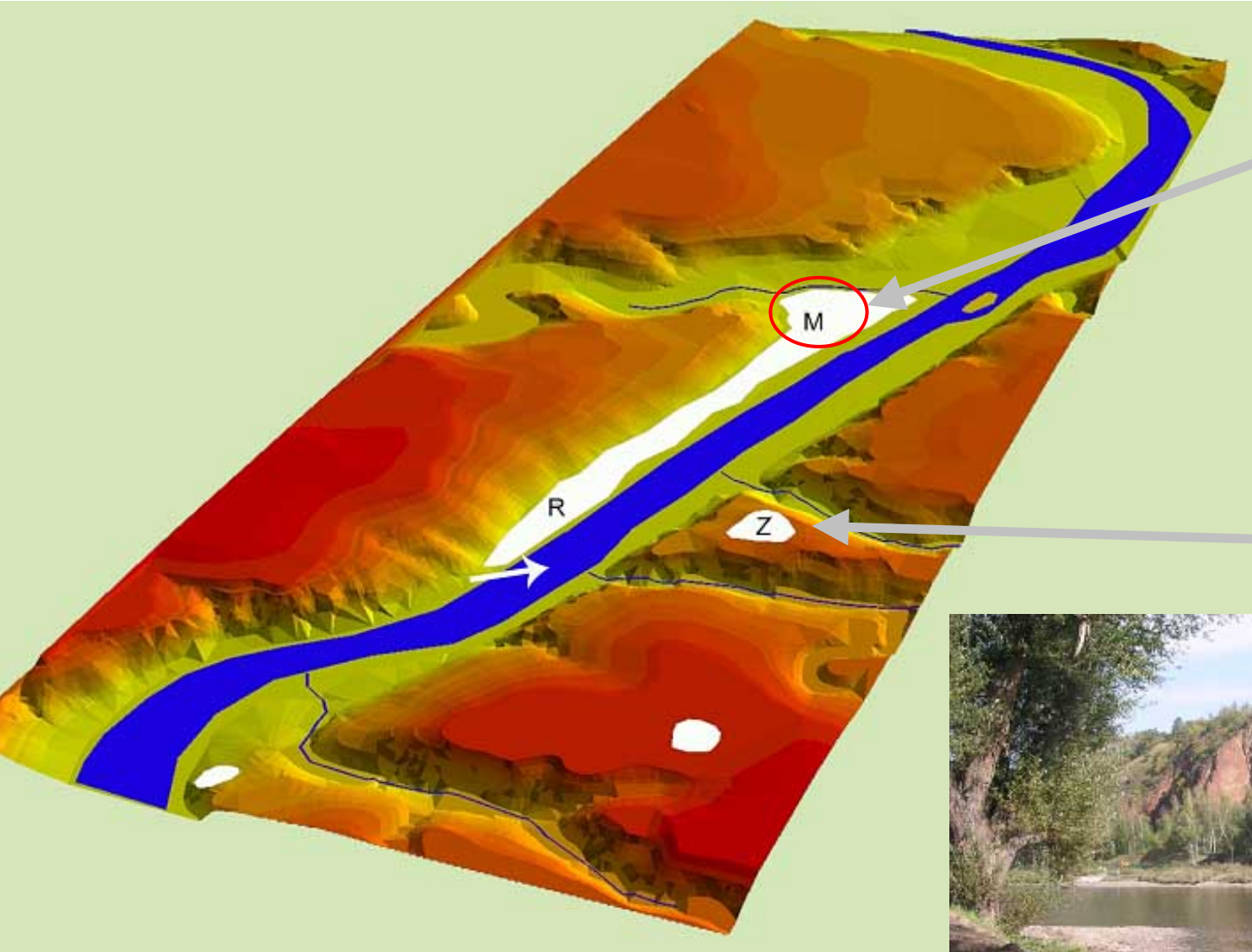
Final Bronze Age settlement site at
Roztoky

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The story of settlement refuse. GIS intra-site analysis of a Bronze Age settlement site

The paper combines GIS with the results of factor analysis (PCA). Settlement refuse of a Final Bronze Age settlement site at Roztoky, Distr. Prague-West, is analysed from the point of view of its quantity, basic functional categories and significant correlations. The site consists of ca. 40 settlement features of different types, the main categories of refuse are pottery (fine, medium, coarse), animal bones, daub, special finds (e.g. loom weights), etc. Factor scores are displayed by GIS and the resulting spatial patterns are interpreted. One of the hypotheses tested is whether there is any patterning to be interpreted as “household clusters” and whether there are find combinations that could illustrate spatial distribution of various settlement activities.

THE SITE OF ROZTOKY



The position of the FBA component within the multicultural site of Roztoky

Prague-Zámka: a prehistoric and Early Medieval hilltop site



EXCAVATION (1980-1983)



Prehistoric components:

- LBK: residential (houses, pits)
- StK: residential (house, pits)
- Eneolithic (FBC, Bell Beakers): ? residual pottery fragments
- EBA: funerary - several graves
- MBA: scarce residential - isolated features
- LBA: scarce residential - isolated features
- FBA: residential - ca 40 features
- Hallstatt: ? - residual pottery fragments
- La Tène: an isolated grave
- Early Roman Period: residential, production/industrial (smelting furnaces, kilns, etc.)
- Late Roman Period: inhumation and cremation graves
- Early Middle Ages (6th-7th cent.): large residential (ca 500 houses)

FINAL BRONZE AGE

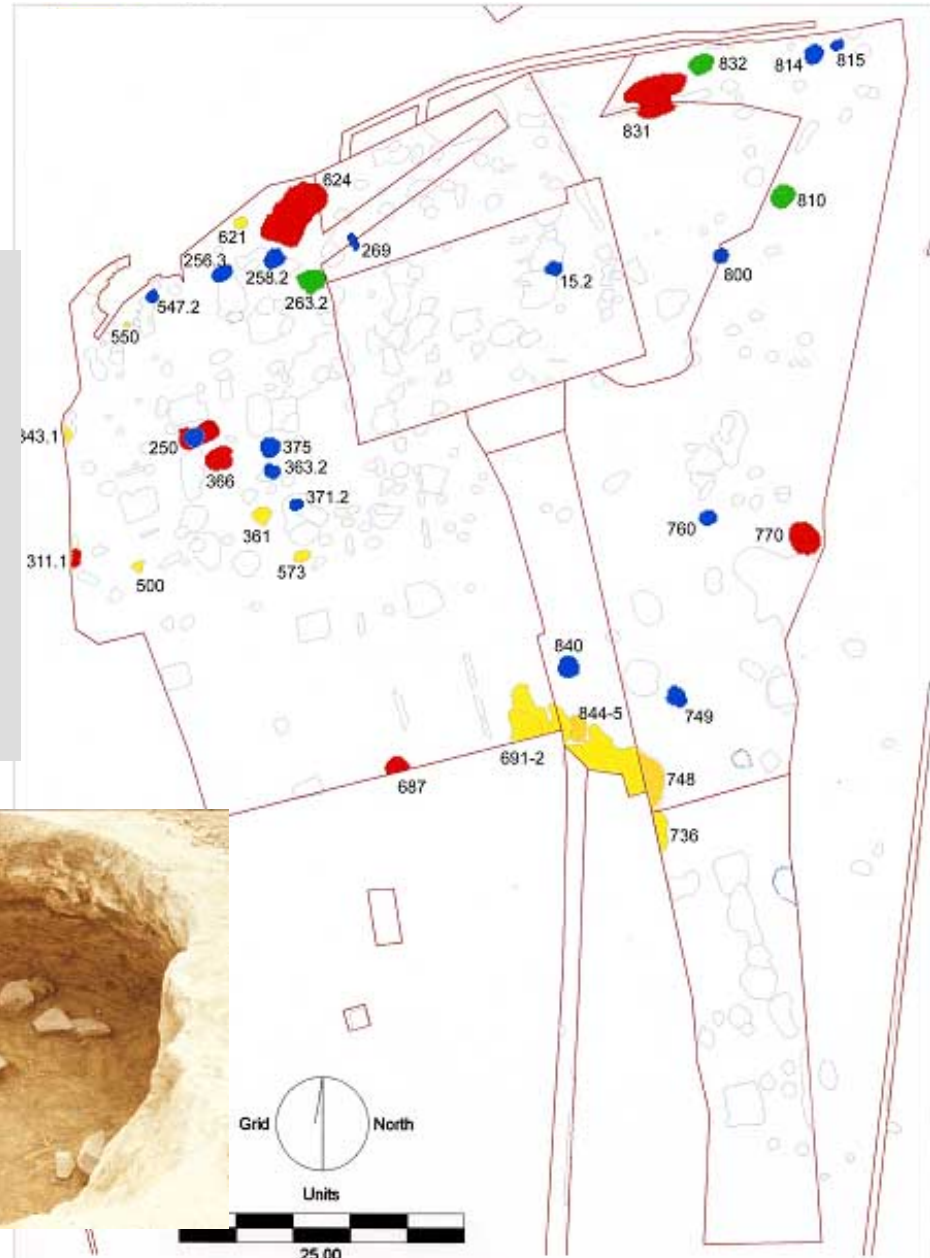


“WORKSHOPS”

LARGE
ROUND PITS

STORAGE
PITS

CLAY PITS
SMALL PITS

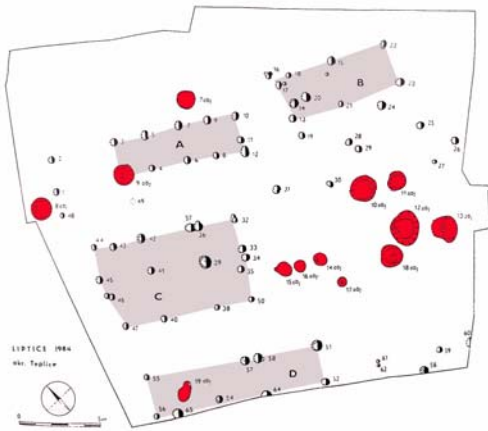
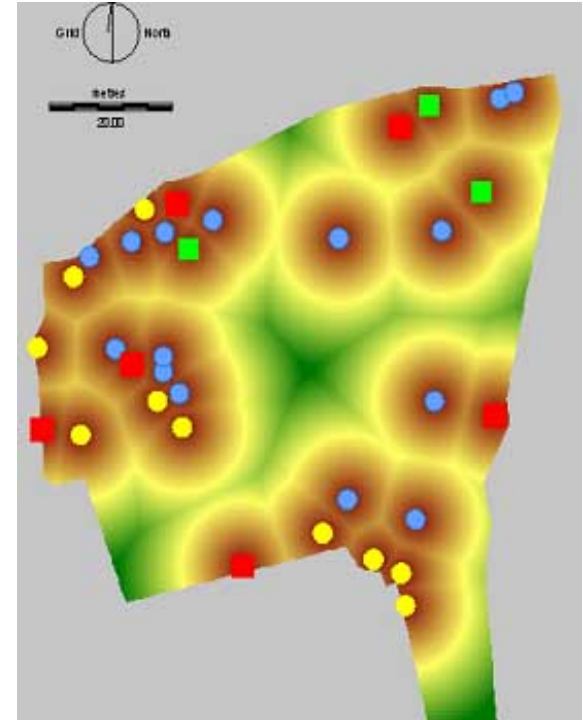
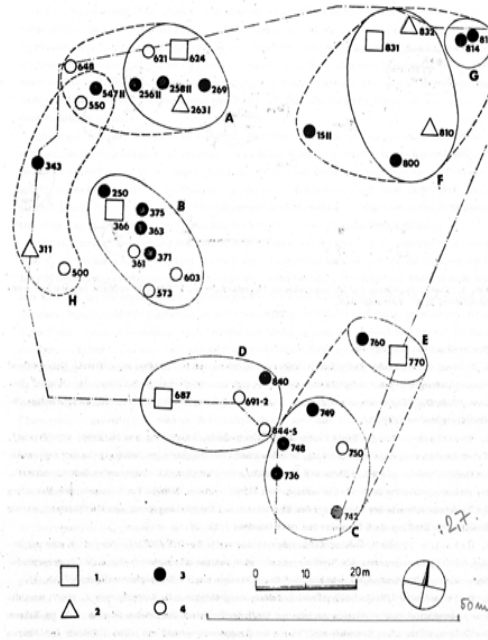


THE „HOUSEHOLD CLUSTER“ HYPOTHESIS

the concept: Winter 1976; Bogucki – Grygiel 1981; Boelicke 1982; Dreslerová-Turková 1989

Roztoky:

- „regular“ composition of clusters (combination of feature types)
- only indirect evidence of houses
- edge effects



LBA household cluster in Liptice, NW Bohemia



Roztoky. Daub fragment with several layers of white paint – an indirect evidence for houses



RELATIVE DATING

FBA: 1000 – 750 BC

Phases of the FBA (Štítary culture)
 (typological dating of pottery assemblages,
 A. Němcová 2001):

POTTERY ASSEMBLAGES

- surface cultural layer on the site absent, just filling of sunken features available
- ca 18,000 pottery individuals
- problem: ca 15 % of pottery assemblages are residual fragments (intrusions) of other prehistoric periods

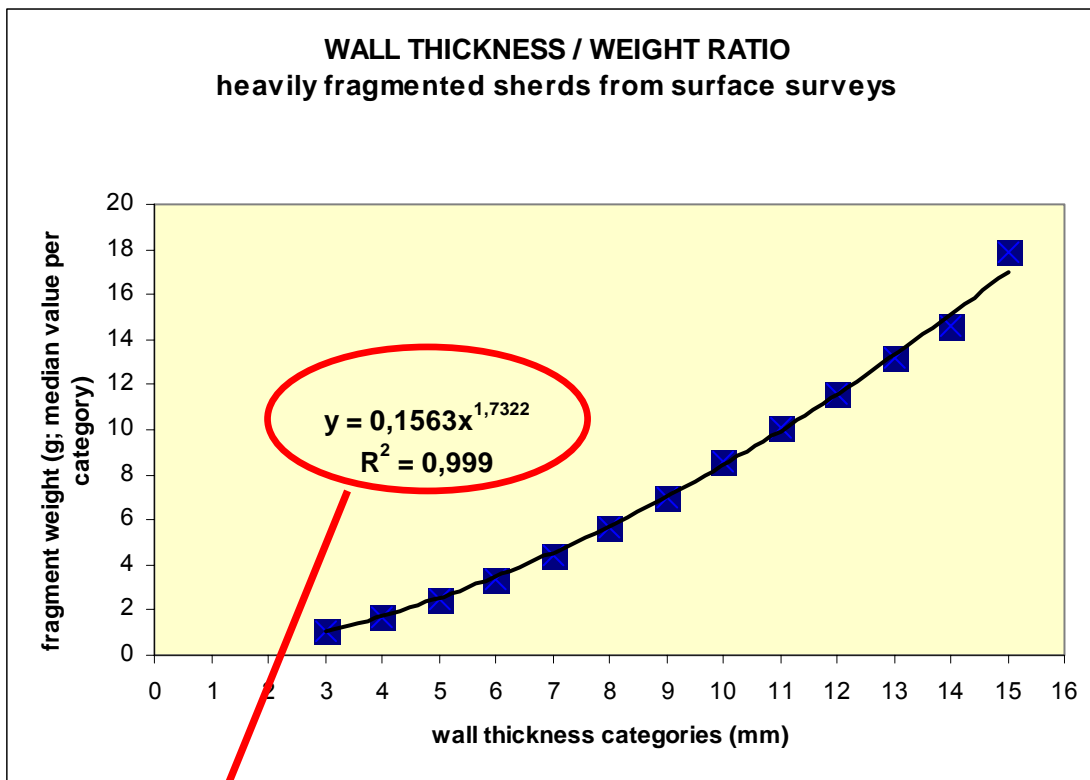
- potential information beyond the dating:
 - function of the features
 - function of the area close to them (intra-site spatial patterning)
 - cultural norms concerning the abandonment and destruction of settlement features (taphonomy)
 - management of settlement refuse



FRAGMENTATION INDEX

= means of comparing sherd sizes among different vessel categories

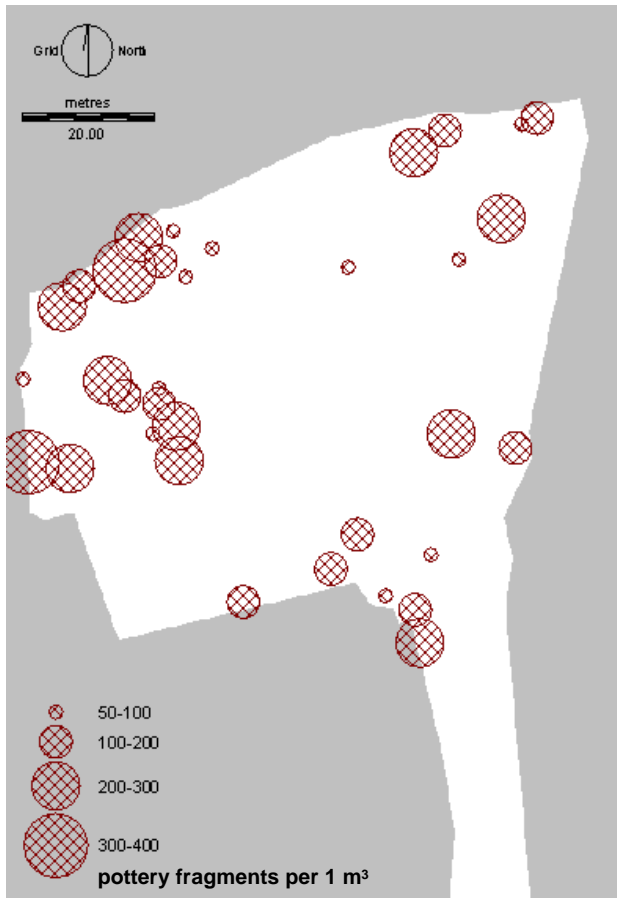
- comparative sample: pottery finds from surface scatters representing the most fragmented finds
- calculation: sherd size (weight) reflects the wall thickness but not in a linear way
- fragmentation index: the ratio between its size (weight) and the average size (weight) of fragments in the surface scatters
- may be calculated for sherds or pottery “individuals”



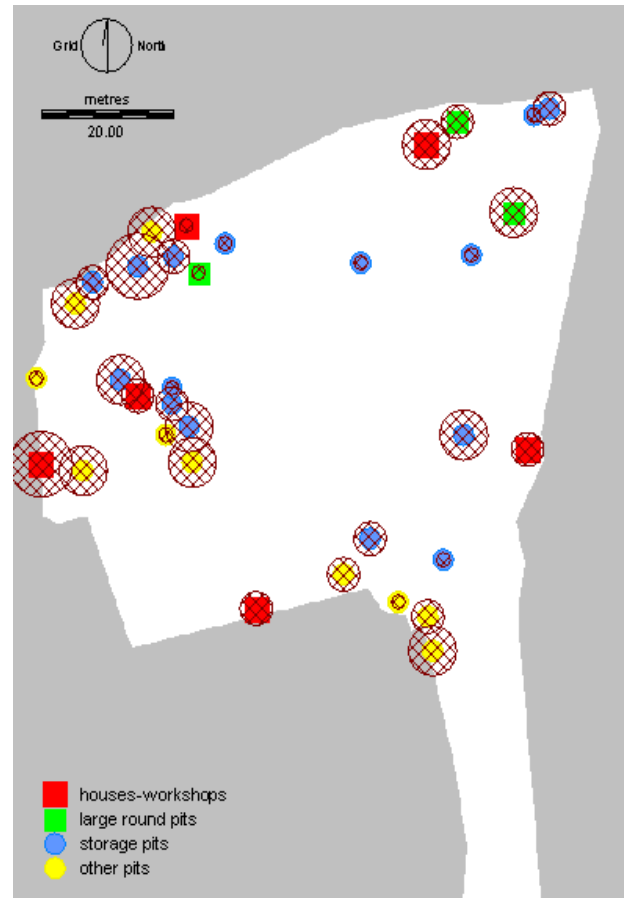
$$\text{Fragmentation index} = \text{sherd weight} / 0.1563 (\text{wall thickness})^{1.7322}$$

DENSITY OF POTTERY FRAGMENTS

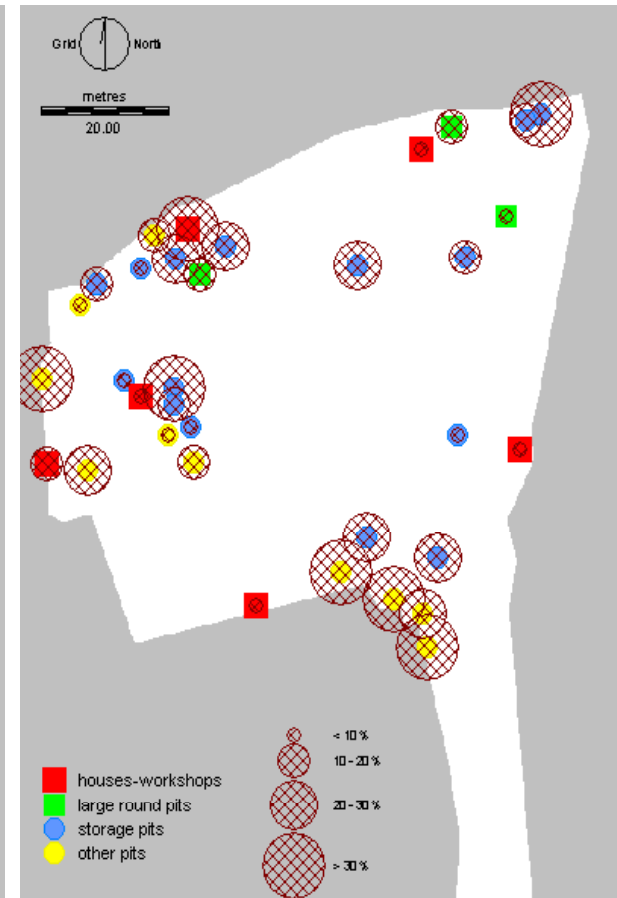
- even distribution over the site
- no obvious correlation to feature types
- all categories of features may display low, medium and high density of pottery fragments



FBA POTTERY DENSITY



FBA POTTERY DENSITY
/ FEATURE TYPES



RESIDUAL POTTERY PERCENTAGE

FACTOR ANALYSIS

Each FBA assemblage may be characterized by

DENSITY_FBA	number of FBA fragments per 1 m ³
DENSITY_RES	number of residual fragments per 1 m ³
RATIO_RES	ratio of residual fragments to FBA pottery (%)
FRAGM_P_IN	average number of fragments per 1 pottery individual
SIZE_INDEX	average indexed size of pottery fragments
FINE	percentage of fine pottery
COARSE	percentage of coarse pottery
RIMS	percentage of individuals with rim fragments

Rotated component matrix. First 4 factors explain more than 85 % (!) of variability

	FACTOR 1	FACTOR 2	FACTOR 3	FACTOR 4
DENSITY_FBA	0.057	0.933	-0.073	0.124
DENSITY_RES	-0.179	-0.007	-0.009	0.948
RATIO_RES	-0.165	-0.760	-0.022	0.506
FRAGM_P_IN	0.906	0.149	-0.012	-0.071
SIZE_INDEX	0.864	-0.161	0.261	-0.049
FINE	0.021	0.496	-0.775	-0.063
COARSE	0.147	0.157	0.919	-0.051
RIMS	0.741	0.301	-0.053	-0.326

Tentative interpretation of factors

FACTOR 1: large size of vessel fragments – secondary refuse

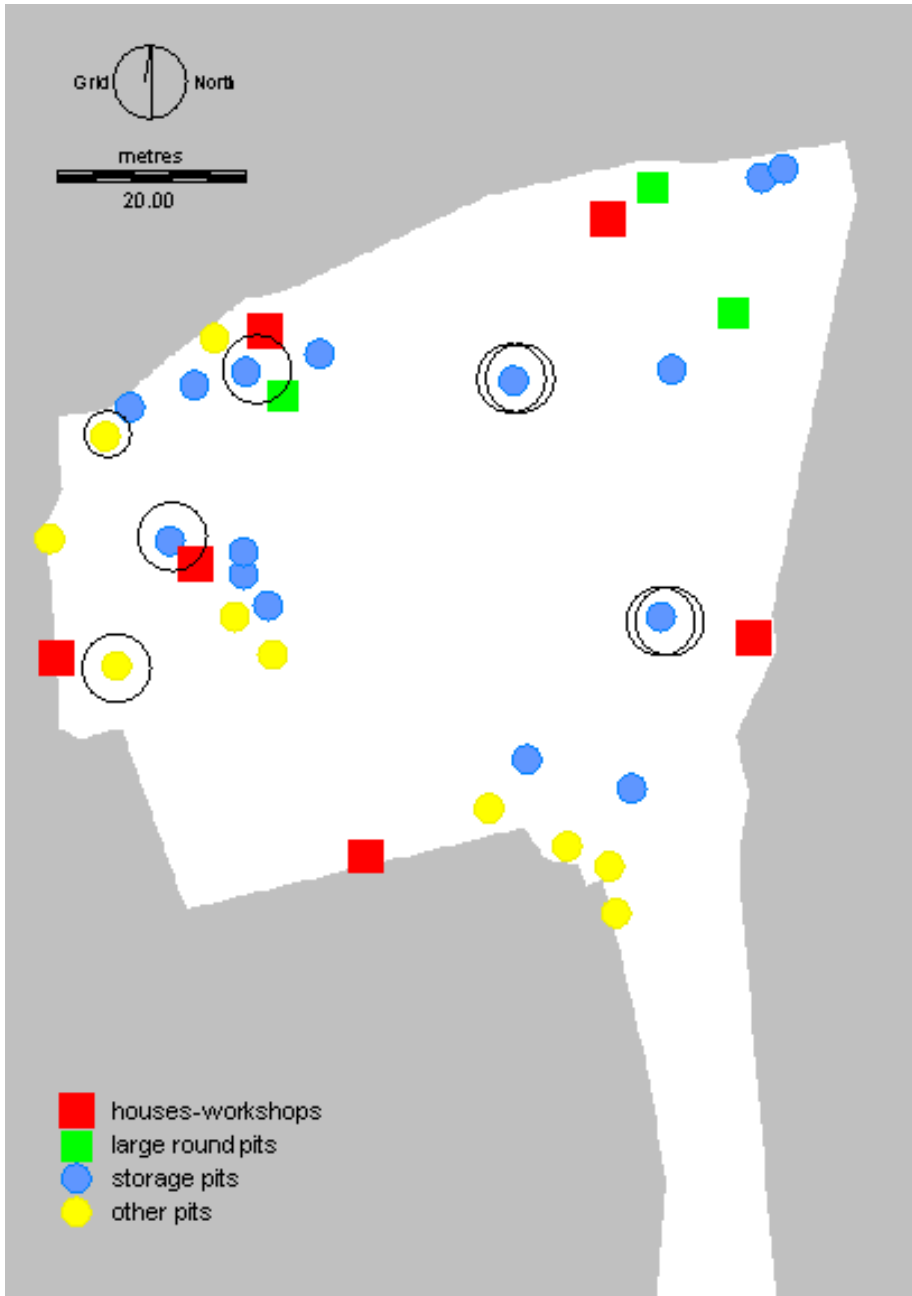
FACTOR 2: high density of finds, fine ware – activity areas

FACTOR 3: coarse vs. fine ware – storage vs. house areas

FACTOR 4: high density and percentage of residual fragments – marginal areas(?), areas used in preceding periods

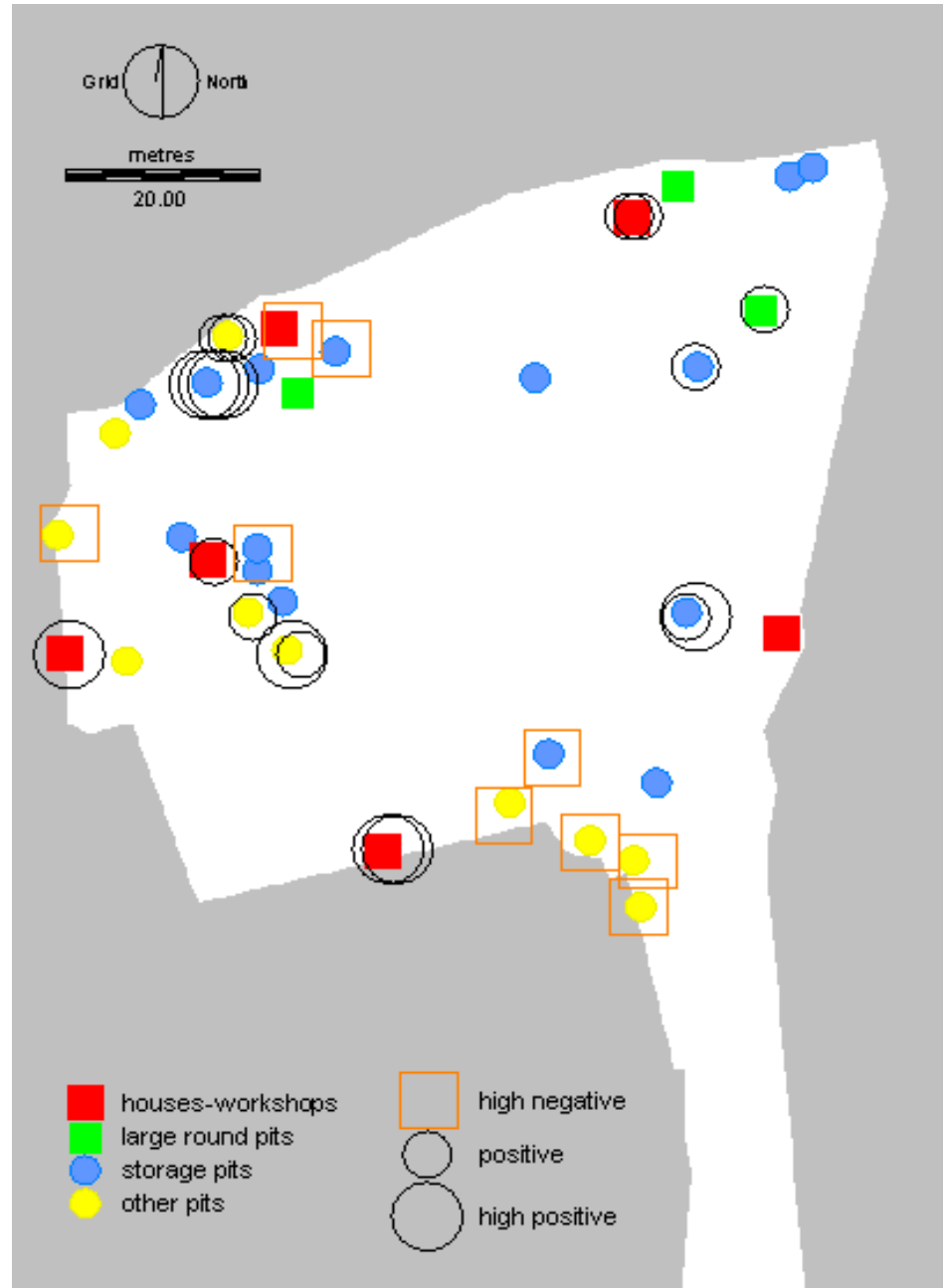
FACTOR 1: SECONDARY REFUSE

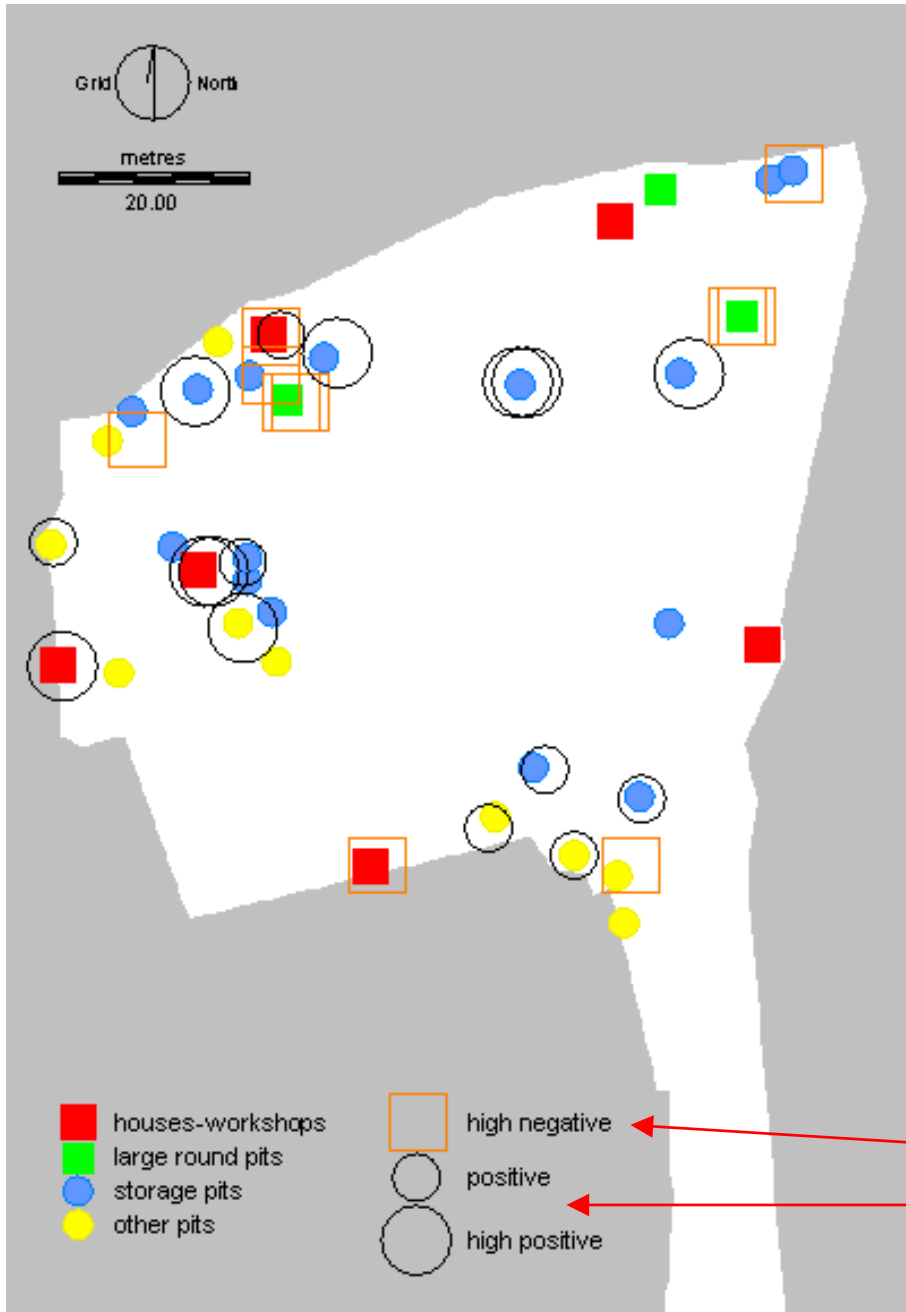
- typical for storage pits, not workshops
 - one high positive value in every „household cluster“(!)
 - often corresponds to high amount of daub
- may reflect a rebuilding phase of the household cluster



FACTOR 2: HIGH DENSITY OF FBA POTTERY FRAGMENTS

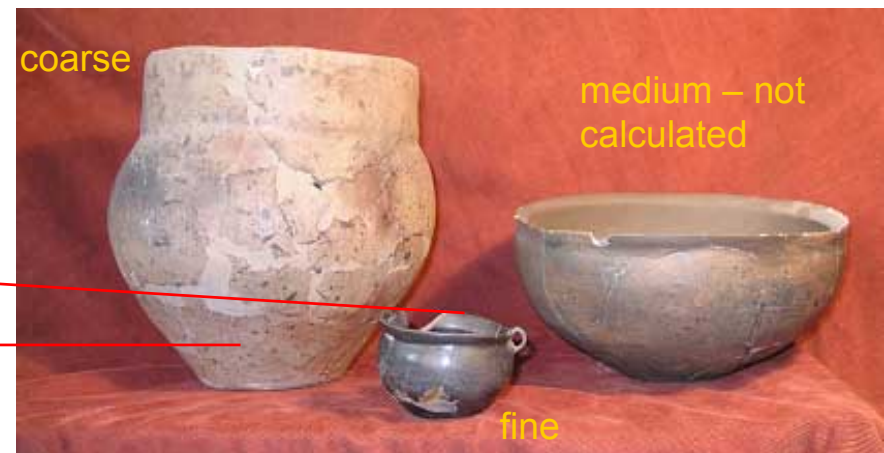
- usually in workshops or other features close to them
- may signify areas of intensive settlement activities





FACTOR 3: COARSE VS. FINE WARE

- spatial pattern not clear
- in theory, it can help to identify house areas (otherwise not preserved)
- living and storage areas were not separated



RESULTS & PROBLEMS

Results:

- pottery discard (refuse) displays not only chronological but also functional and taphonomical variability
- taphonomical aspects include not only “post-depositional” processes but also cultural norms of discard management (may become clear if more sites were compared)
- pottery discard seems to be structured in space reflecting units of the “household cluster” type
- the living, storage and production areas were not separated in space

Problems:

- the location of houses is (at Roztoky and most other sites of the same period) not known – the particular arrangement of household clusters cannot be studied
- at multicultural sites the large density of residual finds make an analysis more complicated and the results less clear