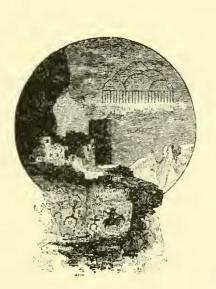
### Sistematični terenski pregledi

SMITHSONIAN INSTITUTION BUREAU OF AMERICAN ETHNOLOGY BULLETIN 155

#### PREHISTORIC SETTLEMENT PATTERNS IN THE VIRÚ VALLEY, PERÚ

#### By GORDON R. WILLEY



UNITED STATES GOVERNMENT PRINTING OFFICE WASHINGTON : 1953

"I would be doing more for the project, myself, and archaeology, he argued, if I attempted to say something about the forms, settings, and spatial relationships of the sites themselves and what all this might imply about the societies that constructed and lived in them" (1974, p. 153).

For sale by the Superintendent of Documents, U. S. Government Printing Office Washington 25, D. C. - Price \$4.00 (cloth)

#### Settlement pattern

the way in which man disposed himself over the landscape on which he lived. It refers to dwellings, to their arrangement, and to the nature and disposition of other buildings pertaining to community life. These settlements reflect the natural environment, the level of technology on which the builders operated, and various institutions of social inter-action and control which the culture maintained. Because settlement patterns are, to a large extent, directly shaped by widely held cultural needs, they offer a strategic starting point for the functional interpretation of archaeological cultures.

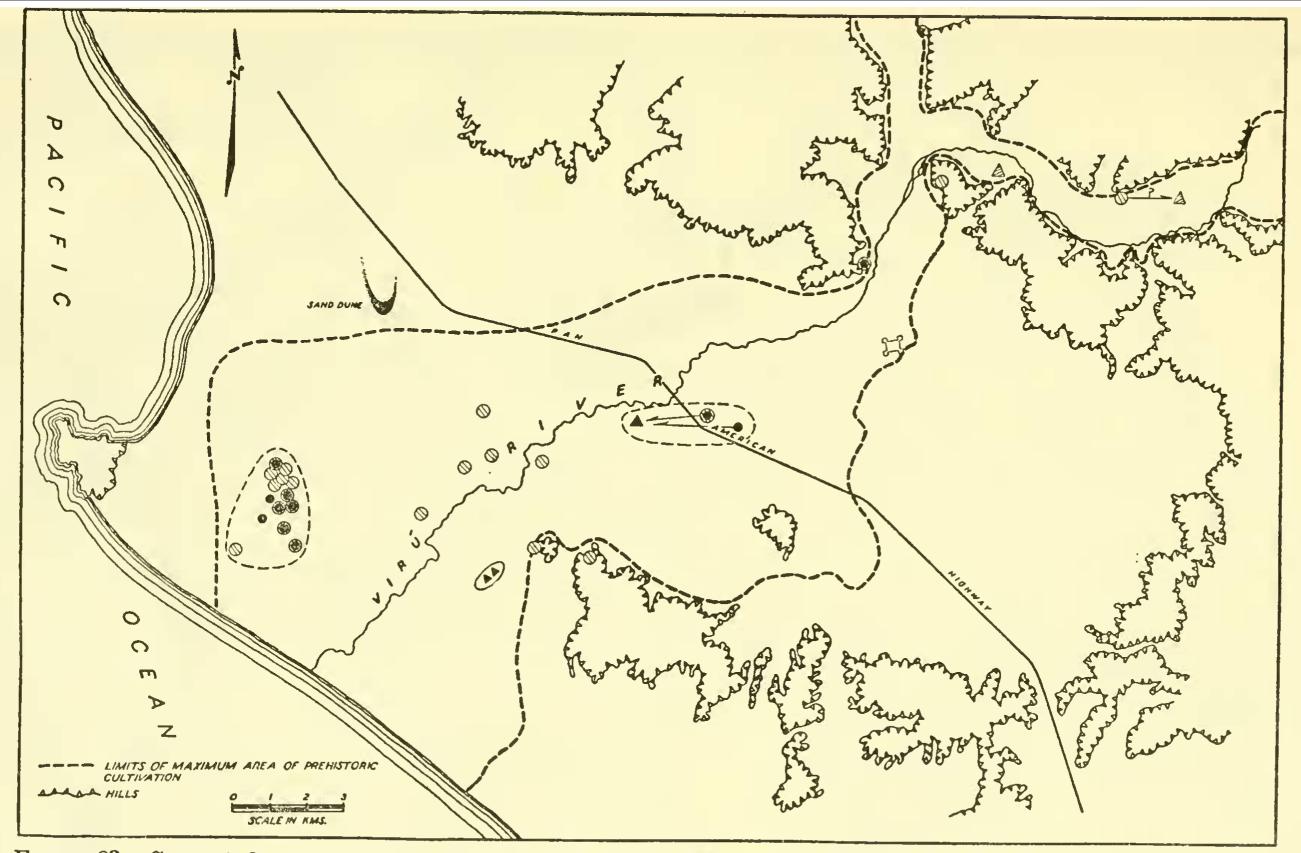


FIGURE 83.—Suggested community patterns for the Early and Middle phases of the Gallinazo Period. Early phase, black; Middle phase, hatched.



FIGURE 10.6. Transportation problems near Habis el-Gharbi, February 1957.



FIGURE 10.2. Surveying the landscape of the Tenango region, Mexico, 1972, by Jeffrey Parsons and his associates.

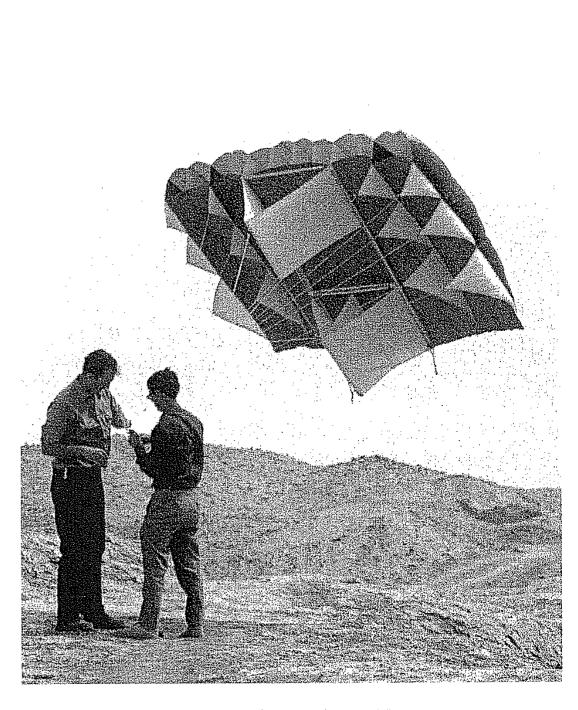


FIGURE 10.4. Robert McC. Adams and Hans Nissen inaugurating use of a "Jalbert Parafoil" (high-tech kite) for low-level remote sensing at Uruk/Warka, February 1967.

## Site catchment (najdiščno zajetje)

the study of the relationships between technology and those natural resources lying within economic range of individual sites." (Vita-Finzi and Higgs 1970:5)

the catchment of an archaeological site is that area from which a site (or more properly, the inhabitants of a site) derived its resources (Vita-Finzi 1969a:106)

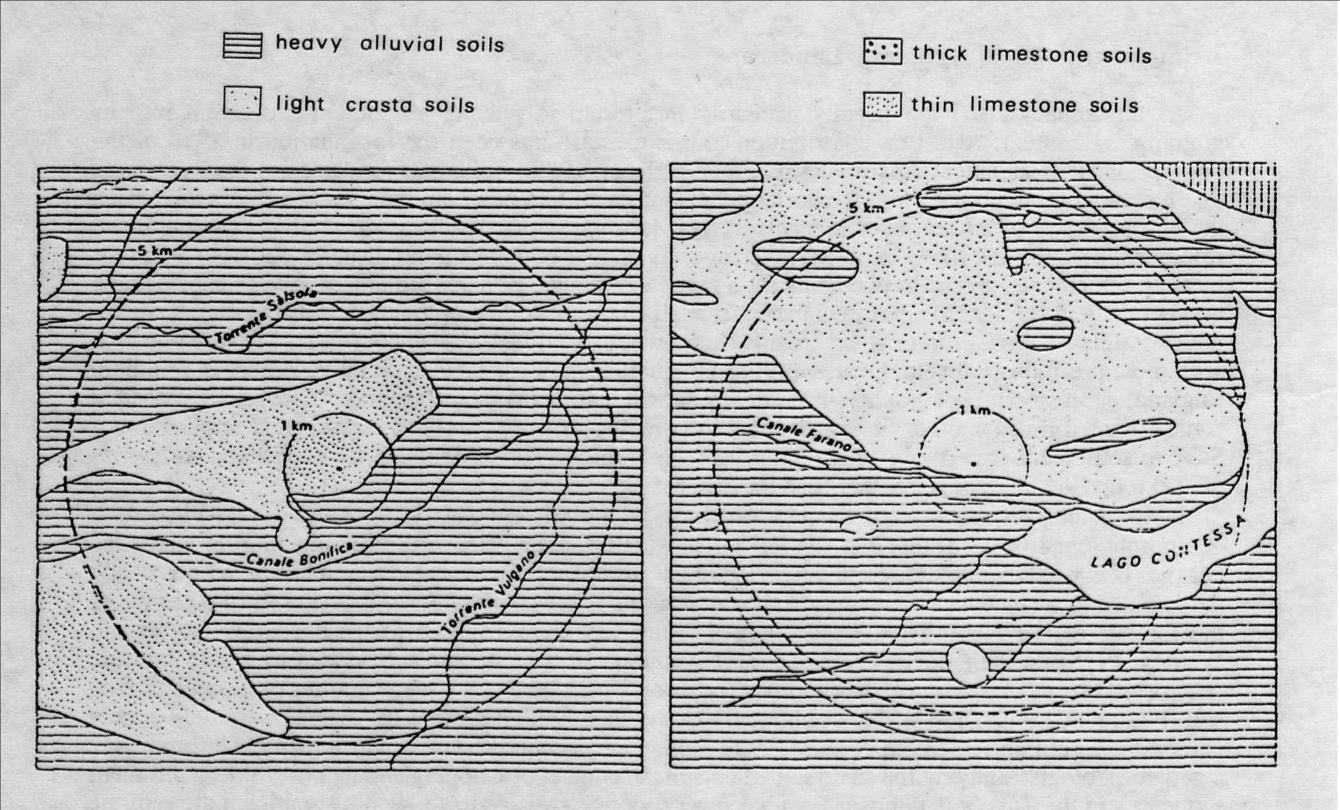


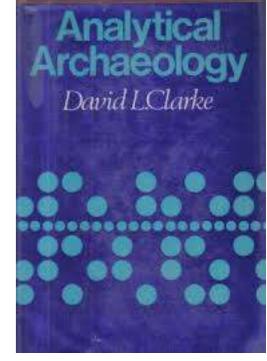
Fig 1. Catchment analyses of two Neolithic sites on the Tavoliere Plain, Italy, using the modern geomorphological context (from Jarman and Webley 1975)

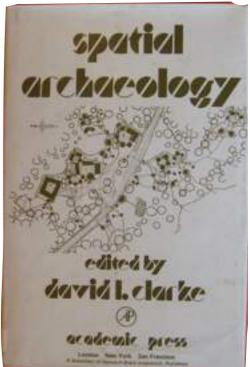


### David Leonard Clarke (1937–76)

"archaeology is archaeology"

# Analytical Archaeology (1967)

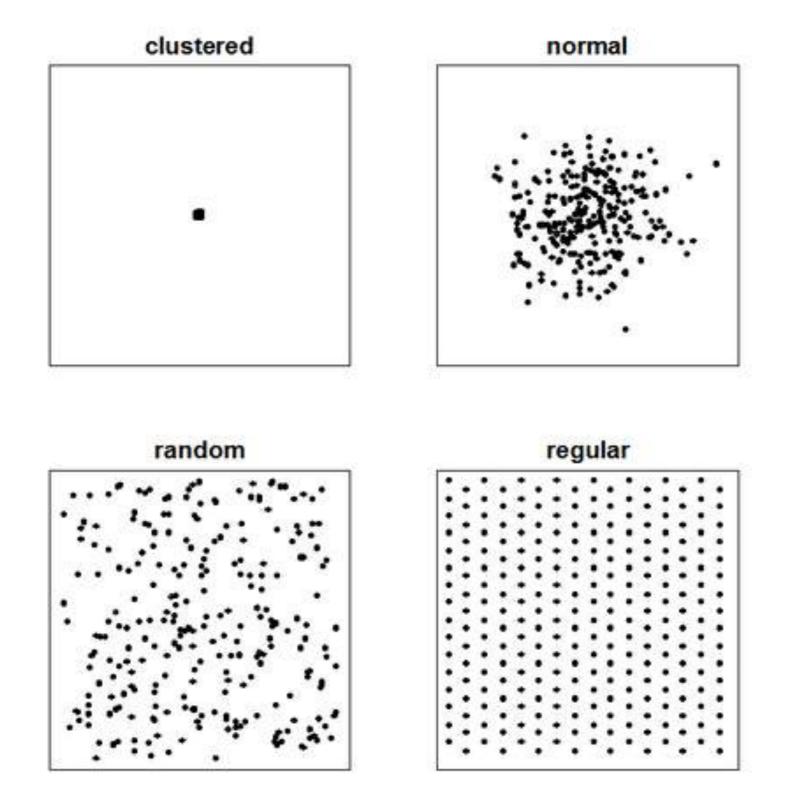




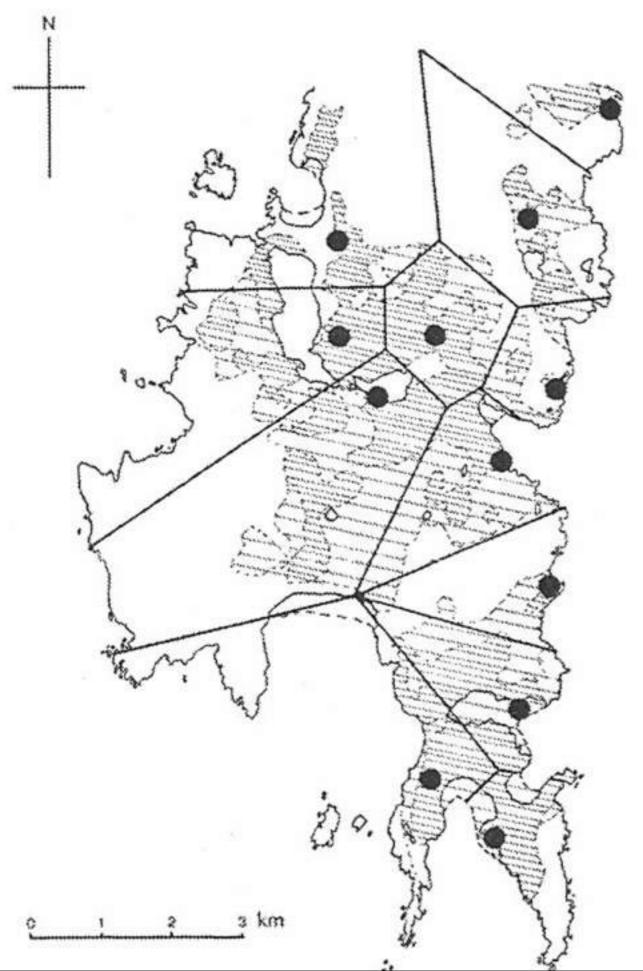
Spatial archaeology (1977)

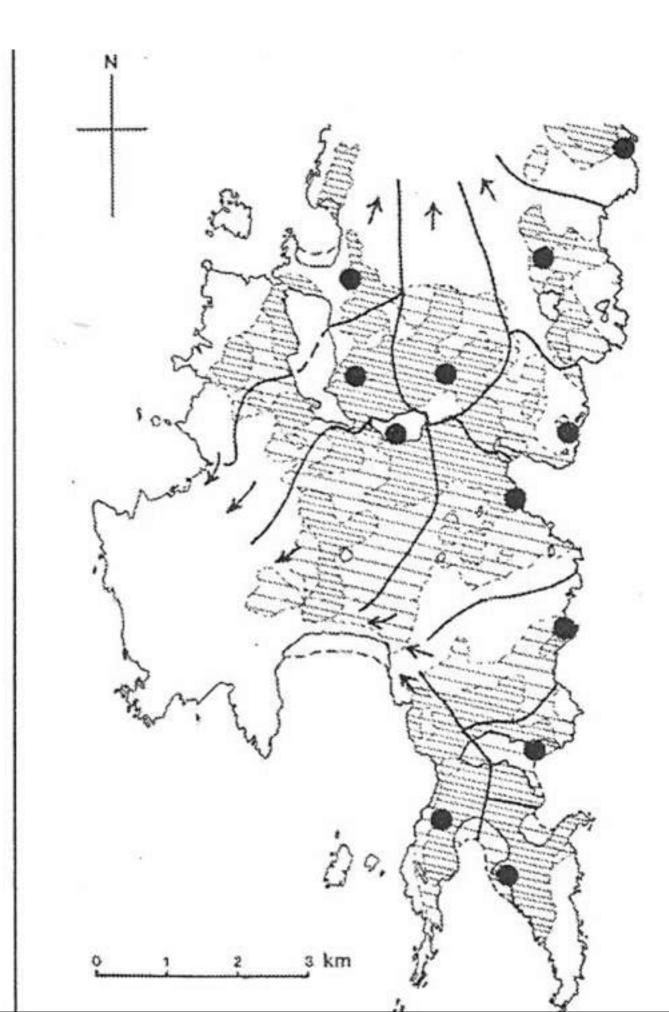
Arheološka najdišča predstavljajo lokacije aktivnosti kulturnih sistemov. Ker so te aktivnosti prostorsko diferencirane, ne moremo pričakovati, da bo eno najdišče odražalo večjih in kompleksnejših poselitvenih sistemov. Raziskave, katerih cilj je razlaga kulturnih sistemov in procesov, morajo biti načrtovane tako, da upoštevajo vse tipe najdišč, na katerih se pojavljajo različne komponente kulturnih sistemov (Judge, Ebert in Hitccock 1975,83)

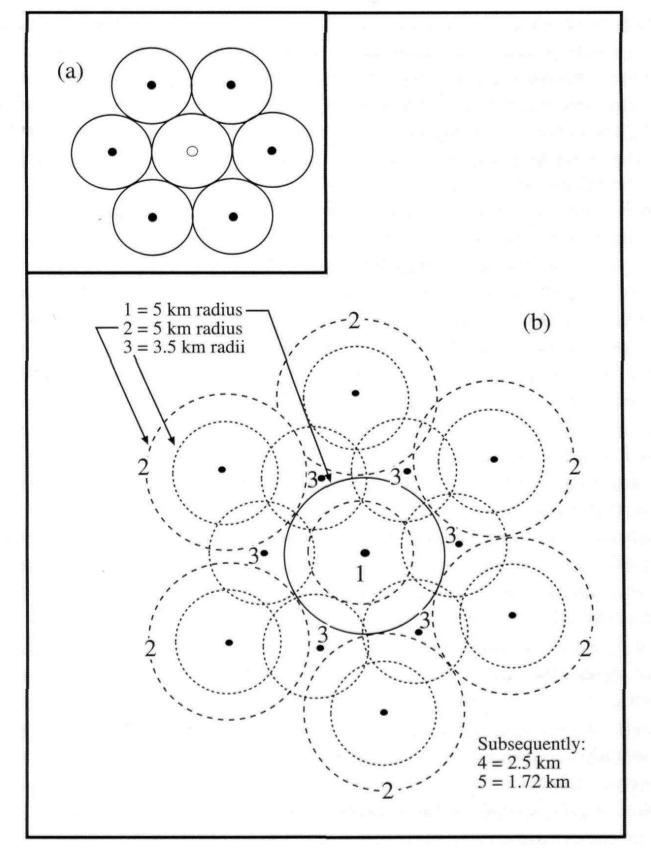
#### Point pattern analysis



Določitev teritorijev







Walter Christaller

Die zentralen Orte in Süddeutschland (1933)

*Figure 13.8* (a) Two-dimensional settlement expansion model (re-drawn from Ellison and Harriss 1972: fig. 24.16); (b) model of secondary expansion 2 from primary settlement 1 followed by tertiary interstitial infill 3. Source: J. Bintliff.



FIGURE 6. Aerial view of Thespiai (north at the top).

Vzorčenje

Binford, L. R., A consideration of archaeological research design. Am. Antiq. 29(4), 1964, 425-41.

This fossil record may be read in the quantitatively variable spatial clusterings of formal classes of artifacts. We may not always be able to state or determine what specific activities resulted in observed differential distributions, but we can recognize that activities were differentiated and determine the formal nature of the observable variability. I have argued elsewhere (Binford 1962: 219) that we can recover, both from the nature of the populations of artifacts and from their spatial associations the fossilized structure of the total cultural system.

#### Vzorčenje

Populacija, ki se jo vzorči in enote, ki jo tvorijo, morajo biti jasno definirane, da ni nobenega dvoma o tem, kaj vzorec predstavlja.

Bolje je celoto razdeliti na več manjših enot kot pa na manjše število večjih enot. S tem se izognemo, da po naključju vključimo večji del nereprezentativne "heterogenosti" v vzorcu.

Enote naj bodo približno enako velike. Tako eliminiramo pristranost, ki izhaja iz zveze med sestavo in velikostjo populacije.

Vse enote naj bodo medsebojno neodvisne. Izbor ene enote ne sme na noben način vplivati na izbor druge enote.

Iste enote je potrebno uporabljati pri vzorčenju, tabulaciji in analizi.

Celota, ki jo vzorčimo mora biti predstavljena (katalogizirana) na jasen način.

Metoda izbora vzorčne enote mora biti povsem neodvisna od značilnosti, ki se jih želi ugotavljati.

Če se želi ohraniti naključnost, mora vsaka enota imeti enako možnost izbora.

V prvi fazi je potrebno z vzorčenjem (statistično naključnim) ugotoviti lokacije najdišč, njihovo gostoto in distribucijo v odnosu do naravnih značilnosti opazovanega prostora. Predlaga stratifikacijo področja glede na pedološko karto in mrežo kvadrantov za vsak tak stratum (0,5 kvadratne milje posamezen kvadrant). Predpostavil, da 20% pregledanih kvadrantov omogoči ustrezno reprezentativnost.

Nato sledi postopek v 7 korakih, kako izberemo najdišča za izkopavanja in upravičimo ustreznost in reprezentativnost postopka in pridobljenih informacij.

Izdela se taksonomija najdišč, ki temelji na formalnih atributih, opazovanih pri pregledu. Določita se relativna frekvenca in distribucija tipov najdišč glede na izvirne stratume (npr. pedološke tipe).

Stratificira se populacija najdišč v vzorčnih strata na podlagi tipologije, ki je še dodatno stratificirana v smislu izhodiščnih meril (npr. pedološki tipi).

V skladu s časom in sredstvi, ki so na voljo, se določi delež vsakega posameznega tipa najdišč za izkopavanja, da bi se dobilo zanesljive informacije o njihovi notranji sestavi.

Oštevilčiti vsako najdišče v vsakem vzorčnem stratumu (1-n)

Izbere se po statistično naključni metodi najdišča za izkopavanja Izkopavanja /Jack D. Nance, Regional Sampling in Archaeological Survey: The Statistical Perspective. Advances in Archaeological Method and Theory, Vol. 6 (1983), pp. 289-356)

2 elementarni funkciji metod vzorčenja v arheologiji:

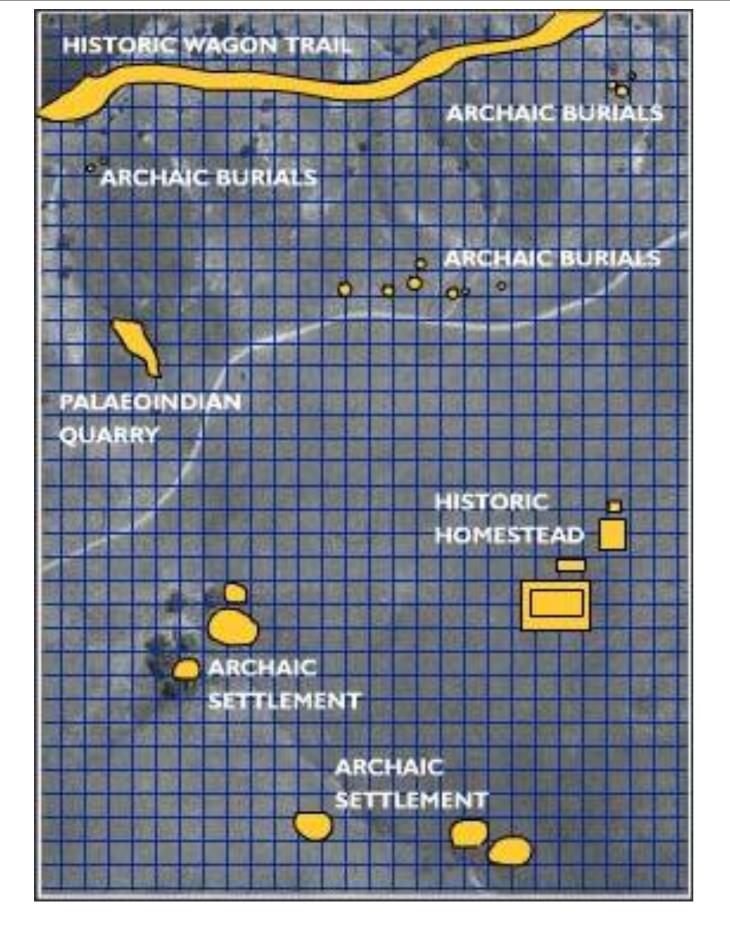
#### učinkovito odkrivanje arheoloških ostankov,

Prvo vprašanje: Kolikšen napor oz. intenzivnost vzorčenja je potrebna za odkritje določenega razreda ostankov glede na različne fizične okoliščine in metodo vzorčenja? Tu ne gre toliko za količinske ocene, temveč za določitev zaupanja v odkrivanje ostankov glede na enoto porabljene energije (i.e. stroške).

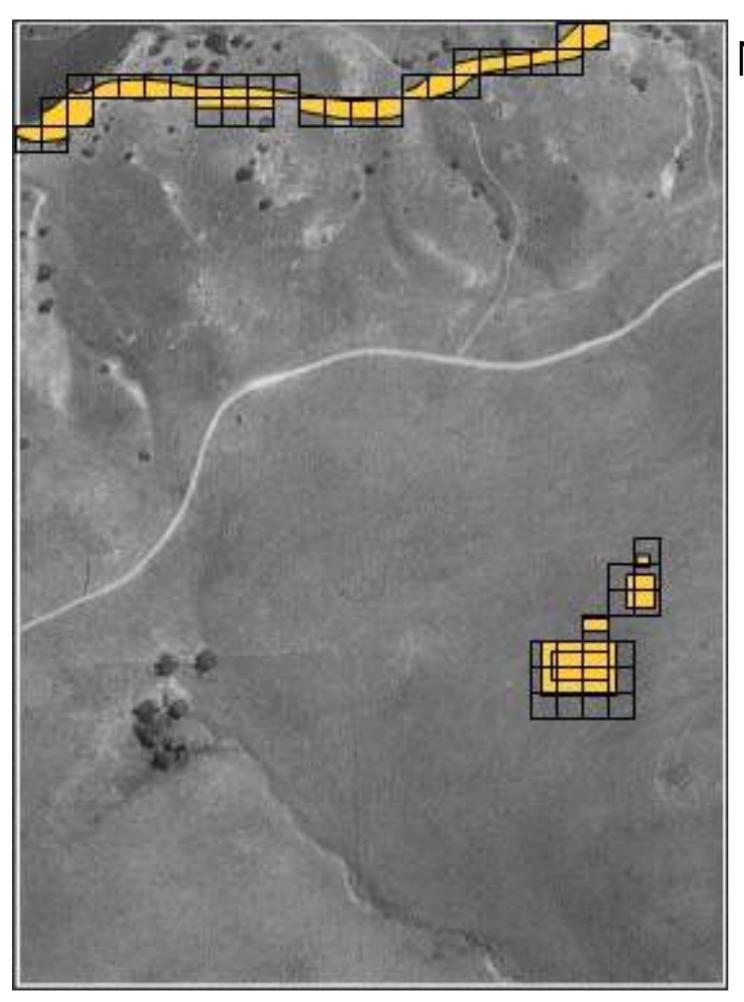
Osrednji koncept: DISCOVER MODEL SAMPLING (DMS) (formalno definirano kot verjetnost, da bodo ostanki ugotovljeni z določeno metodo vzorčenja).

Glavni parametri: vztrajnost prisotnosti (obstrusiveness), številčnost (abundance), prostorska zgostitev (spatial aggregation) (po Schiffer et al. 1978,4).

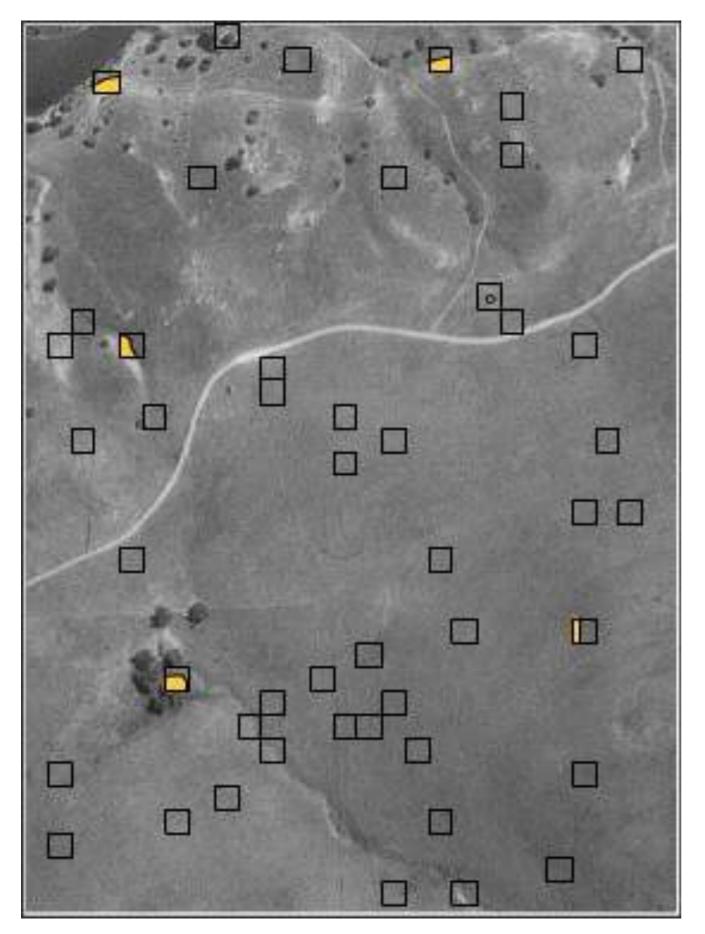
DMS se fokusira na vprašanje, kakšna intenzivnost vzorčenja je potrebna za odkrivanje ostankov v vzorčeni populaciji oz. vzorčni enoti. Ne ukvarja se z vprašanjem napovedi lokacij ostankov.



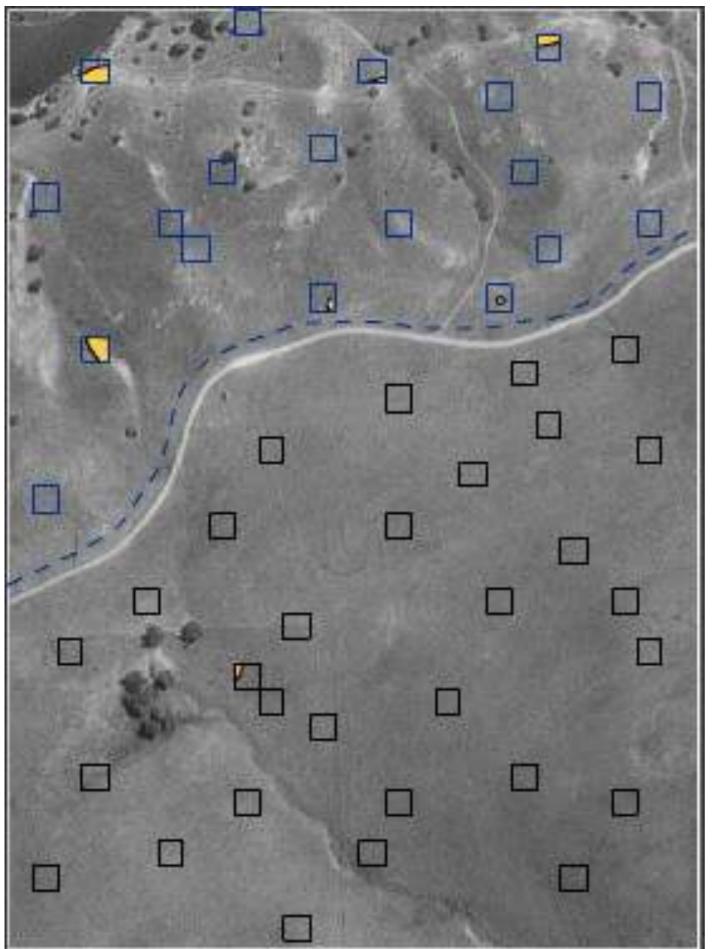
http://www.utexas.edu/courses/denbow/labs/survey.htm#



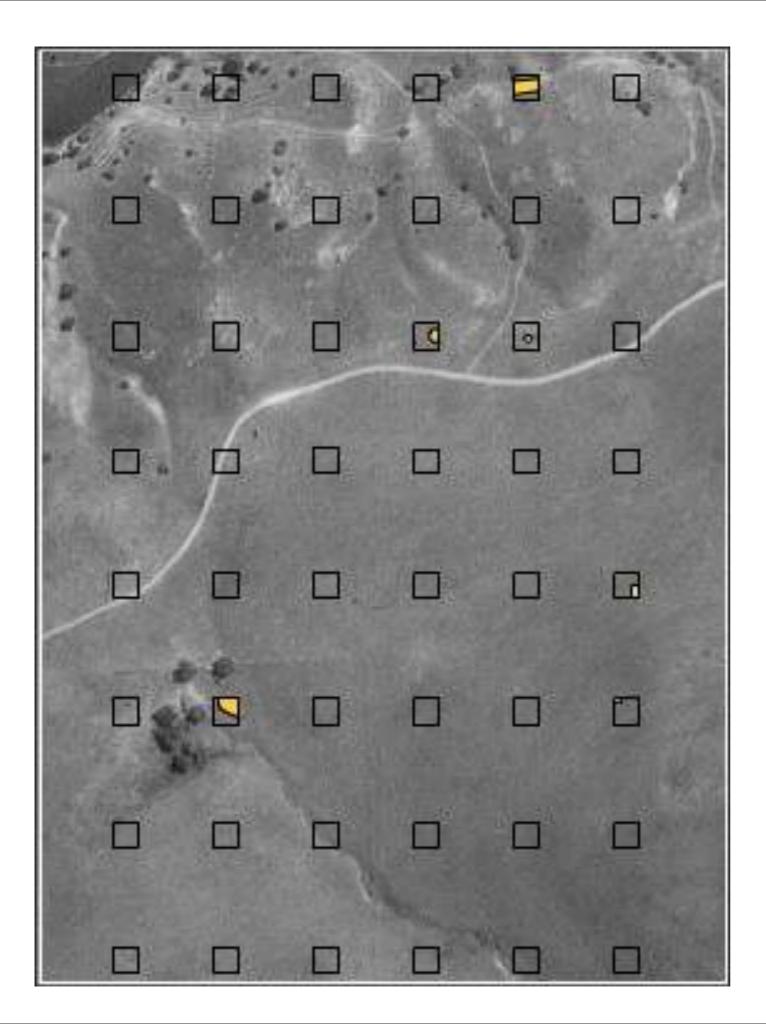
## Non-probabilistic sampling



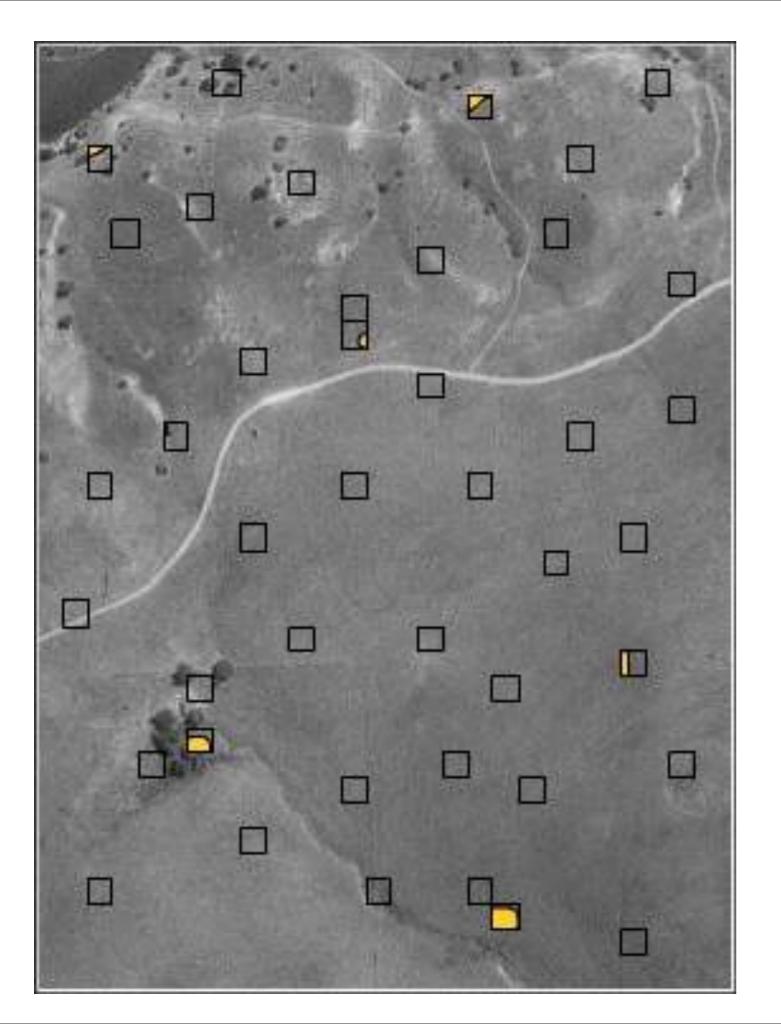
## Simple random sampling



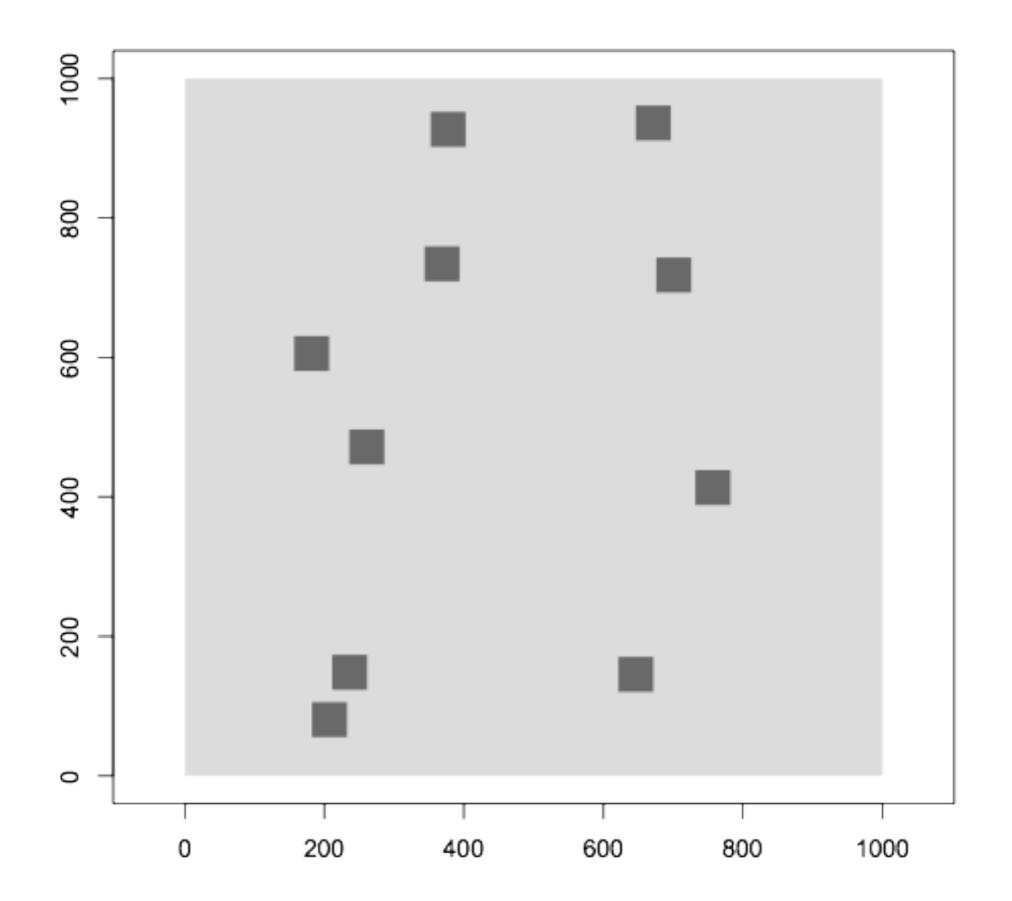
# Stratified random sampling

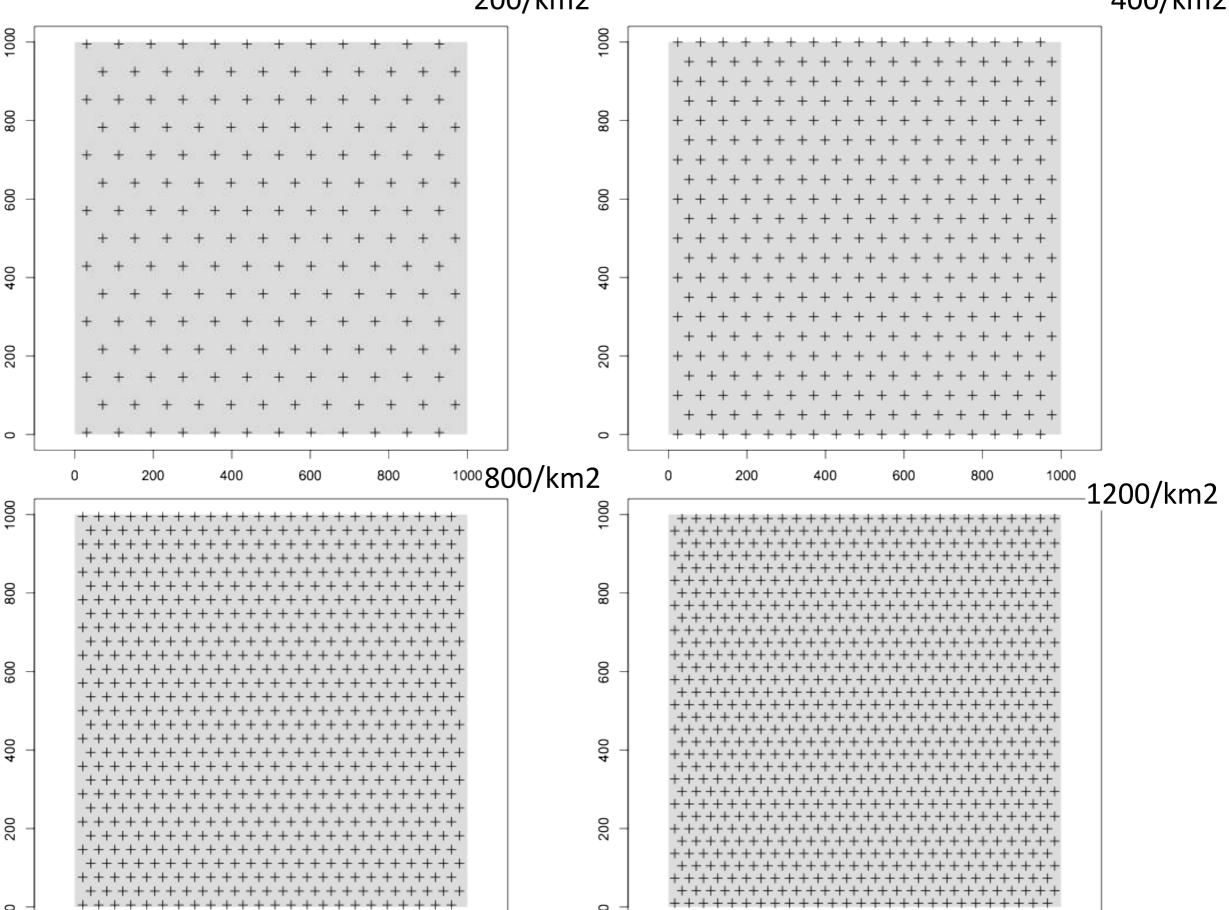


#### Systematic sampling



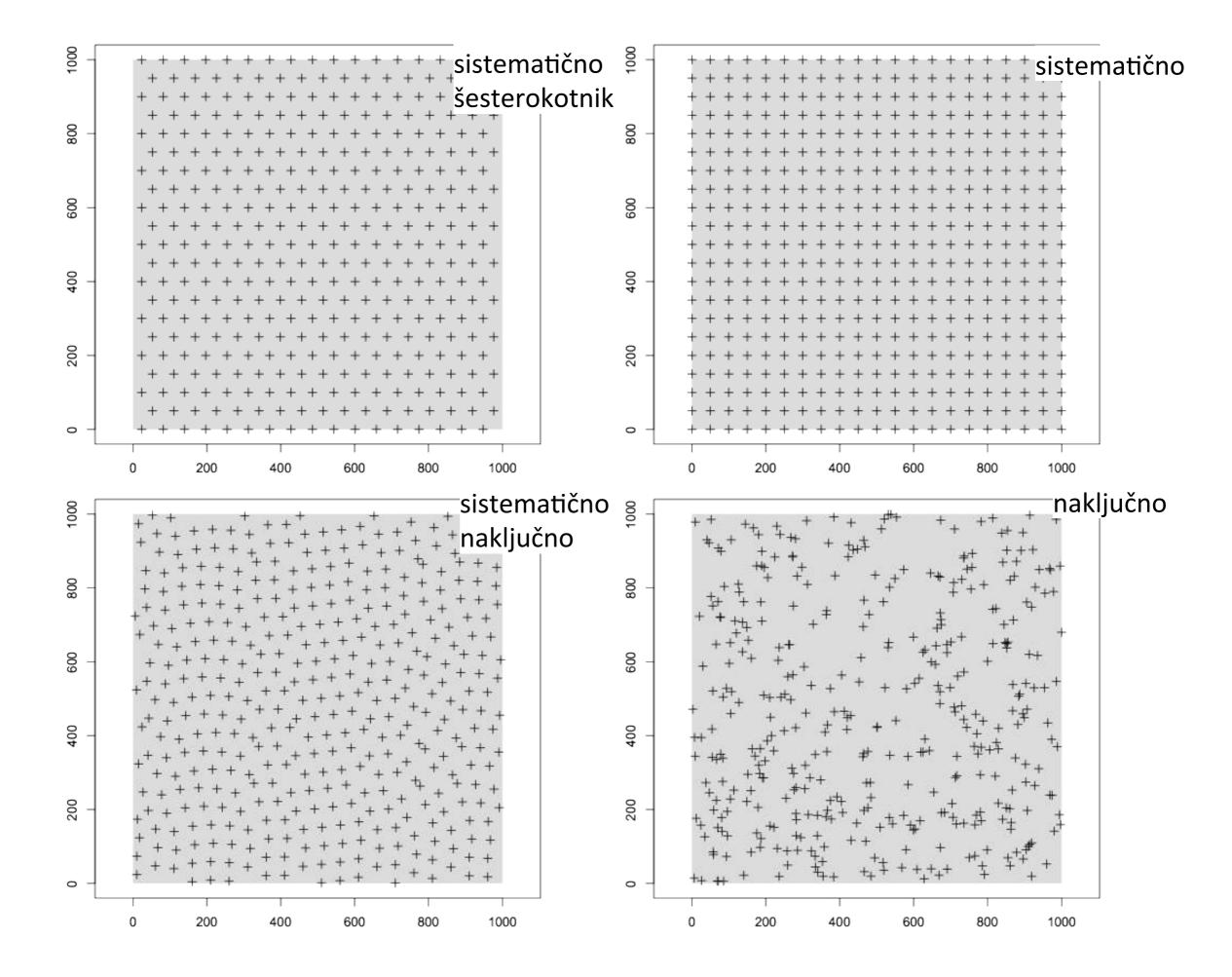
Stratified systematic or systematic unaligned sampling

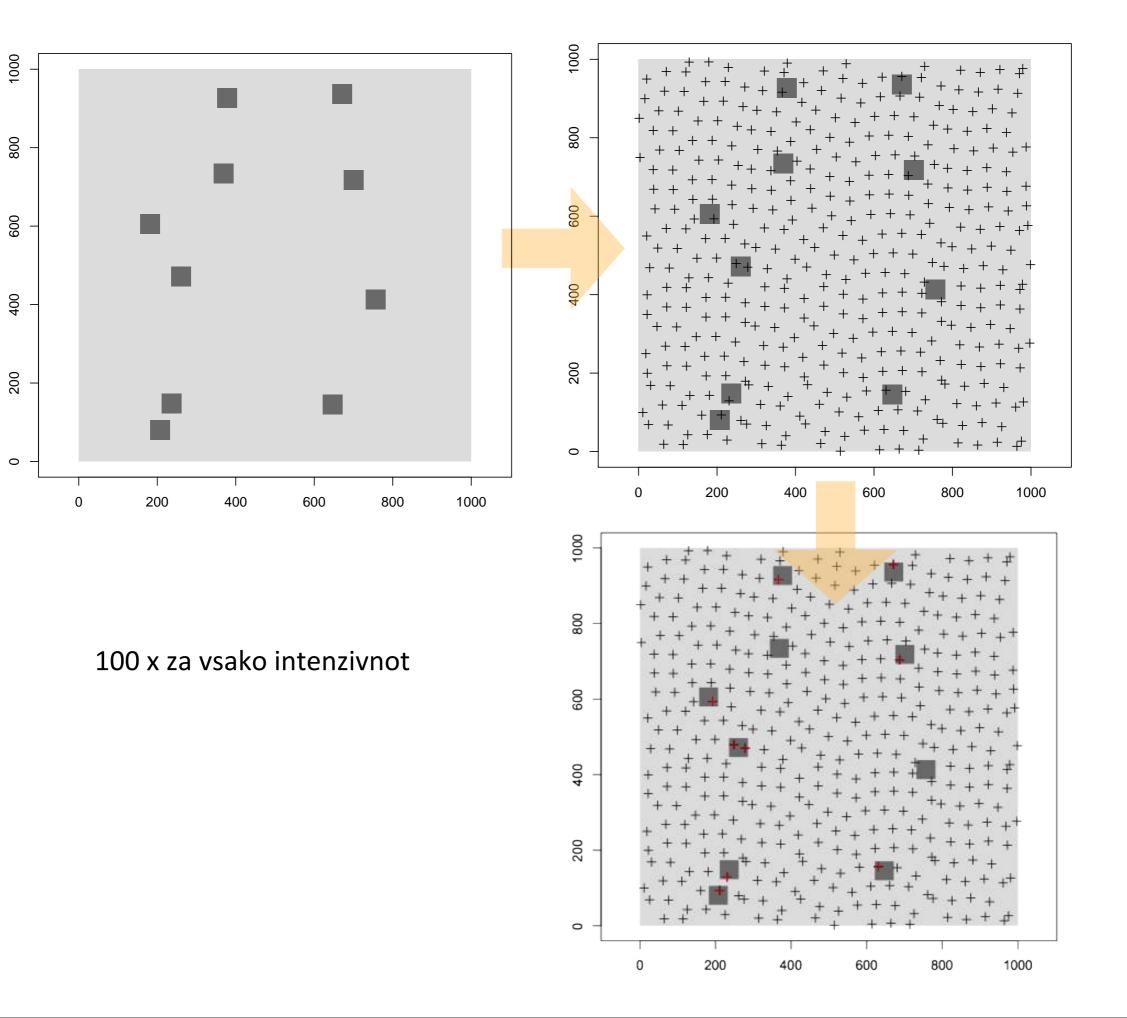


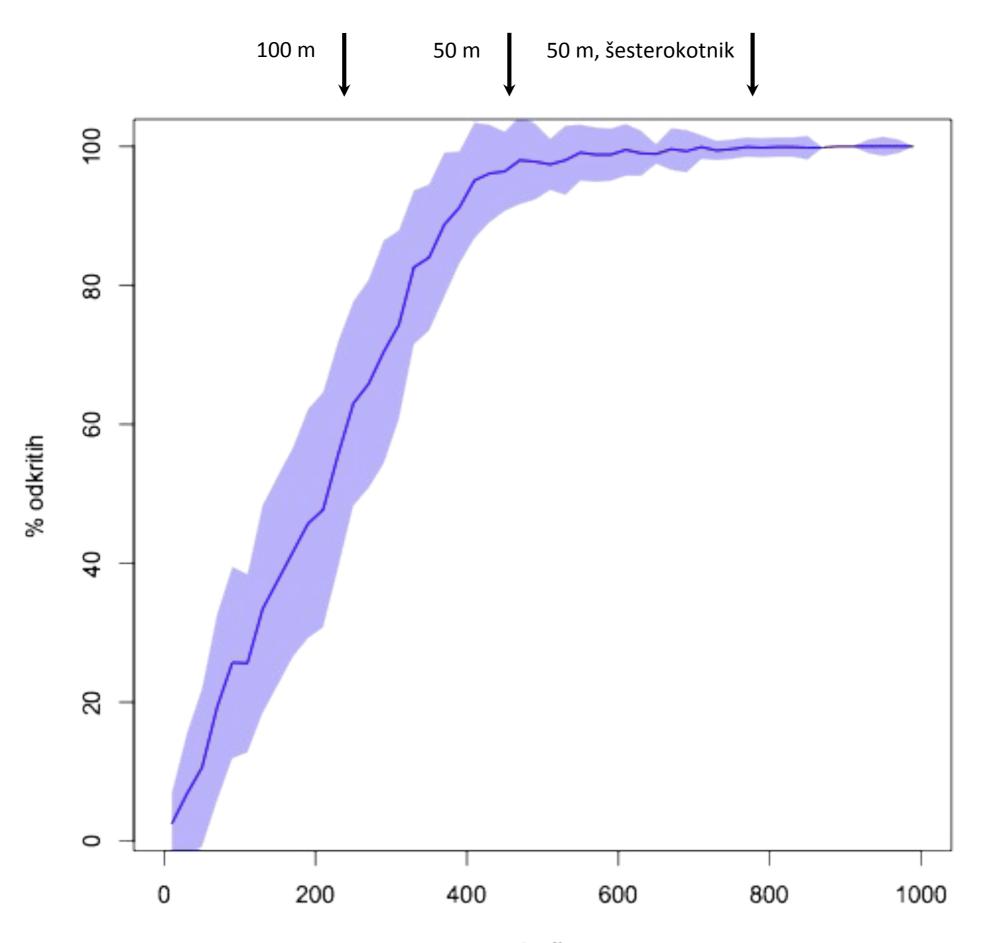


200/km2

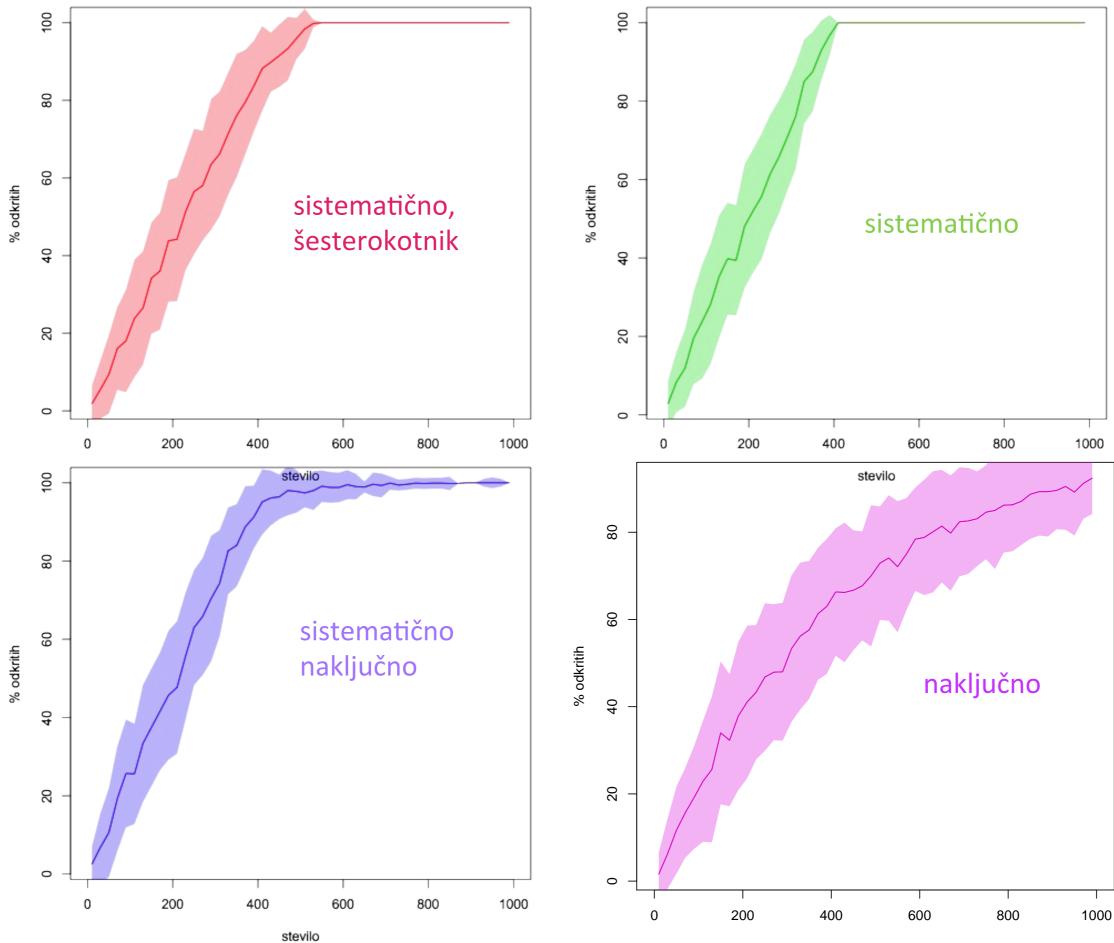
400/km2







stevilo



stevilo

#### učinkovita ocena kvantitativnih in kvalitativnih lastnosti odkritih ostankov.

SPM – model statistične natančnosti (statistical precision model)

V nasprotju z DMS (glavni problem najti primere redko pojavljajočih se pojavov, i.e. ostankov) se SPM veliko bolje pokaže pri ocenjevanju številčno pogosteje pojavljajočih se pojavov.

"Uspešnost" SPM se lahko meri s primerjavo stroškov za pridobivanje statistične ocene določene natančnosti oz. napake. Tehnike z "low error-cost ratio" so bolj učinkovite od tehnik z višjim "error-cost ratio". 0 Existing knowledge. Archaeological sampling, in particular, is rarely carried out *in vacuo*, except for peculiarly innovative research, which is perhaps not as common as archaeologists would like to think. Almost always, we are adding to existing knowledge; this should be reflected in our aims, needs and design. Formally, it may be possible to incorporate existing knowledge through the use of Bayesian methods (p. 16); in general, any project should start with a clear summary of existing knowledge and its implications for the work to be done.

1 Objectives. Without clear objectives, a sample survey lacks focus and is not likely to succeed (indeed, it is difficult to tell what would constitute 'success'). In a multi-disciplinary project, the competing claims of different disciplines must be carefully weighed.

2 Population. The target population must be clearly defined, and the question of which parts of it are actually available for survey (the sampled population, see p. 18) must be considered. It is better, if possible, to discover which areas of a field survey (for example) are 'out of bounds' *before* the sample is designed, than to discover them in the course of fieldwork and have to redesign the survey 'on the fly'. Problems likely to arise from transformation processes (see chapter 3) should also be considered at this stage.

#### C. Orton 2000. Sampling in Archaeology

#### The techniques of sampling

Before looking at the details of different sampling schemes (or strategies) that might be adopted, it is worth setting the question of choice of scheme in its wider context, by looking at the overall process of sample surveying. Cochran (1963, 5–8) gave a list of eleven steps in the overall process, to which I have added a twelfth (Fig. 2.2). They are:

- 0 assimilation of existing knowledge
- 1 objectives of the survey
- 2 population to be sampled
- 3 data to be collected
- 4 degree of precision required
- 5 method of measurement
- 6 the frame
- 7 selection of the sample
- 8 the pre-test
- 9 organisation of the fieldwork
- 10 summary and analysis of the data
- 11 information gained for future surveys.

3 Data to be collected. A sample survey is selective in two ways – in the choice of units to be surveyed, and in the choice of data to be collected (variables to be measured). The temptation to collect as many data as possible 'in case it comes in useful' must be resisted: the chosen variables must be strictly related to the objectives of the survey.

4 Degree of precision required. How precise should our results be? For example, do we want to know the number of objects in a museum store that require immediate attention with an error margin of 100? or 1000? or 10% of the estimated number? And why? Such specifications are vital to the design of the sample. They may even challenge the viability of our survey – if we cannot achieve the required precision with the resources available, why are we doing the survey?

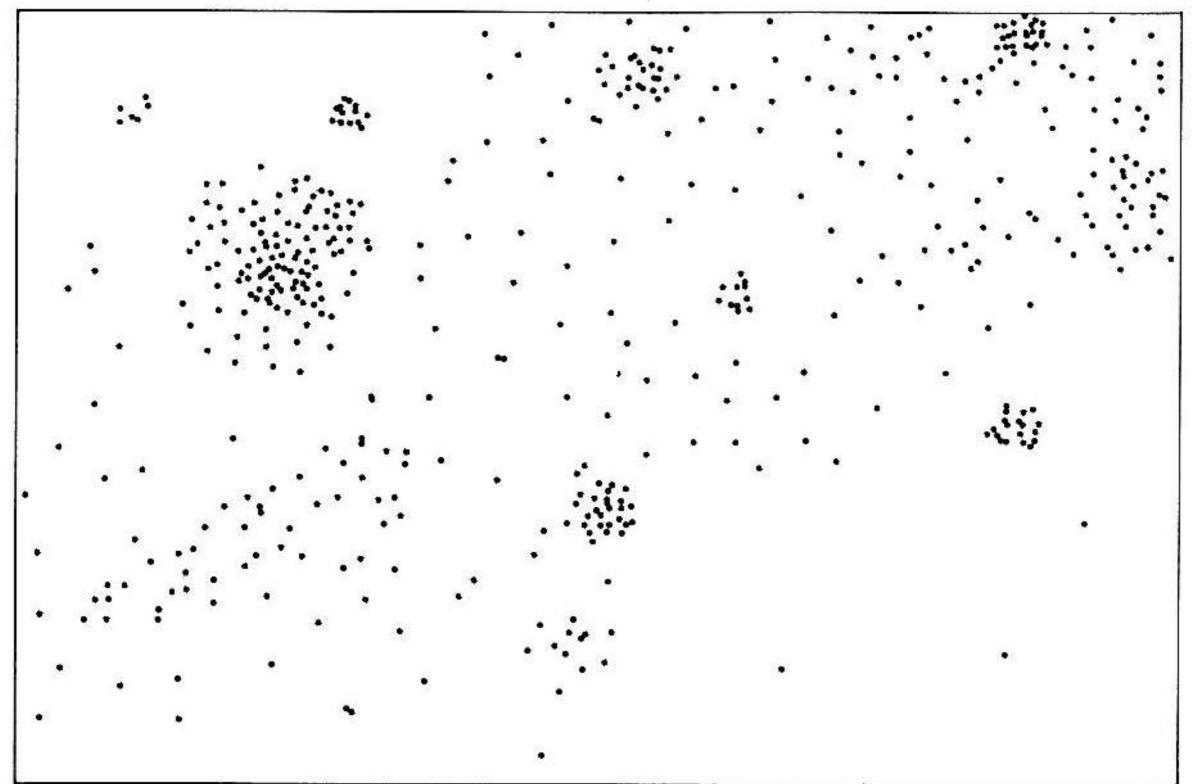
5 Method of measurement. In archaeology, this is often a matter of setting academically viable and practically usable definitions, e.g. how do we define 'condition' of an object? Or, in the field, what is a 'significant archaeological remain'? 8 The pre-test, or pilot survey. One of the problems of survey design is that it is best done when the survey is over (because then we have all the information we need), but by then it is too late. This problem can be overcome to some extent by carrying out a small *pilot* survey, to get some idea of the variability in our population, and hence the size and design we shall need for our main survey. Pilot surveys also have the valuable role of discovering the 'bugs' in our system: difficulties of definition, ambiguous questions on a form, unrealistic time schedules, etc. It is always worth carrying out a pilot survey, if it is at all possible.

9 Organisation. The pilot survey can help here, by answering questions like 'how long will it take a team of n to fieldwalk x hectares under certain conditions?' or 'how long will it take a surveyor to assess the condition of m objects in a store?' (probably not as long as it takes to find them). As always, it is a question of matching resources with needs.

10 Summary and analysis. At this level of an overview, a few general points can be made. First, sufficient time must be allowed for this stage, and over-runs on fieldwork should not be allowed to erode it. It always takes longer than you think. Above all, think about this stage when planning the survey: don't call up your tame statistician with a pile of forms or computer print-out and ask him what to do with them. He will probably tell you.

11 Information gained for future surveys. As John Donne might have said, 'no survey is an island' (even if it is of an island). Your experiences, if properly digested and reflected on, will help you to improve your next survey, or help someone else to avoid the mistakes you made. So take time to reflect, be self-critical, and honest enough to make available a critique of your work.

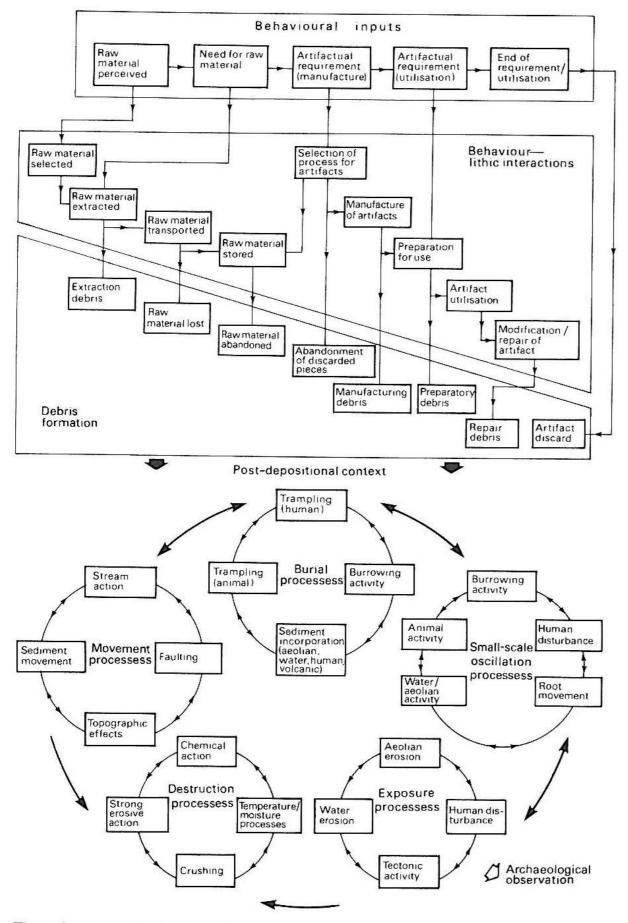
Foley, Off-site archaeology, an alternative approach for the short-sited. Pattern of the past, studies in honour of David Clarke, 1977



General pattern of artifact discard.

This paper has attempted to develop an operational theory that incorporates both a better understanding of the taphonomical basis of the archaeological record and the recognition of the spatial dimension of human behaviour. It might thus be considered a response to David Clarke's (1977a, p. 28) challenge for archaeology to

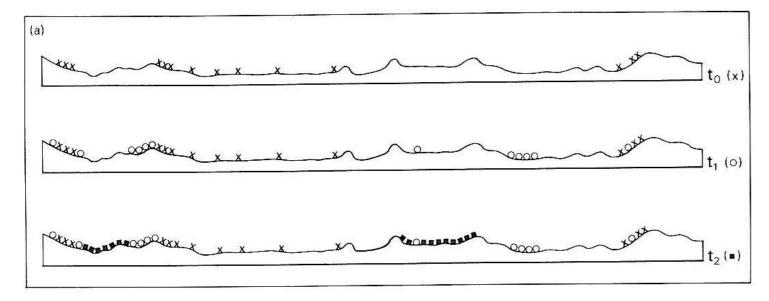
develop its own related range of spatial theory, capable of simulating extinct situations, suitable for dealing with the difficult but not impossible spatial characteristics of archaeological samples and, in its various branches, able to embrace non-settlement site data from linear, sectored, spiral, multiple nucleii cemetry spatial patterns to three-dimensional stratigraphical clusters. We are only just beginning to explore the possibilities of archaeological spatial theory...

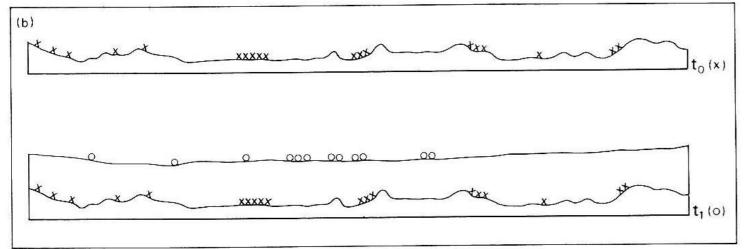


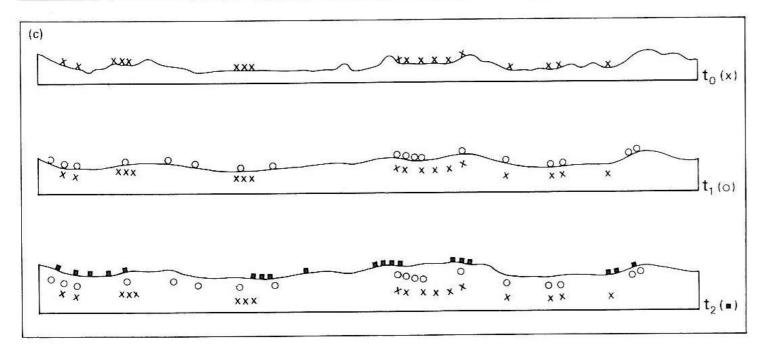
Flow chart of artifact dynamics.

Tafonomija

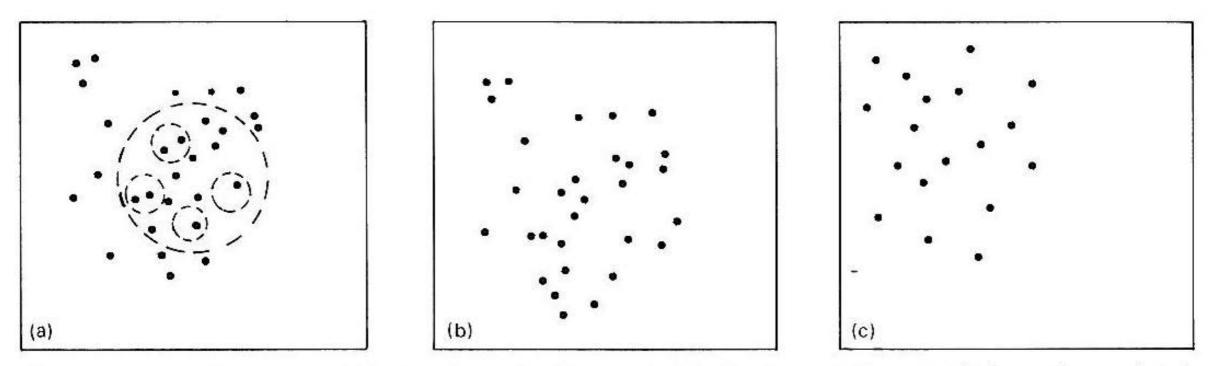
the study of the transition (in all its details) of animal remains from the biosphere to the lithosphere, i.e. the study of a process in the upshot of which the organism pass out of the different parts of the biosphere and being fossilized, become part of the litosphere (Efremov 1940, 85).



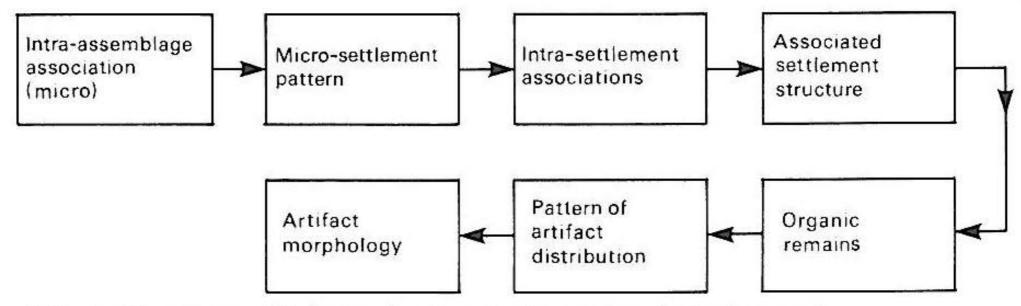




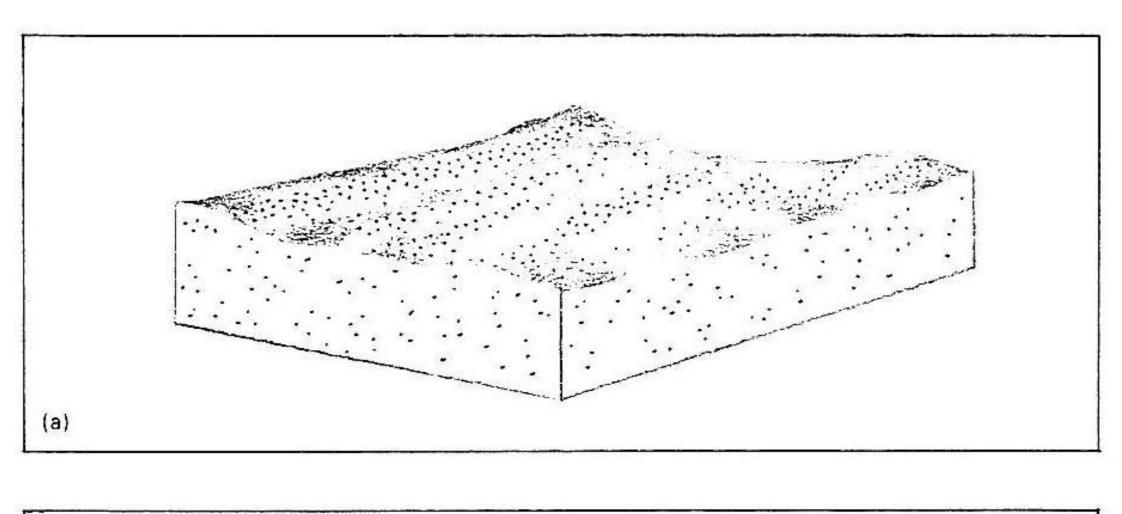
6.6. (a) Cumulative effect of simple artifact discard. (b) Cumulative artifact discard on a landscape suddenly buried. (c) Cumulative artifact discard on a gradually aggrading landscape.

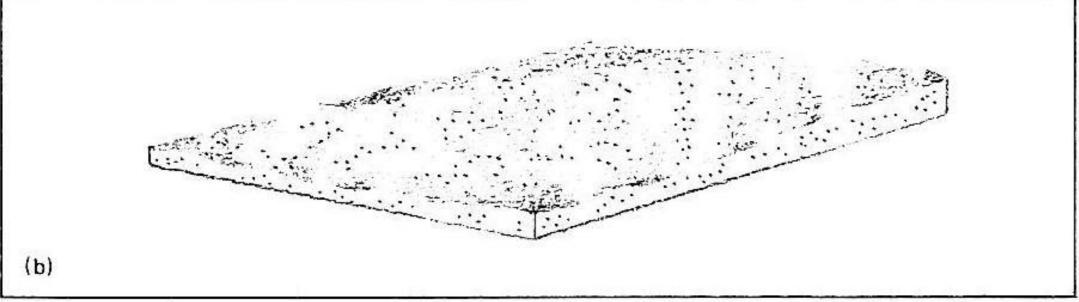


6.3. Sequence of destruction of settlement: (a) situation at discard; (b) loss of associated structures; (c) loss of distributional information.



6.4. 'Typical' process of information loss in the archaeological record.





Archaeological visibility: (a) a landscape with high surface area: sediment volume ratio, and thus low archaeological visibility; (b) a landscape with low surface area: sediment volume ratio, and thus high archaeological visibility.

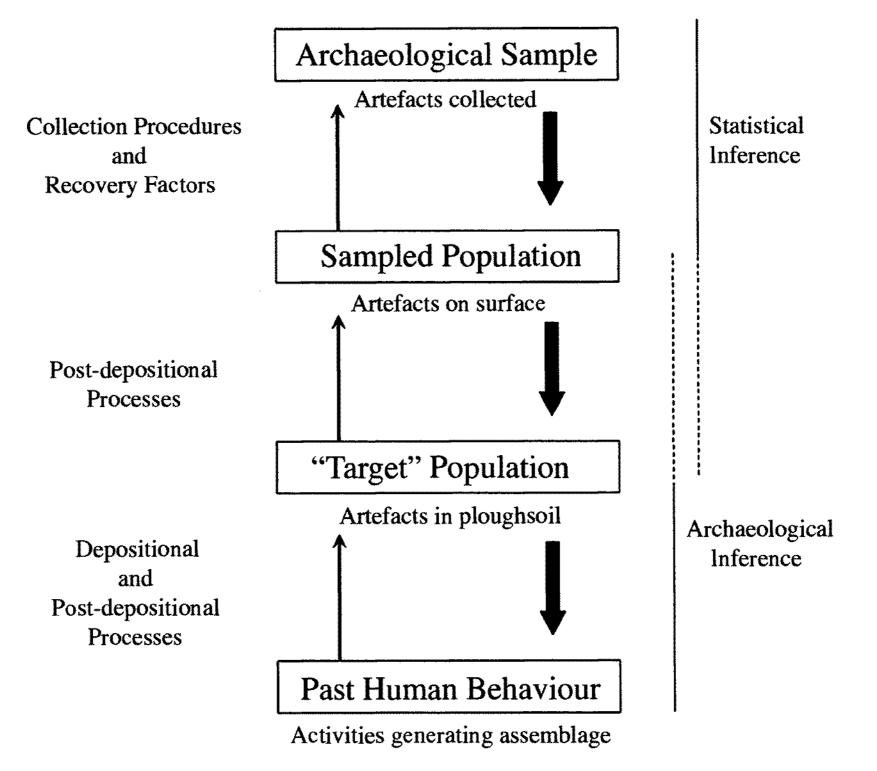
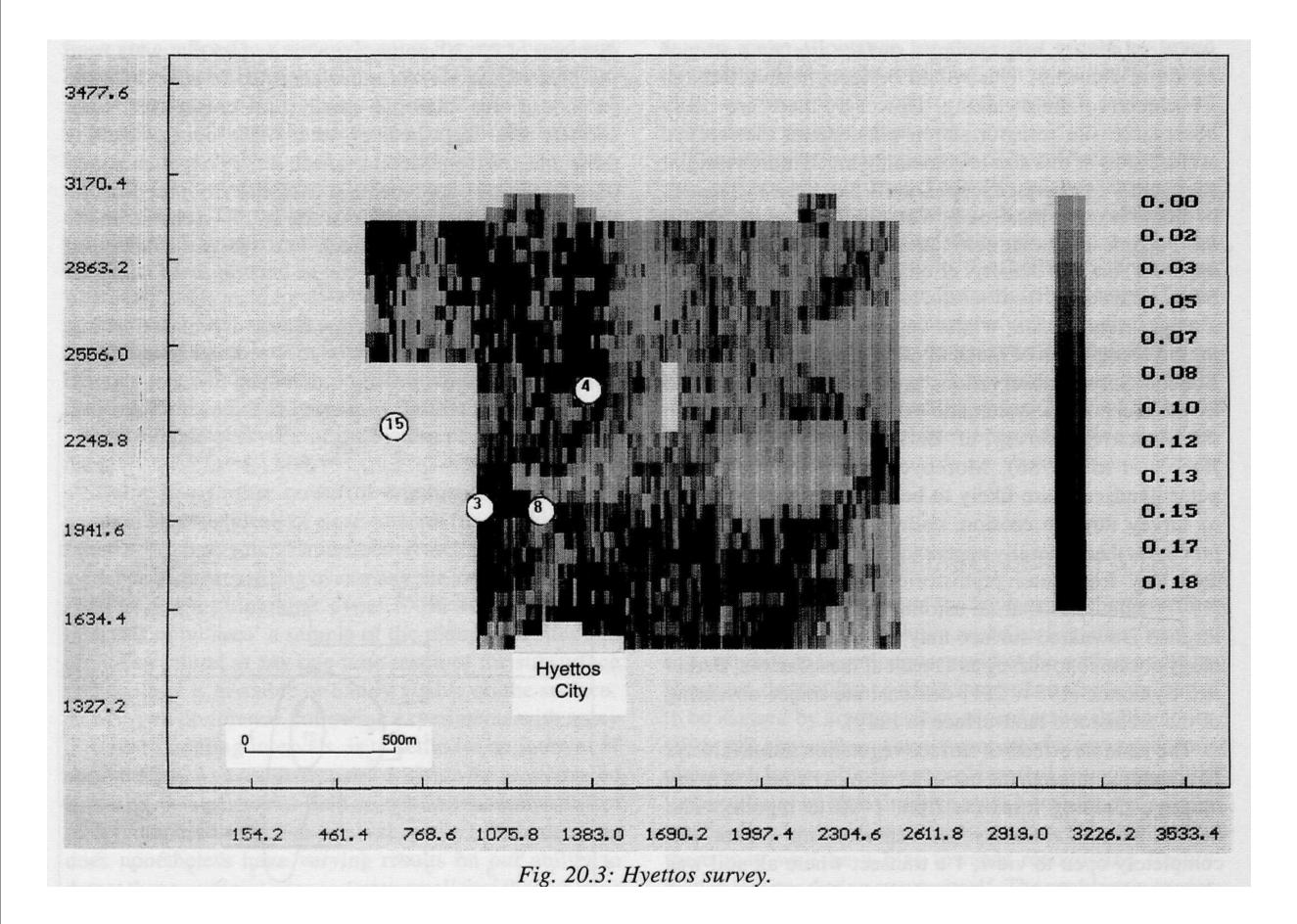
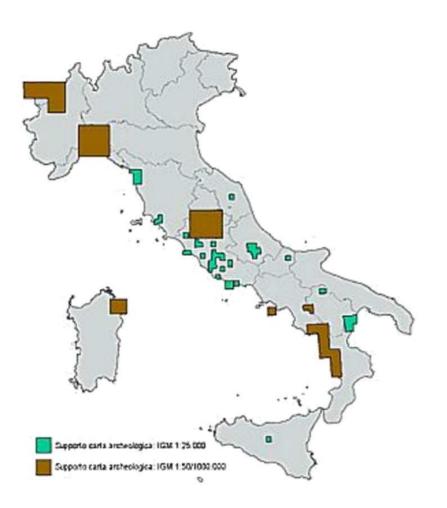


FIG. 1. A model for inference from plough-soil assemblages. (After Haselgrove, 1985: fig. 1.1.)



### Forma Italiae

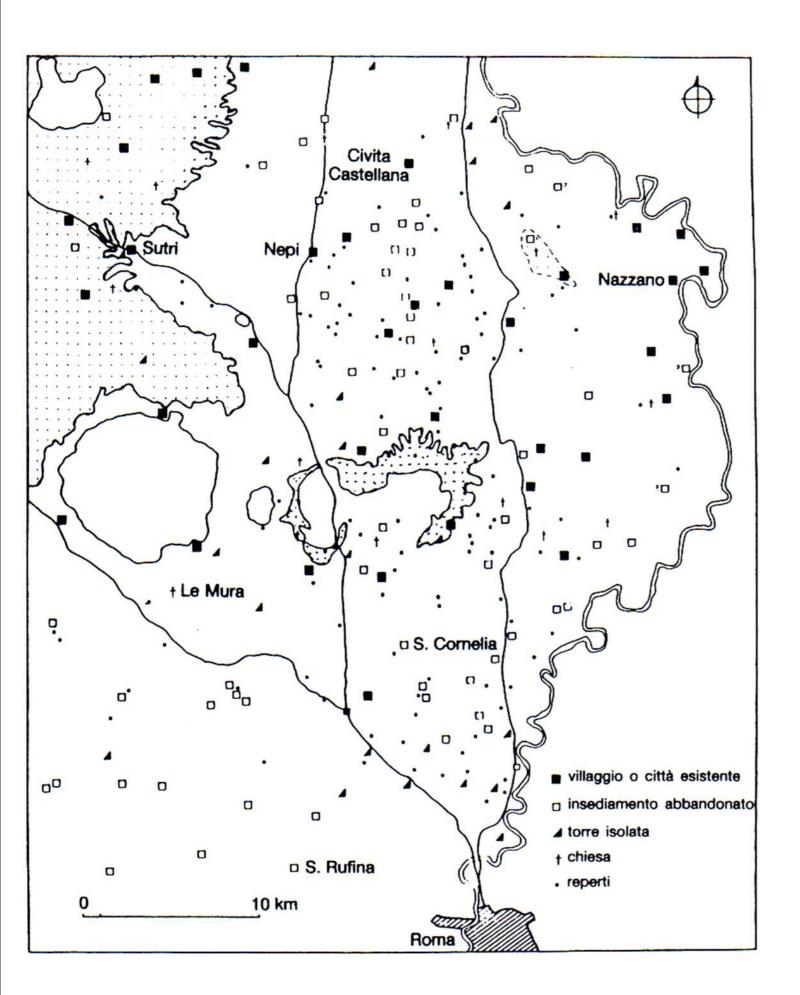




# South Etruria Survey



Fig. 3 – John Ward-Perkins in the field during the South Etruria Survey recording an inscription (Photograph reproduced with the permission of the British School at Rome Library Archive, Ward-Perkins archive).



South Etruria Survey

# 1000 km2 2000 najdišč













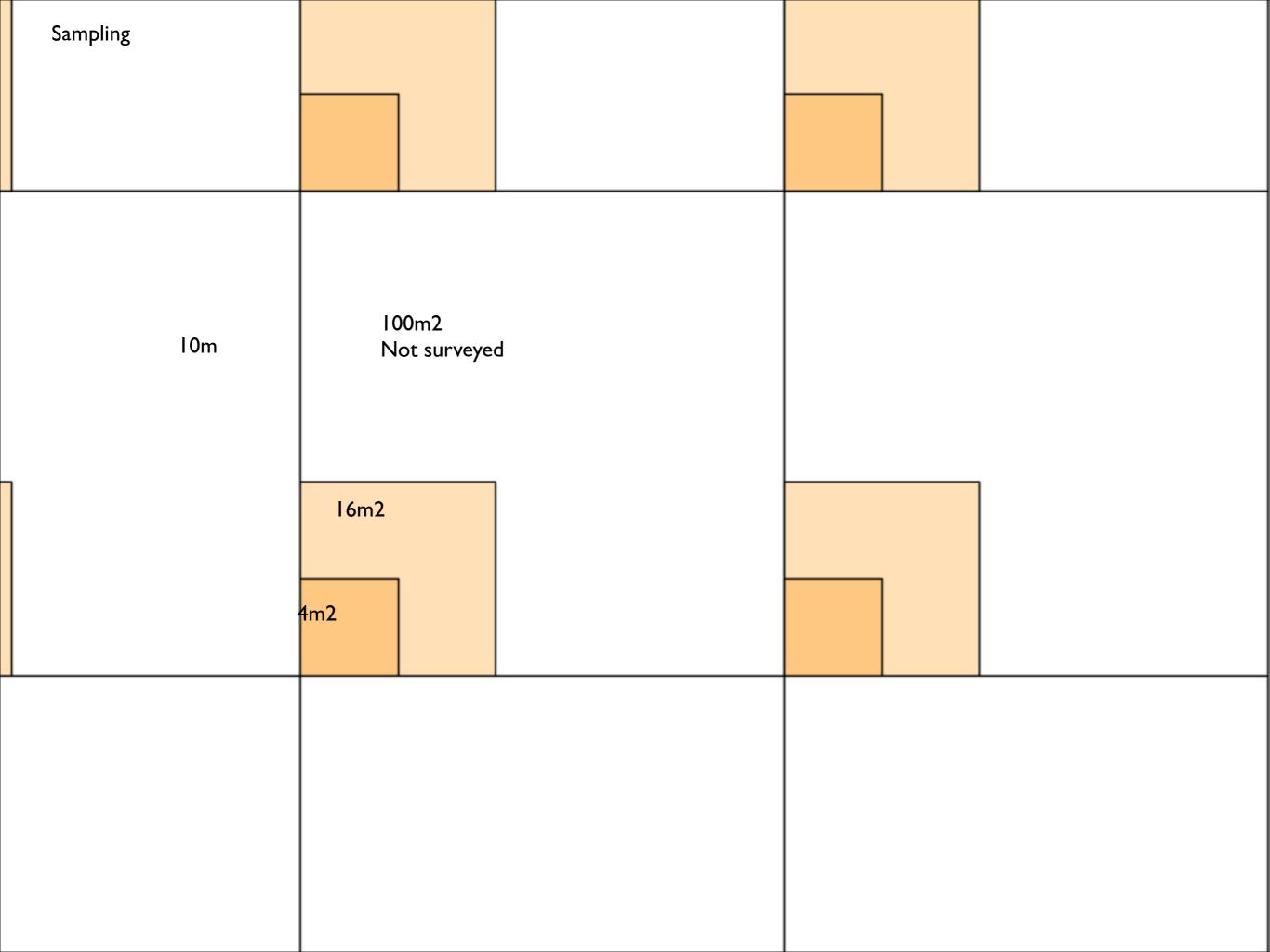














2.2 ha surface surveyed

220 samples

28.755 pieces

~ 1.100 kg of collected material

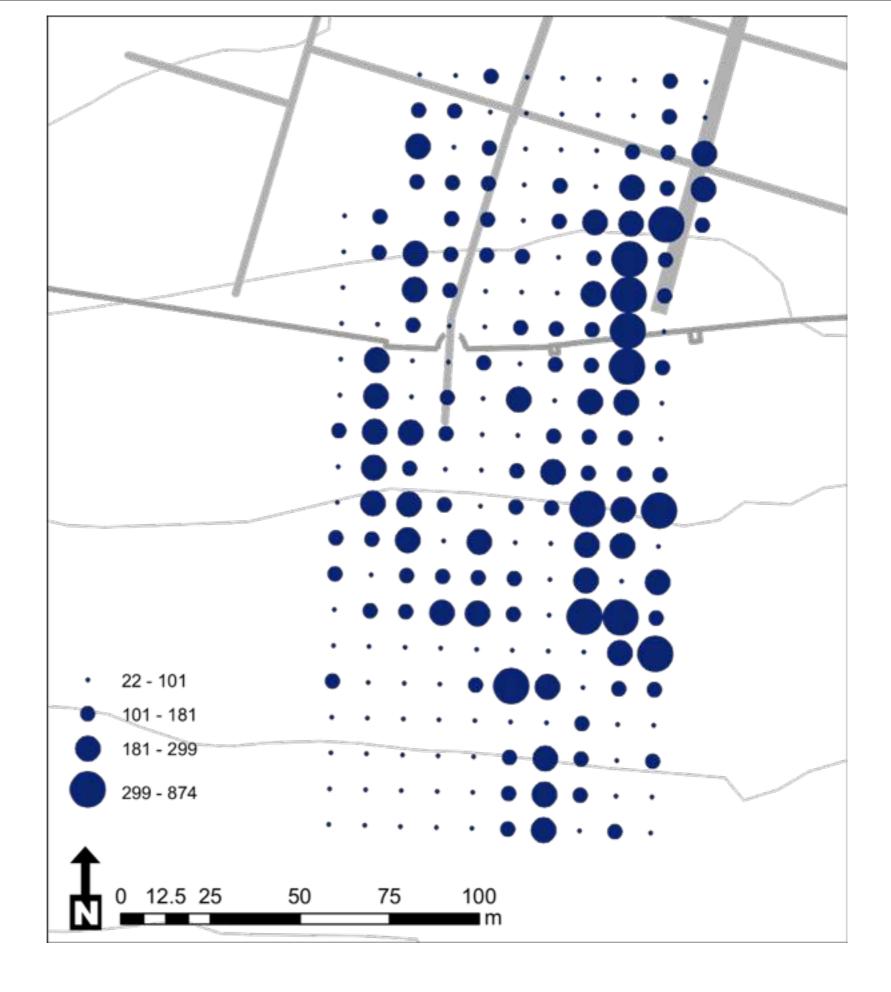
estimated 7.200 kg of material on surface



TREA 2010

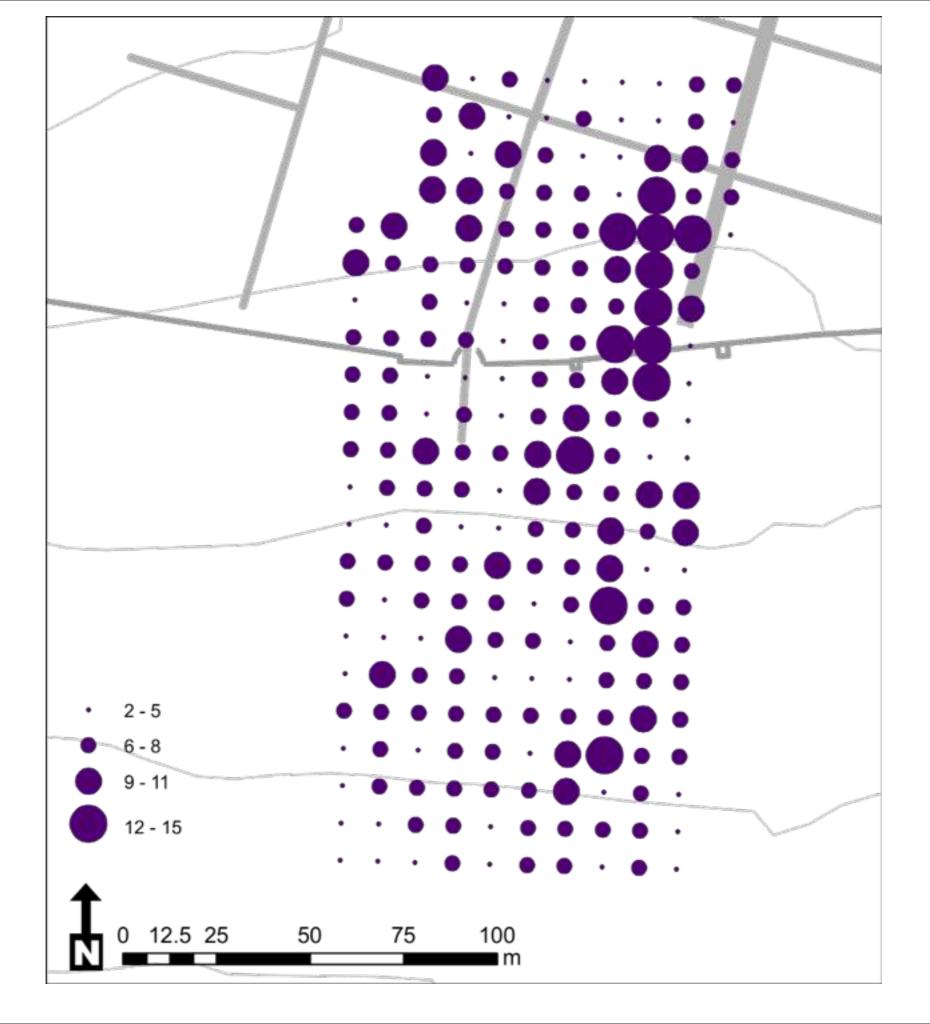
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Black glazed:		Greek or Etruscan fineware:	
Black figure:		Greek or Etruscan coarseware:	
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Campanian B:		Roman fineware:	-
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Phocean red slip:	i i	Late Roman Jamp:	
Late Roman fine ware:		Late Roman pottery wasters:	
Africen cooking ware:		Late Roman undefined:	

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Mesolithic	Early iron age	K Imperi		Post medieval	
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Prehistoric	Bronze age	Repub	lican	Early medieval	
Pre-/proto-bistor	fic 🔲 Protohistoric	Roman		Medieval	
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Out blocks:			Pipe:		1
Daub:			Quern:		
Ferracotta:			Industrial waste:		-
Other building mate	rial:		Mosaic: MSSE	rae	12
Roortile:			Mortar:		-
Roman tile:			Marbie:		-
file:			Non-local stone:		-
formen Brick:			Stone:		-
Srick:			Concrete:		-
Other organic mate	riat				_
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Coins:	Description	coins:			
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yzantine:			Post-medieval:		2
Andieval alkalime/Inc	l-glazed ware:		Medieval undefined:		
Archaic maiolica:			Medieval tamp:		
Asiolica:			Medieval transport at	mphora:	



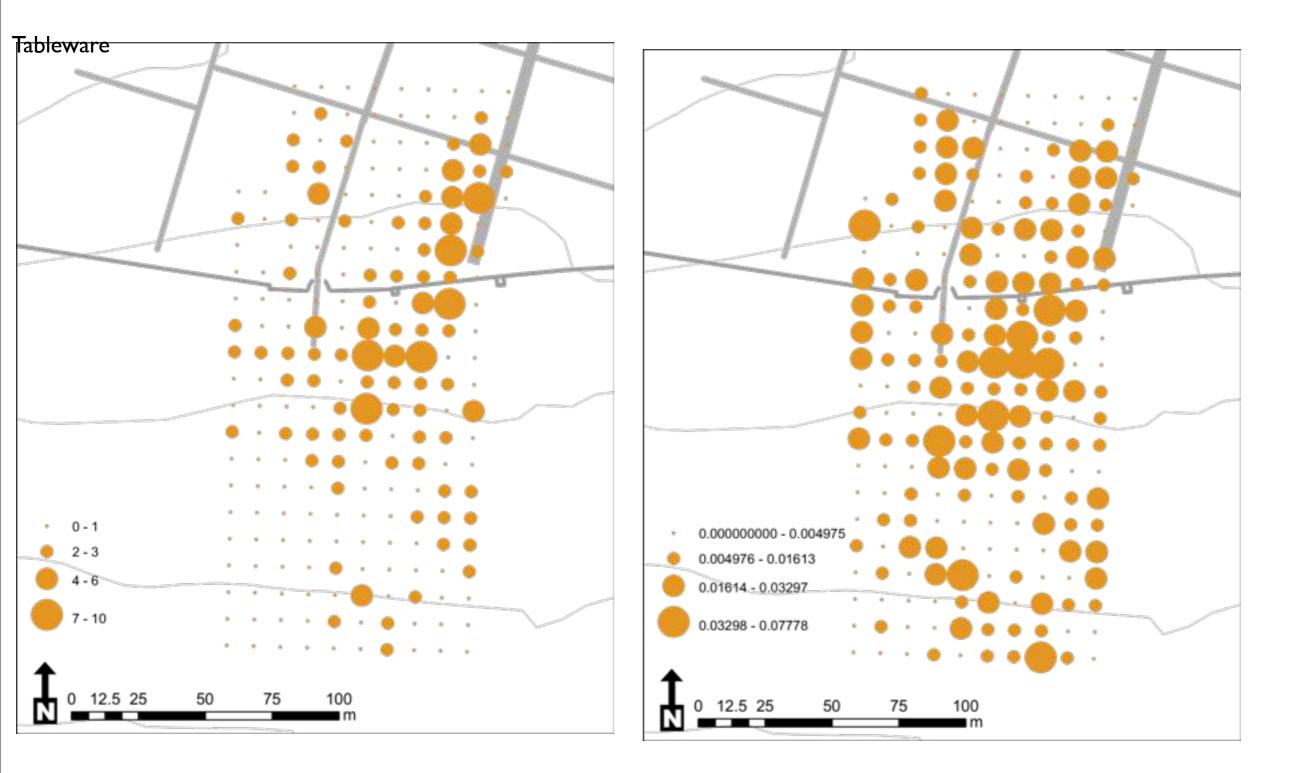
Size

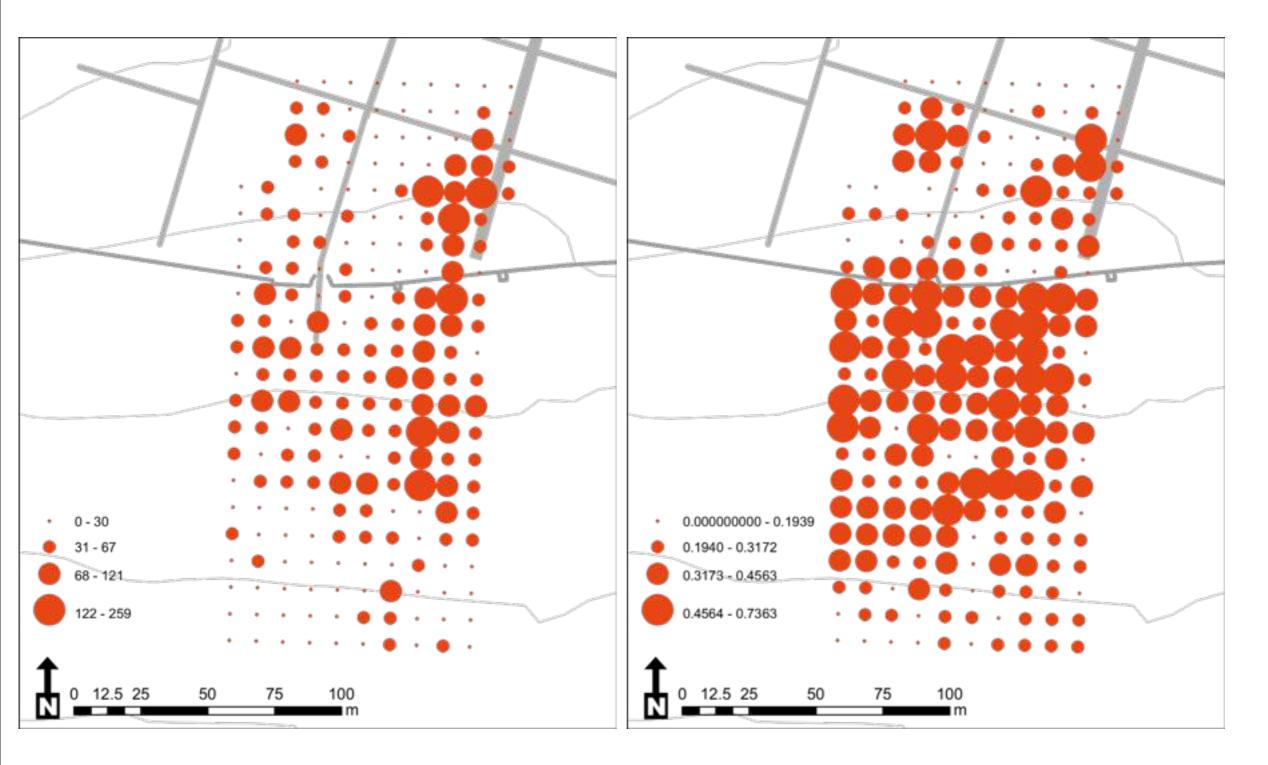


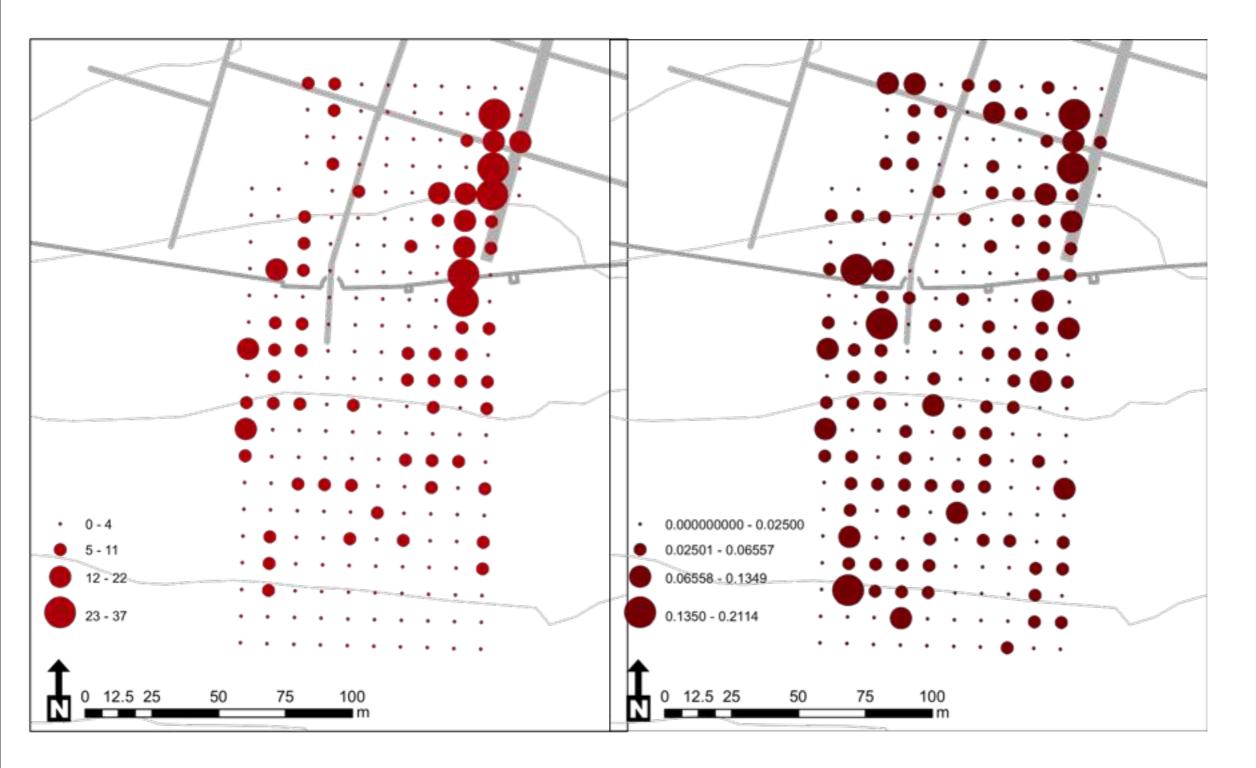


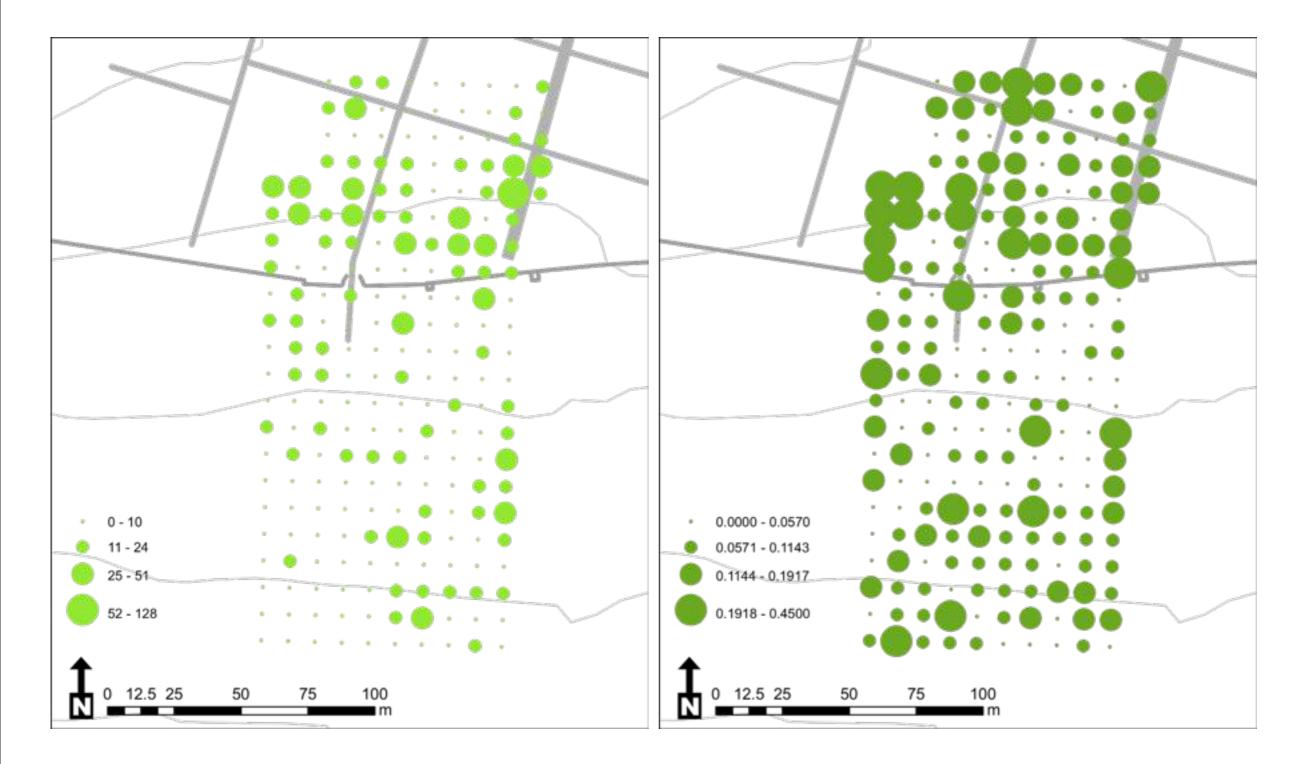
Diversity



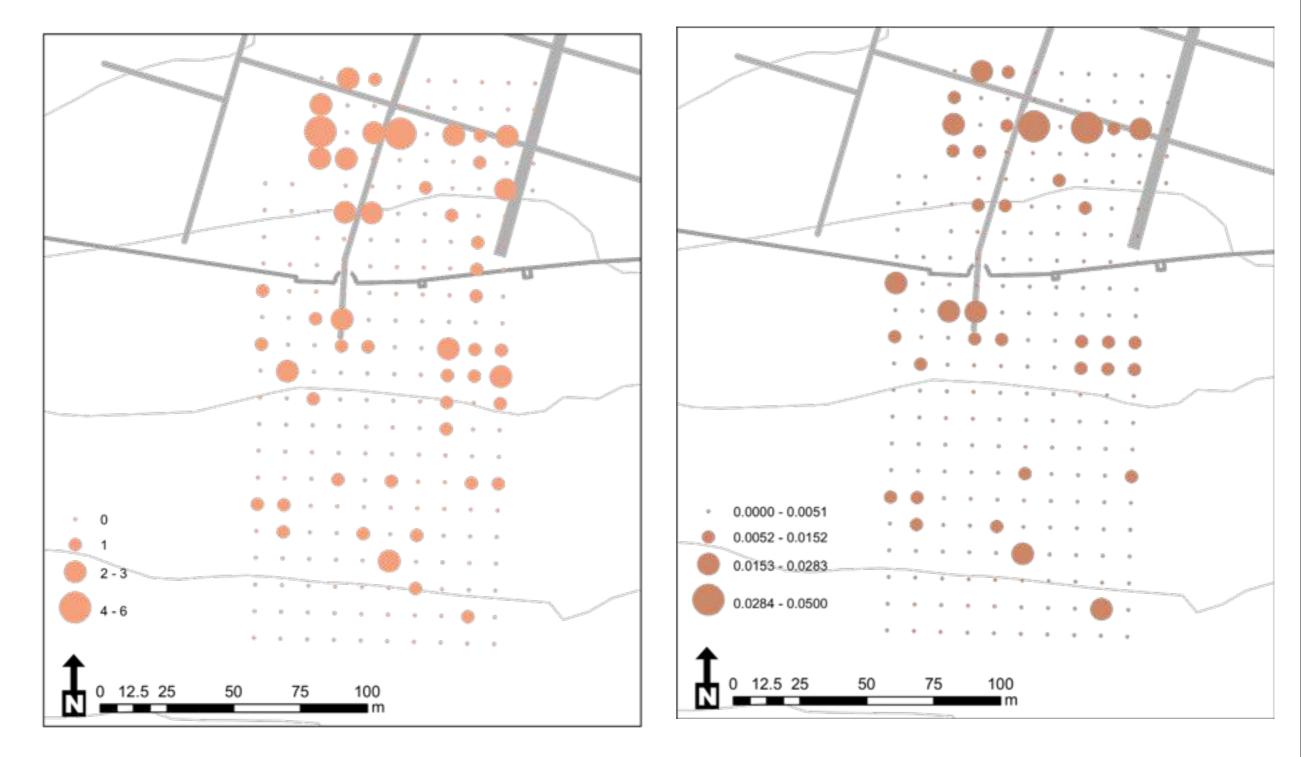


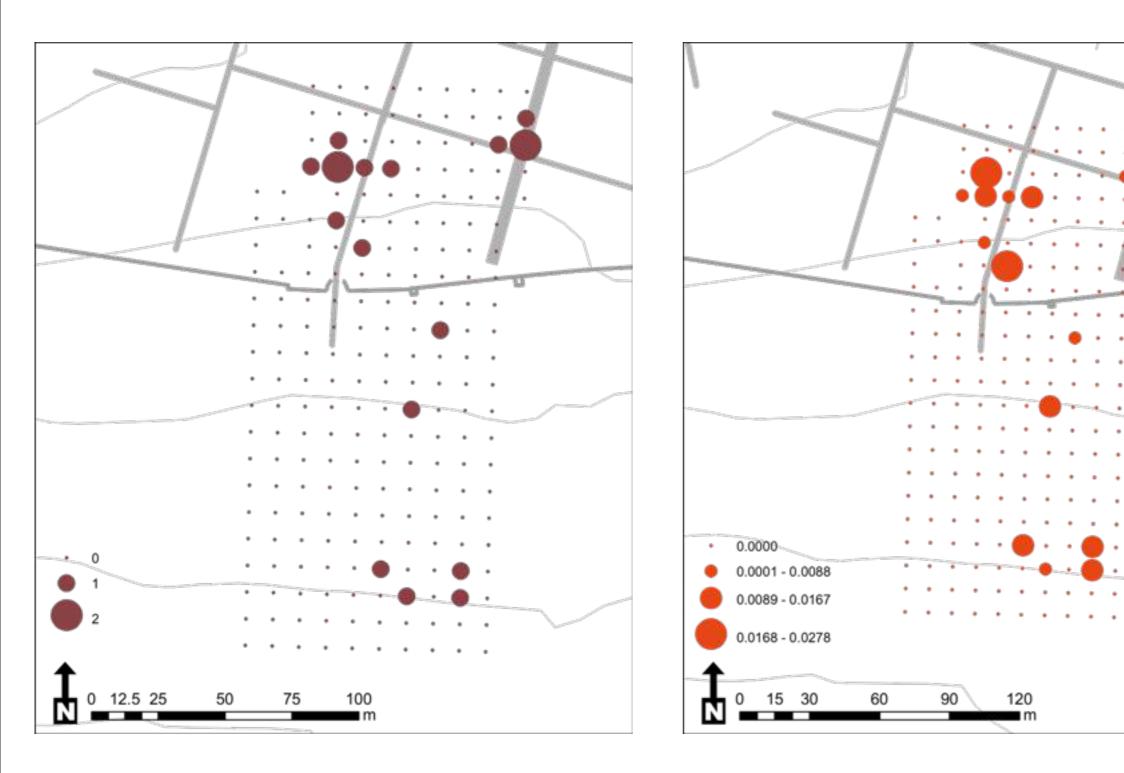




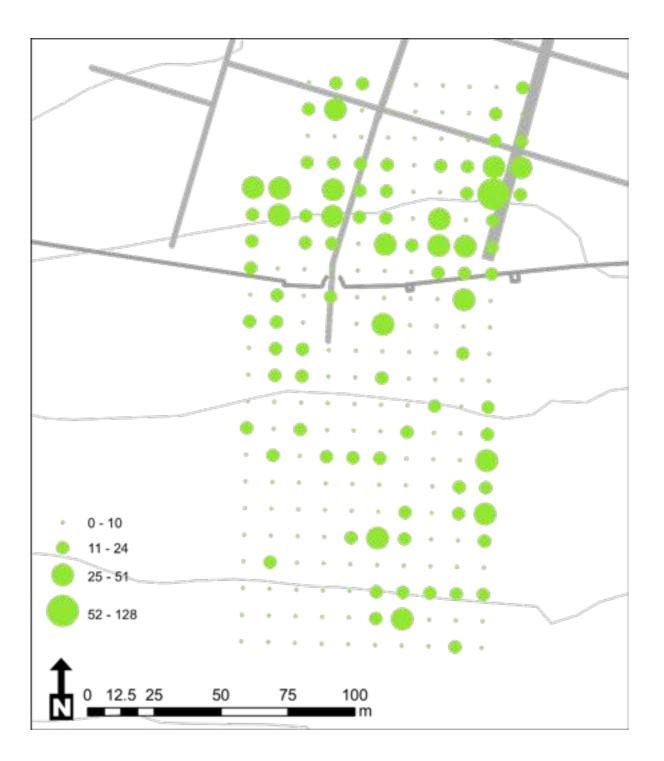


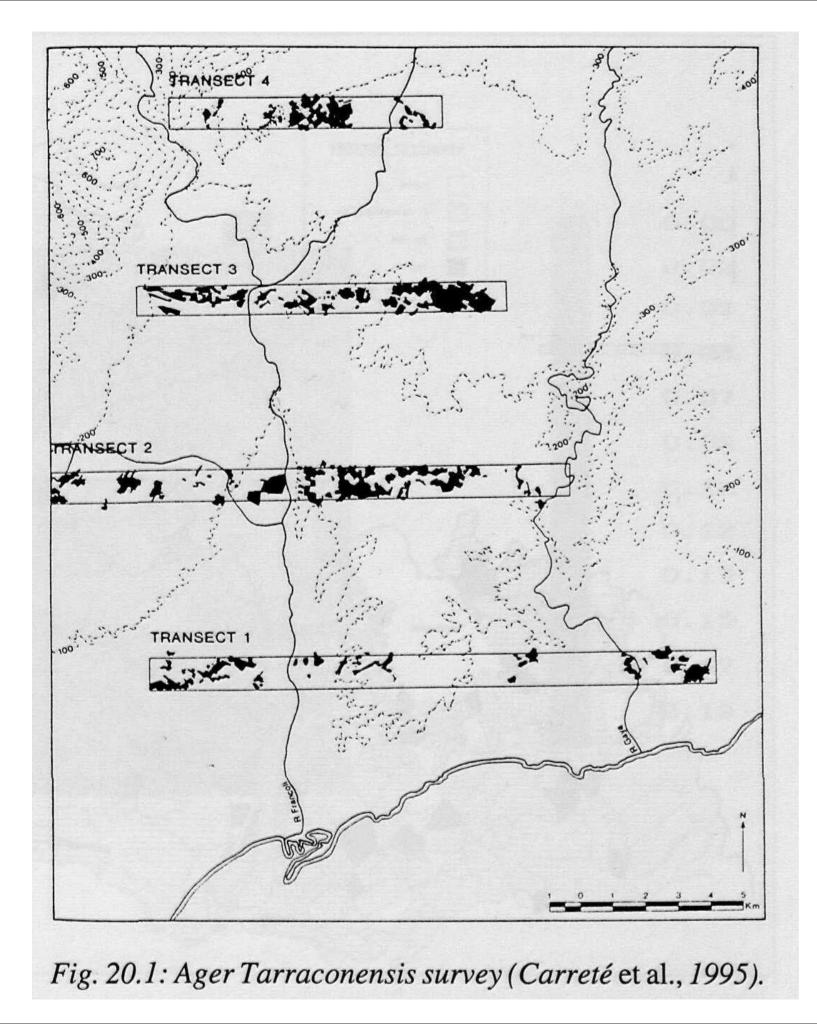
### Protohistoric tiles





### Lamps





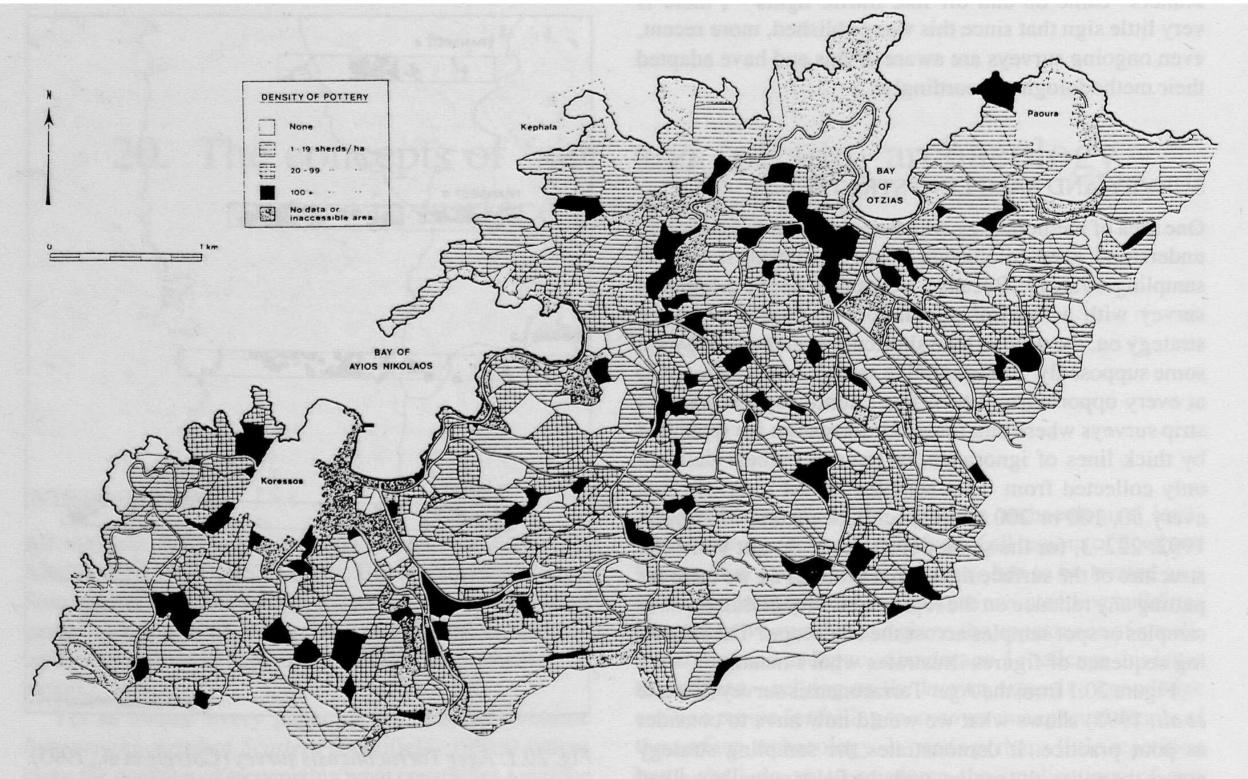
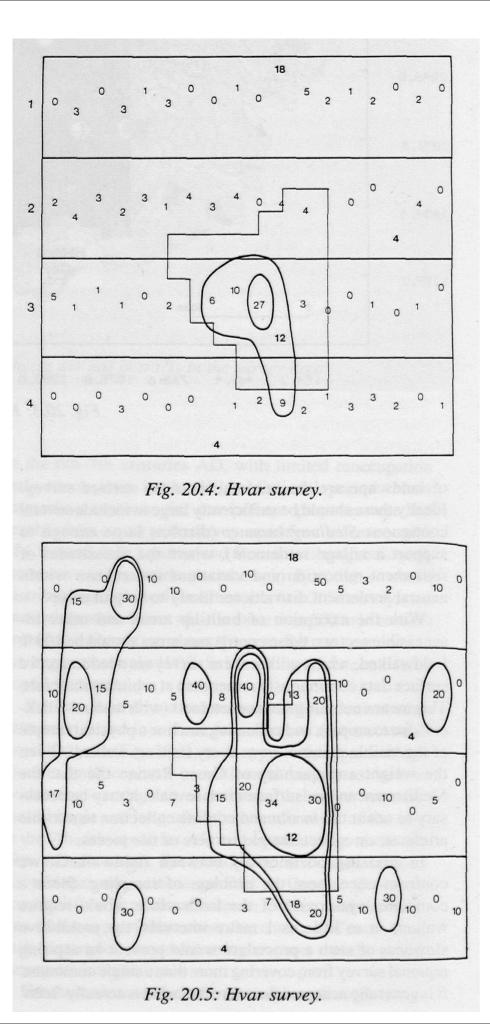


Fig. 20.2: The density of pottery (expressed in sherds per ha) in tracts in the survey area.



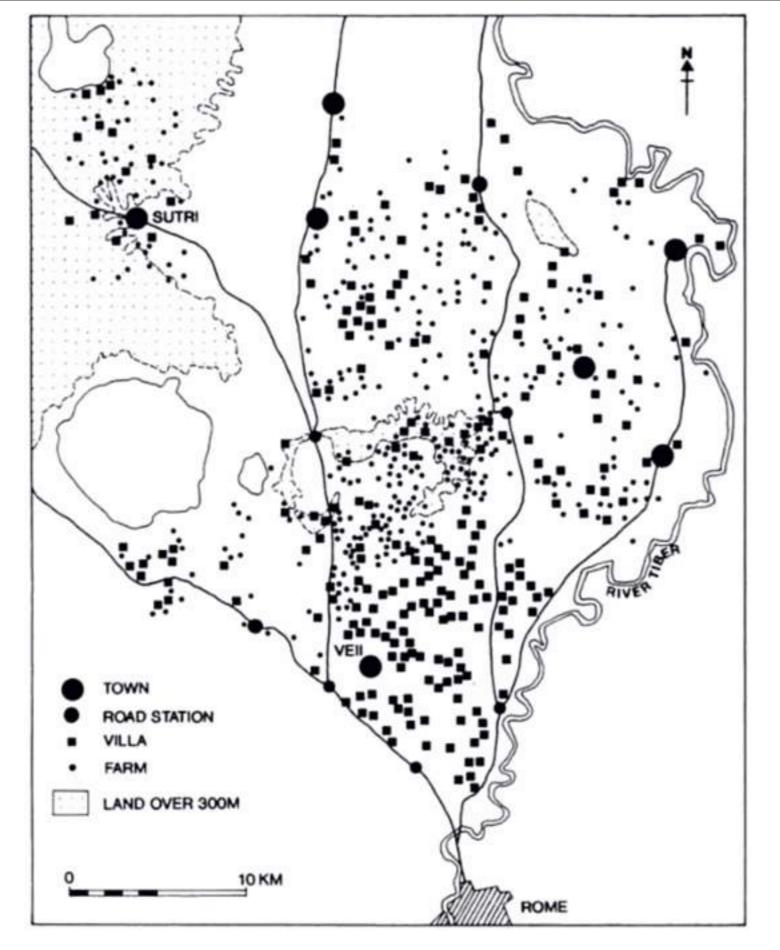


Fig. 2 The South Etruria Survey: the Roman landscape c. 100 AD. (Adapted from Potter, 1979; fig. 35)

Bintliff, J. The concept of 'site' and 'offsite' archaeology in surface artefact survey. Extracting meaning form ploughsoil assemblages. 1999

- No assumptions can be made about the structure and meaning of artefact distributions on a regional landsurface prior to intensive survey; the appropriate methodology is one which will allow structure to make itself known through survey sensitivity.
- 2) You cannot sample in the dark: avoid sample shortcuts wherever possible through fieldwalking large contiguous blocks of countryside of at least *Siedlungskammer* size (that of one and preferably more traditional communes / parishes), counting and collecting surface artefacts continuously in frequent and regular transects (fieldwalkers 5–15 m apart, transects no longer than 50–100 m).
- 3) A logical procedure should be followed in evaluating in the field the complex patterning revealed through intensive fieldwalking. Period-based analysis of the surface distribution of finds should proceed through a series of stages to look for qualitative and quantitative indications of discrete discard behaviours, whose operation can be seen to create particular parts of the regional artefact scatter structure. Typical examples of these behaviours might be extensive manuring; site halo infield manuring/market gardening; occupation sites of varying size and density – reflecting a wide range of variables, both cultural and natural; nondomestic activity foci e.g. cemeteries, shrines, industrial loci, military loci.

All scatters likely to reflect activity foci should be given a secondary detailed survey using a recording and collecting grid for the counting and sampling of finds (and in some cases complementary mapping of rooftile, and geophysical and geochemical sampling, cf. Bintliff, 1992)<sup>(2)</sup>.

### f recurrent distorting factor e sites makes any suggesti wing easy reading of surfa l; sites of the same function aried surface densities accounts se, history of cultivation, t

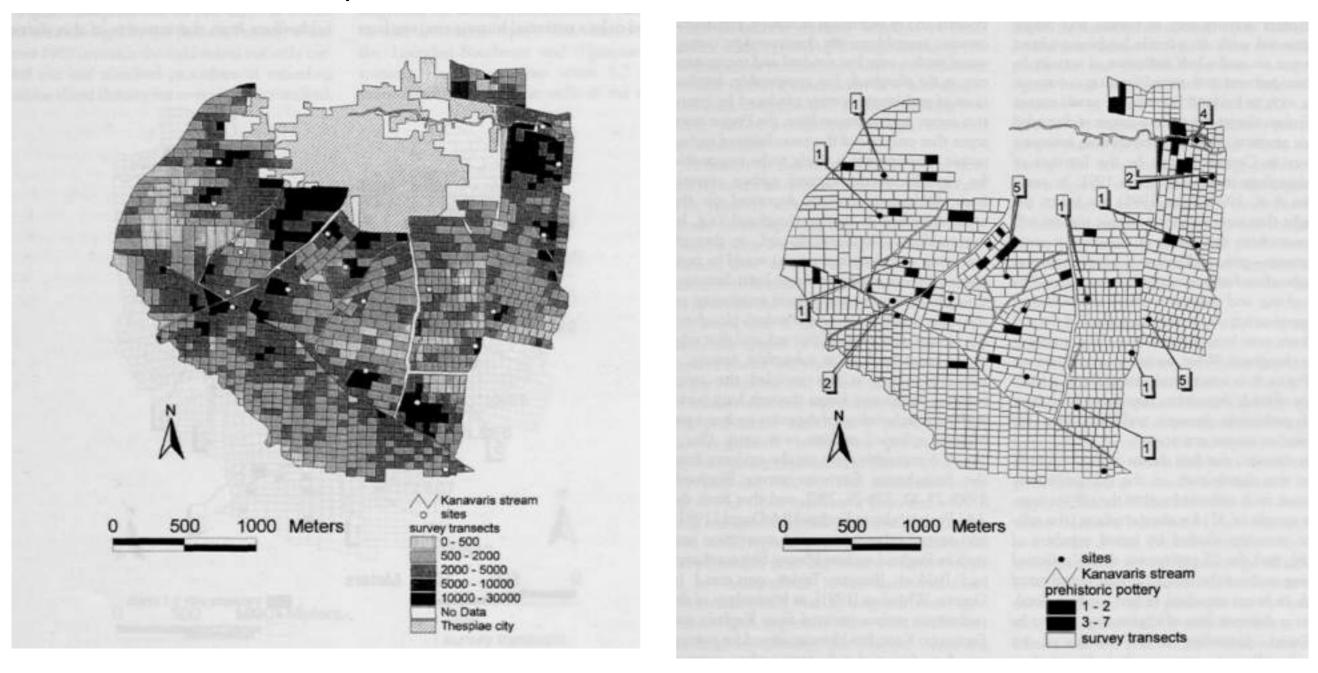
range of activity foci with highly variable surface manifestations even under identical soil conditions and land use histories.

- 5) Revisiting and careful, intensive examination of all but the largest sites can assist in reducing interpretative distortions, but experience suggests that a notable proportion of surviving sites eludes even the vigilant intensive survey, especially when employing singlevisit fieldwalking of a district.
- 6) Field survey is an incomplete guide to regional settlement systems, but it is an illusion to suppose that excavation or historical source control is a firmer basis these approaches are probably even more inadequate for regional settlement reconstruction than largescale intensive survey. In combination however I believe that these three approaches can create Piggott's 'cumulative credibility'; many of the more intractable problems of settlement and population reconstruction and interpretation may be assisted considerably through a dialectic in the field involving information from all three sources of regional information.

Settlement size	Radius of scatter (km)		
Hamlets and farmsteads < 1.5 ha	0.2–0.4		
Villages 2–9 ha	0.6–1.0		
Small town* 10-29 ha	1.3		
Large town/city > 40 ha	2.2-6.0		
*One example only: site 48 in the North	th Jazira.		

Fig. 20.6: The approximate radius of significant field scatters surrounding archaeological sites in the Middle East (total sample: 19 settlements).

## Hidden landscapes



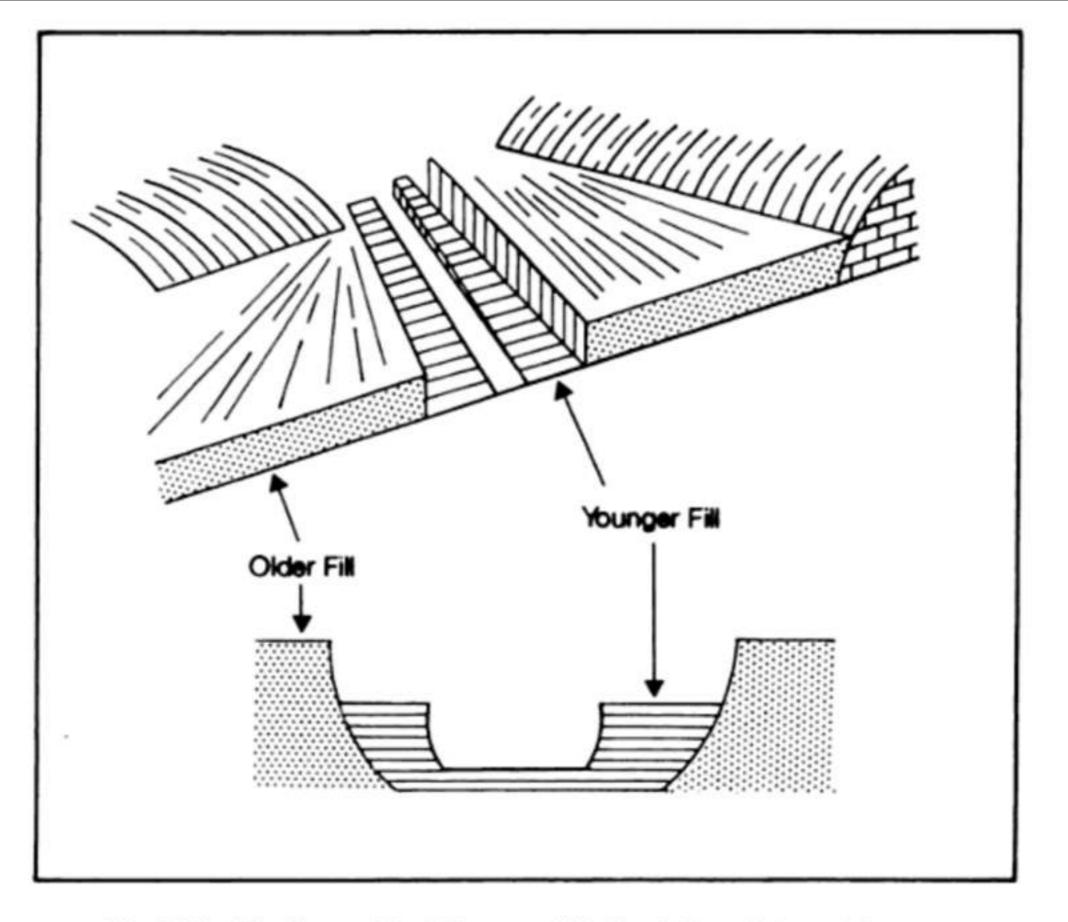


Fig. 3 Vita-Finzi's model of Younger Fill alluviation. (Adapted from Vita-Finzi, 1969; fig. 37)

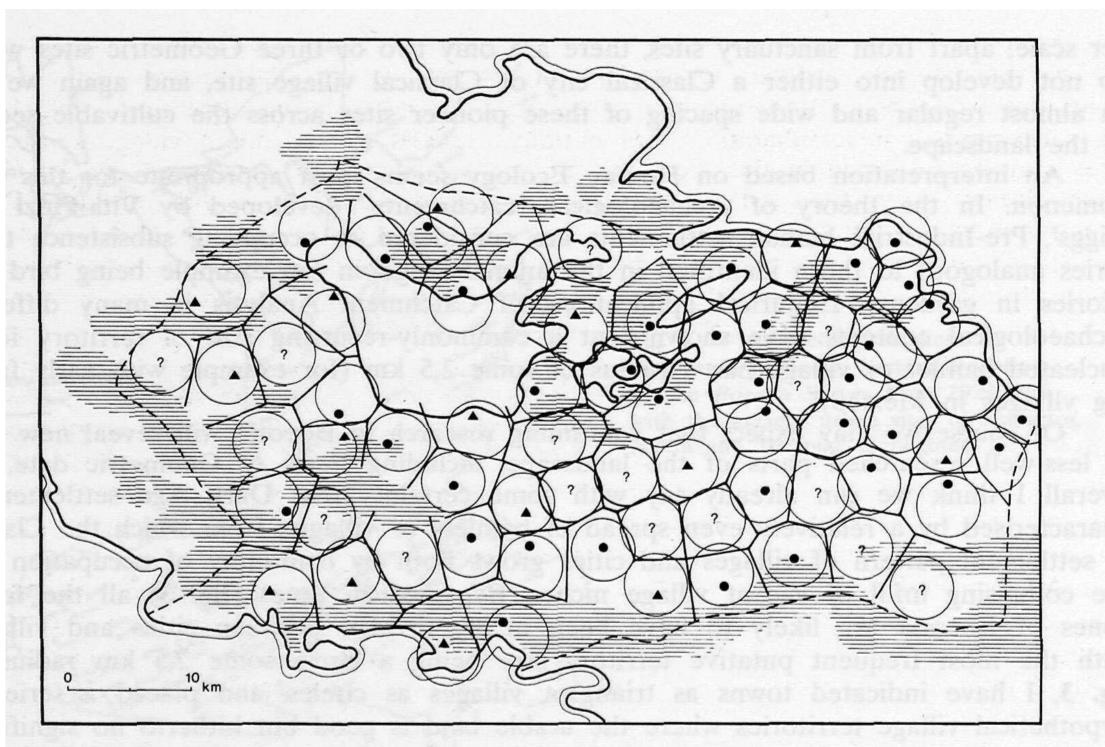


Fig. 3. — Territorial analysis of the town and village network of Classical Boeotia. Known city and village sites shown as black triangles and circles, hypothetical village locations shown as question marks. The territories reconstructed for each settlement have been achieved through a Thiessen Polygon analysis (solid black cell borders). Within each hypothetical territorial cell a modular circle of 2,5 km radius has been fitted to illustrate the comparable size of most putative territories.

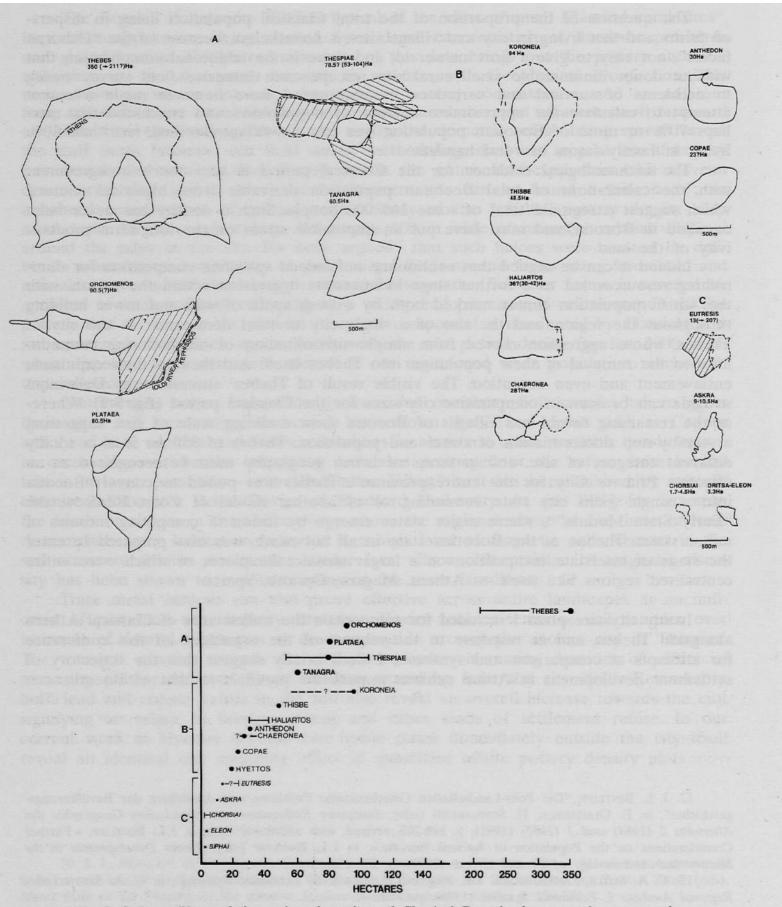
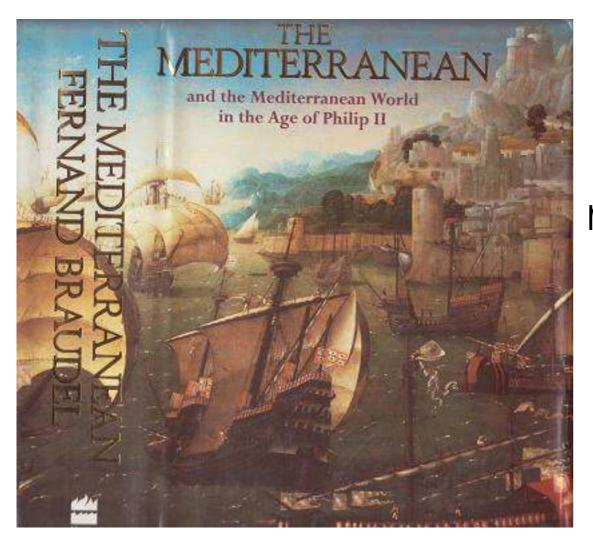


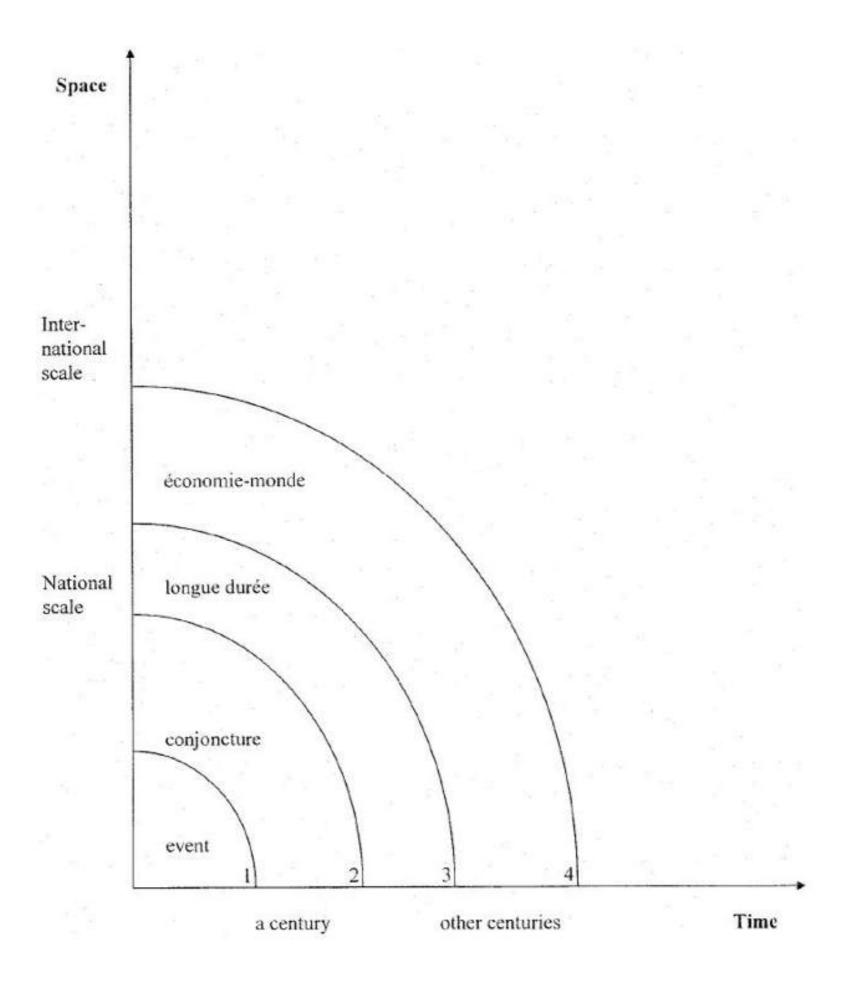
Fig. 7, 8, 9. — Plans of the main urban sites of Classical Boeotia drawn to the same scale, grouped into three major size and status classes (A, B, C) and graphed.



Fernand Braudel, The Mediterranean and the Mediterranean world in the Age of Philip II

[t]he first part is devoted to a history whose passage is almost imperceptible, that of man in his relationship to the environment, a history in which all change is slow, a history of constant repetition, ever-recurring cycles. ... in the second part of the book, studying in turn economic systems, states, societies, civilizations and... in the complex arena of warfare.... the third part gives a hearing to traditional history, ...that is, the history of events. (201)

It was when I was constructing my book on The Mediterranean, I was led to divide the times of history according to their different speeds, according to different temporalities. I think there are actually rapid times, longer times, and almost immobile times. But it was in the end of this course, not by a preliminary operation, that I arrived at this conception of time of history. Similarly, the longue durée of which I am the advocator, it was an artifice by which I was escaped from certain tangible difficulties. I did not think to longue durée before writing my book on The Mediterranean. (Braudel 1978, 244 5)



HISTORY OF EVENTS SHORT TERM—ÉVÉNEMENTS Narrative, Political History; Events; Individuals.

### STRUCTURAL MEDIUM TERM—CONJONCTURES

HISTORY

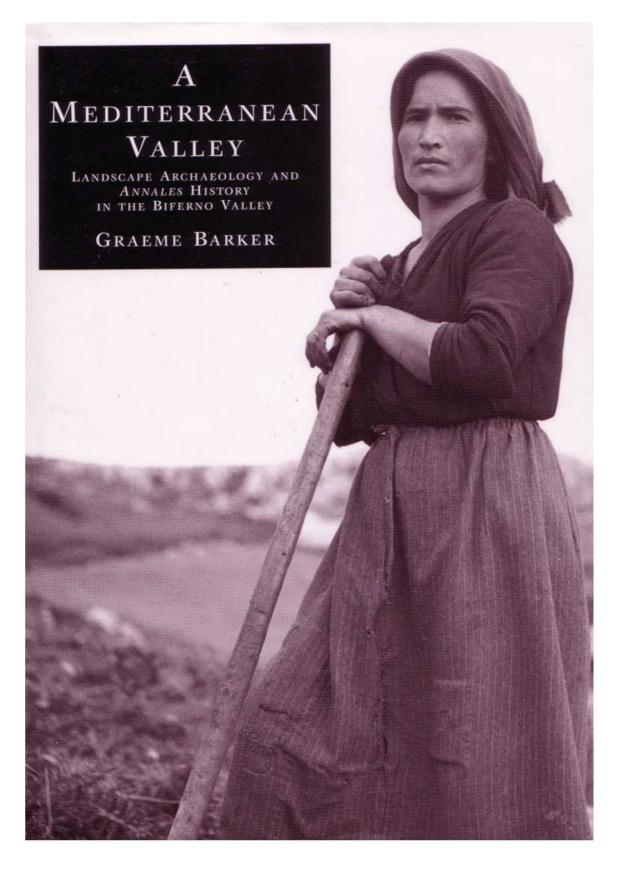
Social, Economic History; Economic, Agrarian, Demographic Cycles; History of eras, regions, societies; Worldviews, ideologies (Mentalités).

#### LONG TERM-STRUCTURES OF THE 'LONGUE DURÉE'

Geohistory: 'enabling and constraining'; History of civilizations, peoples; Stable technologies, World views (*Mentalités*).

Fig. 14. — Braudel's model of historical time or "Structural History".

## Biferno Valley Survey



#### SELECTING THE STUDY REGION

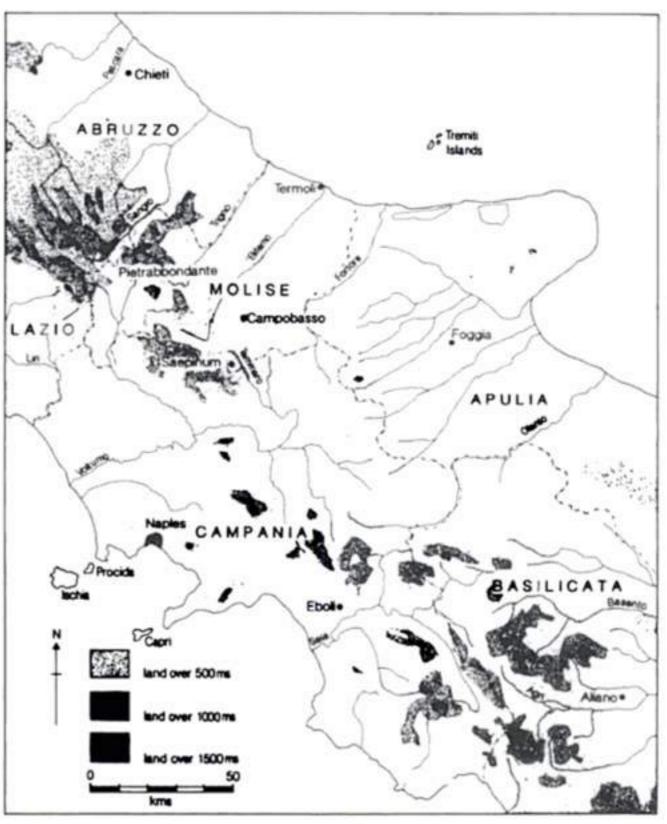


Fig. 4 Central-southern Italy: the natural landscape, the modern political regions, and places mentioned in Chapter One.