Phantom cultures of the Levantine Epipaleolithic

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We thank those whose interest in the Levantine Epipaleolithic has led them to comment on our research. Such public discussion of differing interpretations is vital to understanding the past. In this article, we briefly respond to some of the points raised by those writing in this issue (G.A. Clark, N. Goring-Morris, D.O. Henry and J.L. Phillips) and in a previous issue (Pollner 1995; Keshman 1995) of *Anncyghty*.

Regardless of their perspective, these commentators would likely agree with us that the Levant was inhabited by a number of forager groups during the late Pleistocene. Each group probably ranged over a defined spatial territory and maintained relationships with neighboring (and possibly distant) groups. Such had a social self-identity, and varying social affinity with other groups. Although they employed a diverse material culture, discarded chipped stone artefacts are the most common behavioural residue that remains. It is in the causes of variability in these lithic artefacts and their interpretation that we strongly differ — both in our theoretical approach to the data and our results.

Theoretical perspective

In studying lithic artefacts, we consider typologies to be arbitrary, often convenient, system designed by archaeologists to measure morphological variability (just as kilometre or colur charts measure other aspects). Those criticizing our study envisage Epipaleolithic indus-

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Received 8 August 1995; accepted 13 October 1995; revised 18 December 1995.

References

typos as comprising a finite set of discrete types, discovered by archaeologists, whose frequencies vary in time and space. While variation, from this perspective, represents deviation from these types, it also can obscure meaningful patterns. This theoretical dichotomy pervades the natural sciences. Our perspective has been characterized as "materialist" or "popula-
tion thinking," the alternative approach is termed "essentially" or "biological thinking" (Bateson 1986; 1989; Mayr 1976; see also Clark this issue, and 1901). These differences in theoretical approaches extend beyond the indi-
vidual lithic forms to the interpretation of larger-scale patterns.

While neither of these approaches is inherently right or wrong, each may be more or less parsimonious for a given data set and research objetives. Lithic assemblages have long been analyzed from an "essentialist"/"ontological" point of view, but numerous recent studies support the employment of a materialist/population paradigm. Examples include analyses of Middle Paleolithic assemblages from Europe and SW Asia (Barton 1980; 1989; 1991; Dibble 1987; 1988; Kuhn 1994; Rolland 1981; Rolland & Dibble 1990; Upper Paleolithic and Early Epipaleolithic assemblages from SW Asia (Barton et al. 1988); and North American Ancestral and later prehistoric assemblages (Wienken & Raymond 1980; Floeniksen & Wilks 1984; Hoff-
man 1985). These studies show that macroscopic morphology is largely continuous in sets of lithic artefacts and truly discrete types are few; common archaeological classifications are arbitrary divisions of this continuous variability. This accords well with ethnographic accounts of lithic technology among recent foragers (e.g. Gould et al. 1971). Given these studies, we feel that the materialist/population approach we advocate better fits the lithic data in question here, and has a greater potential for understanding behavior in the Late Pleistocene Epipaleolithic.

The need for portability and functional vari-
ability in forager equipment, and spatial/tempo-
ral variations in the quality and abundance of suitable raw materials, strongly influence lithic artefact design, microblade, core, and discard (Barton 1981; Nelson 1981). Coupled with the reductive nature of lithic technology and the tendency for foragers to invest little energy in making artefacts, such as lithics, with short use-lifetimes expectations (Barnett 1990). Nelson 1991. this leaves scant room for func-
tion-specific design or for imbuing artefacts with active style (Barnes Clark 1989). Further, as es-
sential elements of forager economic systems, lithics are likely to be under strong selective
control, the absence of drift -- producing no-
chronic variation (Sacket 1982; 1983) or pas-
sive style (Clark 1989) that might allow for
tracking of social/obscure lines -- are likely mini-
nal. These constraints, which prevent lithic technology, place severe limits on potential form
and impart a large amount of equivalency to the morphologies of the scattered discard as-
semblages that comprise the Pleistocene ar-
chaeological record. For example, forms such as the microliths and microblades discussed here recur over Much of temperate Eurasia.

Finally, the morphological features used to construct typological typologies were not created to distinguish the cultural groups they are claimed to identify, or to answer any specific research question (except perhaps to sort as-
semblages chronologically). In fact, they com-
monly conflated multiple, different causes of morphological variability. Microlithic system-
atics, for example, mix at least size and shape, production stages, and hunting modernization.

Data considerations
Several of the authors (especially Cuming-Mor-
ris and Philip) criticize the quality of the data and the analyses we used in our original study. We are painfully aware of the shortcomings of published data on the Levantine Epipaleolithic (see Ortonowski & Breton 1980). While we would prefer to utilize raw counts and measurements or at least to integrate basic, summary statistics (count, range, standard deviation, mean, median, min, etc.). we have lacked the funds to find enough size data for even a limited number of forms. Counts of most classes, and especially un-
classified finds, are often unreported and measurements are rare indeed. Notable our primary source of data -- with their admitted shortcomings -- were published by those indi-
viduals most critical of our study.

Contingent on these limitations, the data are very coarse-grained. Even doubling the size of our original sample (from 120 to 240 assem-
bles), to account for those lacking usable data and unpublished ones alluded to by our crit-
ics) over the course of 4500 years (14, 5,000 - 5,0,000)
among all the preceding ‘cultures’ combined (i.e. Geometric Kebaran, Madamaghan, Mushabian, Qerenian, Ramonian), in spite of a much smaller sample of Natufian assemblages (mean, $\bar{X} = 49$, s.d., $\sigma = 29$, range = 7–85, N = 27 for the Natufian vs $\bar{X} = 25$, $\sigma = 22$, range = 0–76, N = 78 for the preceding ‘cultural mix’). While microlith frequency is used to differentiate Geometric Kebaran and Mushabian ‘cultures’, it is not used to subdivide the Natufian, in spite of increased variability.

**Microlith typologies**

Our model explains much of the variability in the frequency of those microliths most commonly used to distinguish Epipalaeolithic ‘cultures’ as discard residues from different stages of microlith manufacture and compound tool maintenance. Because compound tool maintenance involves periodic replacement of some of the microlithic components, a new microlith would need to fit into the space left by one being replaced. We showed how slight modifications of a replacement’s hafting portion (i.e. its backing) to fit a pre-existing space would alter a geometric shape from one type to another.

Both Kaufman (1995) and Follner (1995) mistakenly equate our explanations of variability with edge rejuvenation models proposed for the Middle Palaeolithic (e.g. Barton 1988; 1990; Dibble 1987; 1988; Dibble & Rolland 1990; Rolland 1981). However, most of our discussion centres on the production of microlithic artefacts: maintaining compound tools involves hafting new microliths, not reshaping old ones.

All the authors critical of our study maintain the essential distinctiveness of microlith types, although they disagree about which are distinct. (For example, Goring-Morris recognizes continuity between lunates and triangles, but Henry feels that these two classes are clearly distinguishable by any ‘experienced typologist’.) Kaufman and Henry further charge that no transitional forms exist among microliths. By definition, there can be no transformation between types in an essentialist paradigm, only deviation from ‘typical’ forms or additional types.

Our microlith production model (Neeley & Barton 1994: figure 6) shows a clearly transitional sequence — using the most common microlith types. For even more finely transitional forms, we refer the reader to Goring-
Morriss (1987) detailed account of the Negov Epipalaeolithic. Every conceivable intermediate form is illustrated and tabulated, including examples of the "Helwan trapezo-rectangle" and "stypical Helwan lunate" (Goring-Morris 1987: 458–9), they are invisible from an essentialist viewpoint, however.

The compound tool maintenance we postulated is provided in Goring-Morris’s study of Negov assemblages (whose conscientious publishing of information is commendable). Many microliths in Epipalaeolithic assemblages are broken (̅ = 26%, ̅ = 17%, range 0–87%, N = 81), raising another disturbing question. Broken microliths are usually excluded from typological assessments of industrial affiliation, for good reason: many broken pieces cannot be assigned accurately to a type category. This means that assemblage classification normally is based on a variable fraction of the total microlith population used by a group of foragers, with no assurance that this fraction is representative of the larger population. To our knowledge, there has been no investigation of this phenomenon. It is plausible that this fraction includes an unknown (and possibly large) proportion of microliths that were rejected for use for one reason or another (see also Goring-Morris’s thoughts on blanks in this issue). This would make the samples used for assemblage classification rather unrepresentative of the populations actually used. Added to this is the problem of biased collections from older excavations (Olszewski & Barton 1990) and still used for assemblage classification (cf. Henry 1989: appendices c). Even if different ethnic groups created microliths with slightly different backing shapes, such subtle differences would be difficult or impossible to recognize in the discard assemblages recovered by archaeologists and analyzed by means of the current systematics (see also Clark 1969).

Stone tools and settlement systems

Previously, we suggested that a complex interplay of mobility, resource availability, tool production, tool maintenance, tool use and discard behaviour — along with ethnically distinct idiosyncrasies in tool manufacture — produce observed assemblage diversity. While admitting that all are possible, our critics see culture as making the greatest contribution.

If prehistoric ethnic divisions (or ‘cultures’) can be equated to typological variability, we can make some predictions as to its nature. Because the majority of activities for all known historic groups with an ethnic self-identification take place within a spatially defined piece of the landscape, assemblage variability due to ethnic differences should show similarly discrete, or possibly clinal geographic distributions (e.g. see Savage 1968). Also, there should be spatial co-occurrence between different aspects of variability that result from the same ethnic divisions. In Figures 1 and 2, we examine relevant available data for ‘Mushabian’ and ‘Geometric Kebaran’ assemblages.

Figure 1 shows that there is no geographic patterning — either discrete divisions or clinal distributions — for the critical artefact classes examined.

Figure 2 assesses the co-occurrence of microlith forms and microburins. No clearly discrete groups are revealed, but rather constrained, continuous variability. This is typical for inherent technological constraints on morphological variability (see Barton 1988: 1991). Differential discard of residues deriving from microlith manufacture and compound tool maintenance seems the most parsimonious explanation for this distribution.

Our critics take the lack of spatial patterning for ‘Mushabian’ and ‘Geometric Kebaran’ industries to mean that both ‘cultures’ occupied the same area, under the same paleoenvironmental conditions and had access to the same . . . resources” (Kaufman 1995: 378). In spite of close cultural contact (even occupying the same territory), each group maintained ‘their own traditional tool forms and techniques of manufacture’ (Kaufman 1995: 378). However, Epipalaeolithic populations comprised fully modern humans, whose modern representatives do not behave in this way. Among mobile foragers, the composition of any one assemblage is composed of: discarded artefacts exhausted en route from the previous campsite; those made, used and discarded at the site in question; and the production residues from making artefacts to be carried to the next campsite. These, in turn, are affected by activities performed or planned, and by available and anticipated lithic and other resources en route and at the vari-
our localities. Hence, some degree of assem-
blage diversity is to be expected, even at sites
close to one another. The overlapping distri-
butions of Musherian and 'Geometric Kebaran'
industries says more about such diversity and
the confluenced nature of typological systemat-
ics than anything meaningful about the distri-
butions of social groups.

In support for our settlement model, Kaufman
(1995: table 1) indicates that cores were more
intensively reduced (higher debitage:core ra-
tio), fewer cores were produced on the sites at
which they were discarded (lower primary
elements:core ratio), and artefacts were used more
intensively (higher tool:core ratio and lower
debitage:tool ratio) in assemblages classified as
Geometric Kebaran compared with those clas-
sified as Musherian. These characteris-
tics suggest the former assemblages represent
higher mobility and conditions encouraging
material conservation —the very explanation
we proposed as responsible for the most ob-
vious differences between the Geometric
Kebaran and Musherian. The lack of statisti-
cal significance at an a = 0.05 level clearly
due to the wide range of variability within
the Musherian and Geometric Kebaran indus-
tries, indicating that these classes, as currently
conceptualized, are not very useful entities for
evaluating this kind of variability in the Levantine Epipalaeolithic —a point we made before and reiterate now.

Similarly, Goring-Morris notes for a group of sites in the western Negev that assemblages
classified as Musherian were produced from
'immediately available' flint, those classified as
Ramonian and Natufian were produced from
flint sources at least 30 km distant, and those
classified as Geometric Kebaran vary in being
drawn from distant local raw material
sources. Although Goring-Morris attributes this
to cultural preferences, it accords well with our
previous predictions about mobility and raw
material access (Needler & Barton 1994: 287).
In spite of assertions to the contrary, both
Goring-Morris' and Hunt's responses reveal spa-
tial variation in the quality and quantity of raw
material in the modern Levantine landscape —
cultivated, overgrazed and eroded— for millen-
aria in many areas. Raw material would have
had an even more patchy distribution in the
much less eroded and more vegetated termi-
nal Pleistocene landscape.

Epipalaeolithic and 'culture'
That much of the variability expressed in Epi-
palaeolithic typologies is a result of the processes
of microlith production and use in compound
tools, and associated constraints, should come as no surprise. We do not think that all Ge-
ometric Kebaran assemblages derive from highly
mobile foragers suffering from raw material
shortage nor that all Musherian assemblages
represent the opposite extreme. However, such
processes seem to underlie much of the mor-
phological variability that has been pigeon-holed
into such industries —and obscured by them to
a considerable extent.

Our critics go to considerable lengths to point
out differences among assemblages that we did
not address in our study. We do not purport to
have explained all aspects of lithic variability
in the Levantine Epipalaeolithic. We have at-
tempted to disentangle some elements of the
common Epipalaeolithic systems in SW Asia,
focusing on a few aspects of microlith form —
even critical ones for typologies. We feel that
our proposed explanations do this scientifically,
sufficiently and more persua-
sively than others now current. Other aspects
indeed should be investigated —objectively,
systematically and quantitatively. The
impli-
cation of our critics is that assemblage differ-
ence equals ethnic difference. While we agree
with Kaufman (1995: 377) that 'technology and
typology do vary' —the major point of our
original paper —this does not lead us insuss-
capably to the conclusion that this 'variability
represents cultural and temporal markers' (Kauf-
man 1995: 375–4).&

Do any aspects of microlith morphology re-
fect ethnic divisions? Possibly. But we main-
tain that this has yet to be seriously investigated,
much less demonstrated. Beyond showing how
microliths were made, there has been little at-
tempt to explain the behavioural causes of for-
mal variability in microlithic artefacts. 'Culture' is
a weak explanation when it is simply a catch-
all category for unexplained variability (c.f. Henry,
this issue). There are inherent reasons why emitting
modifications, in the form of beaking, or other aspects
of current typologies have anything to do with
ethnic identities (see Simong 1992).

The same is true of the named industrial
complexes. The standard approach has been to
classify assemblages into timeless and space-
less 'industries' on the basis of similarity and
Figure 5. Distribution of:
(a) microliths;
(b) typical Geometric Kaburan type microliths (straight backed blades and haft-stems);
(c) typical Mushabian type microliths (arched backed and curved blades, and Le Moullied Points).
Assemblages are displayed according to relevant artefact frequency, irrespective of the industry to which they have been assigned. Symbol size is proportional to relative frequency. Microlith frequency is represented by the restricted microlithic index (RMI); microlithic frequencies are shown as percent of total included assemblage.
Data from Henry (1989); Goring-Morris (1987); and Olszewski et al. (1984).
For situations of more than one assemblage at a locality on the map (usually from several sites in close proximity to one another), a mean value was used. The range of values at such localities with multiple assemblages is strongly correlated with the number of assemblages analysed (r = 0.79 for microliths, r = 0.64 for Geometric Kaburan type microliths, and r = 0.63 for Mushabian type microliths), indicating that the archaeological recovery of diversity is largely a function of sample size.
Figure 2. Scatterplot of microbead frequency (MBF) versus relative frequencies of Geometric Kebara' type and Meshabian' type microoliths (see Figure 1) (N = 99).

Along the left side of the graph are assemblages derived primarily from manufacture of compound tools; miospheres discarded geometries, with rare initial (microbead) and intermediate (fragments backed bladesets) stage production residues.

Assemblages near the center of the graph represent geometric production from invertebrate elements and compound tool manufacture: diversified geometries in variable proportions, consomers (but still variable) intermediate stage production residues, and marginal frequencies of initial stage production residues. Along the right edge of the graph are assemblages from blanklet and microbead 'pre-forms' production; initial production residues are frequent and all microbeads are rare or absent.

Data from Henry (1989); Cagigni-Merola (1987); Glasswell et al. (1994).
dissimilarity in assembly composition, as measured by the frequencies of morphological types. These industries are considered, a priori, to represent social entities, for which temporal and spatial distributions, and the environmental contexts are assessed post facto (e.g., "what is the age and geographic extent of the Mushabbin?)." This approach is most likely to reveal timelines and spaceless patterning inherent in lithic reduction technology. Social groups are not timeless and spaceless. For foragers, especially, they occupy a discrete, contiguous piece of landscape — to the exclusion of other such groups — and exist in recognizable form for a limited time-span (Palmer et al. 1995). If our hope is to identify such groups in the prehistoric record, a better approach would be to first identify the co-occurring contemporaneous assemblages in a restricted, spatial context, with the working hypothesis that they represent residues of closely related social groups. Then, one can evaluate assemblage variability within this dataset to distinguish it from other, spatially and temporally defined, groups of assemblages.

It is unlikely that the Mushabbin and Geometric Kebabian complexes represent different social groups, but probably cross-cut whatever ethnic divisions existed in the region. Neither do they seem very useful for exploring the types of processes we have addressed, representing a diverse mix of sites and associated behaviours, with only general statistical tendencies in the direction of the models we proposed. Because of the way they have been created by archaeologists, the same is very likely true of all other industrial complexes in the Levantine Epipaleolithic.

Without an understanding of the underlying causes of variability that differentiate these complexes, they are simply phantom cultures — archaeological constructs that have no reality in Epipaleolithic activities or social organization. Grouping assemblages by the compass orientation of the microsites in the ground would be as valid and as useful. Certainly there were real people in the Levant during the Epipaleolithic. They made real artefacts, performed real behaviours and had real social organizations. The material residues of these behaviours are indeed our key to their interpretation. However, because of the way archaeologists have approached the available data, these prehistoric people are largely invisible to us. While we disagree with Fellert's charge that our study "undermined" the validity of much of the research in this field carried out during the last 30 years (1995: 99), a fundamental change in archaeological approaches to Levantine prehistory is warranted. Another 30 years of chasing phantoms will do little to advance our understanding of the past.

References