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Cross-Cultural Research as a Rosetta Stone for Discovering the Original Homelands of Protolanguage Groups

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What is This?

Cross-Cultural Research as a Rosetta Stone for Discovering the Original Homelands of Protolanguage Groups

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This programmatic article describes how the two types of cross-cultural research (comparative ethnography and comparative archaeology) can provide a Rosetta stone to help us discover the original homelands of protolanguage groups. Here, the focus is on Proto-Afroasiatic and Proto-Indo-European. If words reconstructed by historical linguists for a protolanguage reflect cultural and environmental features, and if those features have material or archaeological indicators (which we can discover by the two types of cross-cultural research), then the archaeological record can be searched for sites that have the expected combinations of features. The likely homeland of the protolanguage should be the site or local

18

region that has significantly more of those indicator features than other sites or local regions.

The most frequent kind of cross-cultural research uses worldwide ethnographic information to test hypotheses about cultural variation and evolution. Now we can also use worldwide archaeological information to study cultural variation and evolution. In combination, these two kinds of cross-cultural research can provide a Rosetta stone for inferences about cultural variation and evolution. In particular, we argue here that these two kinds of cross-cultural research can help us find the original homelands of protolanguage groups.

This is a programmatic article. We do not describe any systematic results because we don't yet have any. We think we know how to find the original homelands of two well-established language families, Proto-Afroasiatic (PAA) and Proto-Indo-European (PIE). We have tried to secure funding for the research we want to do, but we don't want to wait. We think that we might be able to get some of the work done even without external support. So we are publishing this article in the hope that others will want to join us in the proposed research.

We are particularly motivated not to wait because we think that something has to be done to overcome the divisiveness and rivalry that plague the study of human prehistory. Many researchers may want to reconstruct prehistory. But few concern themselves with how to build and cumulate understanding, particularly how to decide objectively between interpretations and how to combine them when the results of tests call for some kind of combination. A large research program to reconstruct the cultures and locations of PAA and PIE is now feasible because of developments and new possibilities in various disciplines. We present an outline of the research program we have in mind in what follows. Needless to say, this is a voluntary project, and so any opinions and suggestions will receive close consideration.

The developments and possibilities that make it feasible to plan a research program include the following:

1. Systematic efforts by historical linguists have reconstructed words and will be reconstructing others in the basic and cultural vocabularies of PAA and PIE.
2. Worldwide cross-cultural studies of the traditional kind (i.e., comparative ethnographic studies) have produced hundreds of statistically tested predictions about patterned relationships between cultural traits and between cultural traits and environments (physical and social).
3. Cross-cultural researchers could use these and future findings to discover archaeologically recoverable indicators of the social customs and environmental features that are implied by the words reconstructed for the protolanguage.
4. Using those archaeological indicators, we could discover the likely homelands of protolanguage groups, testing hypotheses against the data in the archaeological record, which is now more accessible than ever before through the nine-volume *Encyclopedia of Prehistory* (Peregrine & Ember, 2001-2002) and the annually growing electronic Human Relations Area Files (eHRAF) Collection of Archaeology on the Web.
5. Using morphological and DNA analyses of archaeological bone and other remains (from humans and domestic animals), we could test hypotheses about how the protolanguage groups spread through time and space.
6. New databases and query structures produced by the proposed research program would allow both centralization and sharing of diverse data sources, linkable to other databases such as GIS, which would enormously stimulate studies exploring human population movements.

Let us now spell out some of the details of the proposed research program.

Conferences in the last few years, hosted by the Santa Fe Institute, have identified several key debates about two well-established protolanguage families. For example, historical linguists Alexander Militarev and Christopher Ehret disagree about the homeland of PAA—the protolanguage that gave rise to Arabic, Hebrew, and the Chad and other languages of Africa. Using reconstructed words of PAA describing the environment and cultural features (such as farming words), Militarev hypothesizes a PAA homeland roughly corresponding to that of the Natufians in the Levant, with the Natufians spreading from there after 9000 BCE. Ehret, on the other hand, hypothesizes that the PAA homeland was originally located in the southern Ethiopian Highlands and that its speakers started to move from there after 15,000 BCE to

other areas, including that of the Natufians, who, Ehret agrees, could have spoken Afroasiatic.

To correlate results of archaeology and linguistics, we are planning a major attempt at synchronizing datings independently obtained by these two disciplines. Recent research (e.g., Starostin, 2000) has helped refine lexicostatistical methods of protolanguage dating and was effectively used in localizing the PAA homeland by Militarev.

To make their inferences about homelands, linguists have had to rely primarily on connecting reconstructed words to geographical and environmental features, such as flora and fauna. These correspondences have high face validity, at least to some historical linguists. But these correspondences are not likely to narrow the focus enough to particular archaeological sites. We need many more correspondences that are not so obvious. To discover such links, we need to have a method for connecting particular words to particular archaeological features. This is where cross-cultural research comes in: We can find relationships between words and material features that might be recoverable from the archaeological record.

Needless to say, for each language family, we will need a list of reconstructed words and their meanings. The first order of business then will be to construct a list of reconstructed words for PAA; a preliminary workshop with linguists and others participating could construct such a list. There does not have to be complete agreement among linguists on the reconstructed words. Those who question any or all of the reconstructions should be comforted by a major principle of and reason for statistical inference. If many of the reconstructed words and their meanings are wrong, there will be so much random noise in the sample list that statistically significant results (correlating words with ethnographic or archaeological features) will be all but impossible. So a critic should not worry about the validity of future results, assuming that the statistical tests tell us that the correlational results are unlikely to be because of chance. To be sure, there will be error in the reconstructions. But if correlations are strong enough to be statistically significant, the amount of error cannot be large. Critics of cross-cultural research sometimes claim that results cannot be trusted because ethnography is full of error (not their own ethnography, of course). But this is solipsism. Surely, it is possible to know or suspect something on the basis of others' observations.

In any case, the possibility of error in observations does not mean that the errors are likely to produce falsely significant results. And if there is lots of error, we have no reason to suspect that results could be falsely significant. Errors in the reconstructions of words, errors by ethnographers, and errors by the cross-cultural investigators are all likely to be random and therefore make it more difficult to find relationships that are true (C. R. Ember & Ember, 2001; C. R. Ember, Ross, Burton, & Bradley, 1991). The many people who collected the original linguistic, ethnographic, and archaeological data are extremely unlikely to have been in collusion or otherwise biased in the same ways. Thus, any random errors in the data are unlikely to explain the correlations obtained. Tests and corrections for systematic errors can also be made (C. R. Ember & Ember, 2001; C. R. Ember et al., 1991; Naroll, 1962).

Turning now to how we would explore the links between words and cultural features (ethnographic or archaeological), consider an example of how words for kin might be useful. We know that kinship terminology is related to variation in social structure (e.g., in descent and residence rules). And cross-cultural research has also found connections between social structure and material features. So if PAA had a special term for mother's brother, that would suggest a matrilineal kinship system, probably with matrilocal residence. Assuming that we can verify that a special mother's brother term predicts matrilocality as well as matrilineality, we could then look in the archaeological record for signs of matrilocality. We already have an archaeological indicator of matrilocality. Cross-cultural research (using comparative ethnography; see M. Ember, 1973; and Divale, 1977) has revealed a strong correlation between floor area of the average house and matrilocal (vs. patrilocal) residence. Assuming that this comparative ethnographic regularity is applicable to the archaeological record—and there is no persuasive reason to think not—and assuming that Militarev is right about Natufian being PAA, the floor area of Natufian houses should generally be similar to the floor area in recent matrilocal societies. That is, the floor area of Natufian houses on average should fall within the range of average floor area in matrilocal societies that are described in the ethnographic record.

In this and other ways, the proposed research could reliably establish the homeland of PAA. It would start with reconstructed words in the protolanguage and then see if cross-cultural research

(comparative ethnography and comparative archaeology) and comparative genetics could confirm the relationships (correlational, genetic) that are implied by the reconstructed words. This scenario is not just the product of wishful thinking. With modern statistical methods, available computer software, known modeling techniques, and the new technology of computerized databases (particularly the eHRAF collections on the Web), we can make worldwide tests relatively quickly. It is now much easier to model and choose between alternative hypotheses and to combine them when the test results call for combination.

A second major debate in historical linguistics revolves around the homeland of PIE. Indeed, this question has been a focus of debate for more than a century. Two competing hypotheses emerged some 30 years ago. One locates the PIE homeland among the *kurgan*-building people of the steppe north of the Black Sea, who would have spread their language as they moved widely into Eurasia (Gimbutas, 1989). The other hypothesis locates the PIE homeland among Anatolian farmers who would have spread their language during the Neolithic era (Renfrew, 1988). We think that the research program we are proposing has a good chance of resolving the debate about the PIE homeland in much the same way we plan to attack the PAA problem. First, we reconstruct words in the protolanguage. Then, we look in the ethnographic record for archaeologically recoverable indicators of the implied cultural and environmental features. Then, we look in the archaeological record to find which sites have those features, comparing southern Russia and Anatolia. The original homeland should have a significantly larger number of those features, significantly larger by statistical test, as compared with other possible homelands.

Thus, cross-cultural research can provide a kind of Rosetta stone for translating the meaning of reconstructed words into predictions about correlations and sequences that could be tested against the data in the ethnographic and archaeological records. In our experience, just about any variable that is commonly described qualitatively (in words) in the ethnographic and archaeological records can be measured ordinally (by a rank-order measure of frequency, degree, or extent), which means that all kinds of causal hypotheses, including complex multivariate ones, can be tested statistically. A worldwide cross-cultural test is the best way to ensure that an explanation or prediction is more or less universally valid; testing theory against the widest possible range of variation is our best protection against being wrong (M. Ember &

Ember, 2000). Regional comparisons within language families (Burton & White, 1991) are also possible and often desirable, especially if a general relationship is confirmed in most regions but not in all. If some region does not show a statistically significant relationship, that region may generally lack some crucial predictive or modulating condition, which should be incorporated in the final conclusions.

How can we discover archaeological indicators of social customs and environmental conditions? The methodology for doing so is already developed (M. Ember & Ember, 1995; Peregrine, 2001, 2004). For example, archaeologists are beginning to infer warfare on the basis of the probable causes of death in skeletal populations (Frayer & Martin, 1997). But we do not always have skeletal populations. Hence, an archaeological indicator of war may be more useful. Peregrine (1993) has suggested that the degree of what he calls "settlement impermeability" is an accurate indicator of war frequency. Using graph theory, he counts the number of "steps" it takes to enter the innermost part or parts of the settlement from outside the settlement. This is the index of impermeability. Consider a settlement or habitation site that consists of one-room dwellings. If it takes one step to enter each dwelling (i.e., move from the outside to the inside through one entrance), the impermeability index is 1. If there is an outer fence around the dwelling or community, the index is 2. If there is a trench in addition, the impermeability index is 3. If houses have inner rooms that can be entered only from outer rooms, additional steps are added to the score (see also Blanton, 1993). Peregrine (1993) found that societies in the ethnographic record that have an impermeability index of 3 or more almost always have war at least once every two years; those that have one or two steps almost always have little or no war. (He used codings of war frequency from C. R. Ember & Ember, 1992a, 1992b.) Judging by the Embers' experience (see C. R. Ember & Ember, 1992b), investigators can maximize the reliability of codings by omitting cases that independent coders disagree about appreciably in their initial ratings. Appreciable disagreement generally reflects ambiguity in the original full-text data, and so near unanimity or unanimity between independent coders means that coding is likely to be reliable.

How can we trace the spread of cultures in prehistory, which may also help to suggest homelands? Conventionally, archaeologists compare sites to see if and how supposedly related cultures are similar in regard to their cultural repertoires. If similarities

are evident, more detailed analyses of material objects (ceramics and metals in particular) can indicate their original source and empirically demonstrate origin and movement. Clear links to descendant cultures in the same geographic area may suggest genetic continuity, which could be confirmed by DNA analyses of human remains and/or the remains of animals associated with humans (domestic animals, household pests such as mice and rats; using animals is a strategy suggested by Marcus Feldman, personal communication). If reconstructed words in a protolanguage reflect cultural and environmental features, as we would assume, and if those features have material or archaeological indicators (which we can discover by cross-cultural studies), then the archaeological record can be searched for sites with the expected combinations of features. Even with highly mobile populations, cross-archaeological search would suggest a possible homeland, if it could be shown that particular sites had significantly more of those indicator features than other sites.

Cross-cultural (i.e., comparative ethnographic) studies can direct cross-archaeological studies of how and why cultural features have changed and diverged across time, which may also help us find homelands. This is because those cross-cultural researchers who do comparative ethnographic studies to test causal theories about cultural variation are also often, if not usually, studying cultural evolution or devolution. After all, what is culture change if not cultural variation viewed across time? To be sure, when cross-culturalists test causal theories of culture change, they usually do so synchronically (using measures for a case that pertain to the same time). But they assume that if the theory is true, the causes and effects should be highly correlated synchronically. We conduct synchronic tests of causal theories because they are economical in time and money (the ethnographic record is much larger than the ethnohistoric record) and because the ethnographic record does not often provide us with data for more than one time period for a case. But even if a causal theory survives the synchronic tests, it still needs to be tested diachronically. For example, in nonstate societies, unpredictable natural disasters that destroy food supplies strongly predict higher frequencies of warfare (C. R. Ember & Ember, 1992a, 1992b). Lekson (2002) has recently tested this theory against diachronic archaeological data from the prehistoric U.S. Southwest and found evidence for more warfare during periods of more resource unpredictability (as indicated by tree-ring data). Comparative ethnographic data suggest that warfare, in

turn, has profound effects on social structure, particularly on patterns of residence and descent and on the likelihood of polygyny (M. Ember & Ember, 1983). Archaeological data might be used to establish the truth of the suggested sequences in social structure in culturally (and linguistically) related populations, which would be another way the ethnographic model of cross-cultural research could direct comparative archaeological research in the quest for homelands.

Another implication of cross-cultural research for archaeological sequences and for inferences about homelands and the spread of culture has to do with cultural complexity. Cross-culturalists have come up with many scales of cultural complexity (Bowden, 1969; Carneiro, 1970; Carneiro & Tobias, 1963; Freeman & Winch, 1957; Lomax & Arensberg, 1977; Marsh, 1967; McNett, 1970; Murdock & Provost, 1973; Naroll, 1956). These are all highly correlated with each other (C. R. Ember & Levinson, 1991). Among the most useful for comparative archaeology and the search for homelands are hierarchical scales, such as Guttman scales, that suggest evolutionary sequences. Recently, Peregrine, Ember, and Ember (2004) replicated one such scale in the archaeological record. Such scales can establish shifts in complexity across time (up or down) in archaeological populations and can suggest the presence of unseen cultural features. For example, if a particular feature generally emerges only after another feature has emerged, the presence of the former in a site can indicate the presence of the latter, even if there is no obvious sign of the latter. In this way, cross-cultural and cross-archaeological research might even have feedback effects on comparative linguistic research. We may often be able to tell historical linguists what they might find in their efforts to reconstruct words in protolanguages. The effort to establish homelands can be informed by more than one kind of comparative research and in more than one direction.

In sum, we seek possible answers to various questions, including the following: Which kinds of words are most suggestive of social and other customs, physical environmental features, and social environmental features? What additional cross-cultural research needs to be done to establish correlations between words and environmental features? What features could be inferred from comparative archaeology? And how could geneticists help us in tracing connections between archaeological populations? One or more workshops could start us on the way to answering these questions on the basis of objective data and replicable judgments. The

locations of the original homelands of protolanguage groups can be found if we pursue something like the research program outlined here.

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