

# The History and Classification of American Indian Languages: What are the Implications for the Peopling of the Americas?

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Though the synthesis of linguistic and nonlinguistic data in hypothesized reconstructions of the peopling of the Americas is a complex task, it is one that can be useful to undertake, provided that the proper techniques are employed. The most important methodological prerequisite is the use of the well-established techniques of historical linguistics to establish and evaluate the linguistic data. Extreme caution should be exercised in using linguistic classifications, and conclusions derived from them, that are based on the comparison of superficially similar words and grammatical elements, such as the method of multilateral comparison employed by J. H. Greenberg and M. Ruhlen. The linguistic picture as presently known is compatible with a wide range of possible scenarios for the earliest peopling of the Americas. In exploring the best fit between linguistic and nonlinguistic hypotheses of New World prehistory, only explicitly historical hypotheses will prove to be of value.

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## INTRODUCTION

The history of the world's languages is obviously part of the history of the human race, in the Americas as elsewhere. Hypothesized reconstructions of the recent past have often relied on linguistic data and have typically attempted to encompass and to some extent to reconcile both linguistic and nonlinguistic aspects of human prehistory. The formulation of such syntheses is unfortunately, however, greatly complicated by many difficulties inherent in the correct utilization of linguistic data. Linguistic materials and their historical interpretation require specialized interpretation and evaluation, but at the same time they lend themselves to superficial treatment and specious argument to what seems a noticeably greater extent than other types of technical data used by prehistorians. It is our belief that, in spite of these difficulties, linguistic evidence can be brought to bear on questions relating to the first peopling of the Americas, and we attempt here to set out some of the methodological prerequisites for doing this. This is a particularly timely undertaking, since public dialogue on this subject has recently been dominated by a methodological approach that is inherently flawed and has led to conclusions that must be set aside if the general task of working out the prehistory of the Americas is to be placed on a sound basis. The methodological approach that we criticize is the one advocated by Greenberg (1987a) and by his associate and coworker Ruhlen (n.d.a, 1989, this volume; Ruhlen and Shevoroshkin 1989). We also want to make clear the limitations that any classification will have, given the current state of knowledge. Our conclusion is that the linguistic picture is compatible with a rather wide range of possible scenarios for the earliest peopling of the Americas, and that the current state of linguistic knowledge is of little help in trying to restrict that range of possibilities. We advise extreme caution in the development or utilization of any hypothesis of the first peopling of the Americas that relies on currently available deep-level classifications of American Indian languages, such as that propounded by Greenberg and Ruhlen.

The difficulties with the use of linguistic data flow in part from the fundamental question of the extent to which human linguistic history corresponds empirically to human nonlinguistic history. The relationship between linguistic history and other aspects of history is complex, and easy assumptions about this relationship are risky. People can learn and pass on new languages, but indi-

viduals cannot acquire new genes or teeth. Languages can become extinct in populations which survive genetically. As a consequence, attempts to correlate language groupings with human phylogeny or movements at deep time levels face major obstacles. It is well known that the language spoken by a group of people may come and go; it is likely that language replacement and extinction have been, over time, relatively common phenomena. To the extent that this has been the case, the preliterate linguistic history of the human race is unrecoverable. Judging from the known recent linguistic history of the world, it seems evident that the segment of human linguistic history which is recoverable is younger, probably much younger, than recoverable aspects of human biological history (cf. Boas 1940:212 and note 5 below).

Other difficulties with the use of linguistic data are inherent in the data itself. Any attempt to correlate linguistic history with other aspects of human prehistory must be based on reliable historical information on the languages being considered, which can be obtained only through the application of sound historical-linguistic techniques to correctly analyzed and understood features of the languages. Regrettably, the first language or languages spoken in the Americas are at present invisible to the generally accepted methods of historical linguistics, but this lack of knowledge cannot serve as a justification of the use of less reliable techniques.

## APPROACHES TO THE CLASSIFICATION OF AMERICAN INDIAN LANGUAGES

Two approaches to the study of the relationships among American Indian languages were represented at this conference, which we refer to as 'word comparison' and 'standard historical linguistics'.<sup>1</sup> The word-comparison method is employed by Greenberg and Ruhlen, who call it "multilateral comparison"—an allusion to the large number of languages surveyed. The presentation of their data is in the form of lists containing numerous sets of words that are superficially "similar in sound and meaning" (Ruhlen 1987b:6)<sup>2</sup> and discursive considerations of similarities in grammatical morphemes. The aim of the method is classification, but the classification that results

<sup>1</sup> We intend these labels as easily understood, objective descriptions. A more technical term for 'word comparison' would be 'lexical comparison,' since this method includes the comparison of lexical items that are not whole words but grammatical morphemes. The word-comparison method does not, however, encompass the comparison of grammar, but only of grammatical elements treated as separate entities. Greenberg has referred to the classification of Indian lan-

guages based on standard historical linguistics as the "major alternative" (Greenberg et al. 1986:477; Lewin 1988:1632); Ruhlen (1987a:215-227; n.d. a) has referred to its practitioners as "Phase III linguists" and "Diffusionists" (the last an utterly false term presumably adopted for polemical effect).

<sup>2</sup> "Linguistic classifications such as Greenberg's are discovered on the basis of resemblances in sound and meaning in

from it is simply a codified statement of the judgments of similarity that have been made in assembling the sets of words. Greenberg (1987a:1–37, 1987b:647–650) expressly rejects historical linguistic techniques—there is no history in his book, only a classification that is presented as being a reflection of the history of the languages.

The approach of standard historical linguistics employs techniques for formulating and testing hypotheses about the undocumented history of languages. These techniques have been developed and refined, over the last century and more, on the basis of the study by thousands of scholars of the historical changes undergone by a wide variety of languages. The goal of historical linguistics is to work out the linguistic history of languages and thereby to determine the principles and factors that govern the universal phenomenon of language change.

A fundamental fact on which there is general agreement is that there is extensive linguistic diversity in the Americas. A summary of the work of specialists employing the standard historical-linguistic approach (Campbell and Mithun 1979) found about 60 linguistic units (families and isolated languages) in North America, 15 in Middle America, and about 60 in South America—hence about 135 for the Americas as a whole. Greenberg's statement that this "major alternative [classification] . . . would involve the acceptance of something like 200 independent linguistic stocks" (Greenberg et al. 1986:477–478; Lewin 1988:1632) both exaggerates the number of entities and misstates what they are.<sup>3</sup> The linguistic units of the historical-linguistic classification are viewed by its proponents as a maximum number that reflects the progress so far of historical-linguistic scholarship. Many if not most supporters of the "major alternative" are sympathetic to the notion that all or nearly all American Indian languages may be related. Their classification simply reflects their belief that these deeper relationships cannot at present be demonstrated, owing to the great time depths involved and the inadequacy of linguistic methods to recover history after so much cumulative change has taken place. It is a commonplace to observe that it can never, in principle, be demonstrated that two American Indian (or other) languages are not related. At the same time, the burden of proof clearly falls on those who wish to claim closer affinity among some groups than among others. Greenberg et al. (1986:477) claim that "the Americas were settled by three separate population movements whose identity can be most precisely expressed in linguistic terms as Amerind, Na-Dene, and Aleut-Eskimo." Even if this is what happened at some remote time level, the tremendous linguistic diversity that came out of what is proposed as the single Amerind

"population movement" would remain to be explained by any model of the peopling of the Americas.

## LINGUISTIC CLASSIFICATION AND THE PEOPLING OF THE NEW WORLD

Greenberg and Ruhlen have postulated three independent migrations to the New World, separated in time, one for each of Greenberg's New World linguistic groups: Amerind, Na-Dene, and Aleut-Eskimo (Lewin 1988:1632; Ruhlen 1990). They are not, however, the first scholars to have adopted the approach that "the classification of modern American Indian languages can . . . be viewed in the context of the original settlement of the Americas" (Lewin 1988:1632). Edward Sapir's well-known opinion on this subject is so aptly framed as to be worth quoting at length. It shows how little progress has been made since his day in establishing a correlation between linguistic classification and the original peopling of the Americas:

If the apparently large number of linguistic stocks recognized in America [can] be assumed to be due merely to such extreme divergence on the soil of America as to make the proof of an original unity of speech impossible, then we must allow a tremendous lapse of time for the development of such divergences, a lapse of time undoubtedly several times as great as the period that the more conservative archaeologists and palaeontologists are willing to allow as necessary for the interpretation of the earliest remains of man in America. We would then be driven to the alternative of assuming that the linguistic differentiation of aboriginal America developed only in small part (in its latest stages) in the new world, that the Asiatic (possibly also South Sea) immigrants who peopled the American continent were at the earliest period of occupation already differentiated into speakers of several genetically unrelated stocks. This would make it practically imperative to assume that the peopling of America was not a single historical process but a series of movements of linguistically unrelated peoples, possibly from different directions and certainly at very different times. This view strikes me as intrinsically highly probable. As the latest arrivals in North America would probably have to be considered the Eskimo-Aleut and the Na-dene (Haida, Tlingit, and Athabaskan) [Sapir 1949b:454–455].

the basic vocabulary. . . ." (Ruhlen, this volume). Greenberg and Ruhlen's reference to these sets of words as "etymologies" is misleading; in historical linguistics an etymology is an account of the history of a word (or other element) and its uses. The use of historical terminology for a set of contempo-

aneous data masks the fundamentally ahistorical nature of the word-comparison method.

<sup>3</sup> It is difficult to see anything but a polemical basis for Greenberg's (1987c:666) claim that "Chafe and Goddard . . .

Note that Sapir considers it "intrinsically highly probable" that "the peopling of America was . . . a series of movements of linguistically unrelated peoples," at the same time singling out Eskimo-Aleut (Greenberg's "Aleut-Eskimo") and Na-Dene specifically as the probable latest arrivals. Greenberg, on the other hand, has subjected the possibility of multiple migrations to exaggerated ridicule, declaring that if "each of these [supposed 200 linguistic units] represents a separate migration [they would have] requir[ed] a traffic controller at the Bering Strait" (Greenberg et al. 1986:478). Ruhlen (this volume) has firmly committed himself to the conclusion that the unity of Amerind implies a single migration for the ancestors of its speakers. "Something like 200" separate migrations and Greenberg's traffic controller are not, however, required by the fact that standard historical linguistics has so far not been able to reduce the linguistic diversity in the Americas to fewer than about 135 distinct units, and it is unfortunate that uncritical acceptance of this assertion has already started to show up in the secondary literature (e.g., Bray 1986; Fagan 1987:186). As Sapir points out, while progress so far in historical-linguistic classification permits the postulation of many migrations, it also gives grounds for the optimistic belief that some or even all these groups may ultimately prove to be related and hence to reflect few migrations to the New World, even perhaps only one. Thus far, however, valid linguistic methods provide no basis for choosing among the many alternatives. Notice, moreover, that even if Greenberg's tripartite view should ultimately prove to have merit, this would still leave the very large problem of the internal classification of his postulated Amerind family, which is the major topic of his book (Greenberg 1987a).

In contrast to Greenberg's insistence on three migrations, the conclusions of standard historical linguistics are compatible with several possibilities. This is because there is so much that we do not at present know that a number of scenarios are plausible or at least cannot yet be conclusively ruled out. We consider some of these possibilities, which are in part mutually exclusive and in part compatible. (1) If all or many American Indian languages form a genetic unit, it is possible that a single migration of this linguistic unit entered the New World and later diversified, producing the many language groups extant at the time of European contact. An important question

both are absolutely prejudiced from the start against any attempt at deeper classification in the Americas;" in fact, Greenberg (1987a:163, 395) and Ruhlen (1987a:122, 242, 246) cite studies of deep-level linguistic relationship by Chafe (1964, 1973, 1976) and Goddard (1975).

<sup>4</sup> We hold no brief for this date; the present linguistic evidence cannot support any specific nontrivial conclusions about the date or dates of the peopling of the Americas. Since this paper was written we have seen an important paper by Johanna Nichols (1990), in which she demonstrates that the

for this hypothesis (raised already by Sapir) would be whether so much linguistic diversity could develop in the time since this migration (ca. 12,000 yr B.P.).<sup>4</sup> (2) Under the same hypothesis of linguistic unity it is also possible that some linguistic differentiation took place in north-eastern Asia, and that an indeterminate number of already distinct, descendant linguistic subunits crossed to the Americas over a period of time. This hypothesis would be compatible with a New World linguistic time depth that is greater than the date of first settlement; it would require assuming that any members of this linguistic unit that stayed behind in Asia were replaced by other languages (under the usual assumption that there is no language in Asia that is a member of a group of languages otherwise found only on the New World). (3) Another possibility is that there were multiple migrations, at different times, involving different languages that did not form a linguistic unit. This hypothesis raises the questions of how many migrations there were and what the evidence is for them, as well as increasing the probability that there should be evidence of linguistic connections between New World and Old World languages. (4) Yet another possibility is that there was a single migration in which more than one language was present, or a limited number of such multi-language migrations. This hypothesis raises questions similar to the previous one. (5) An additional possibility is that one or more of the linguistic units that migrated to the New World became completely extinct there. Although this is inherently likely, it would be extremely difficult to demonstrate other than, perhaps, by arguments derived from hypothetical models<sup>5</sup>. All of these hypotheses would have to deal with the generally observed fact that there is more linguistic diversity in the Americas than in Eurasia, in spite of the relatively recent peopling of the New World.<sup>6</sup>

As Meltzer shows, even setting aside the linguistic aspects of the Beringian migration problem, many possibilities remain:

Coming to North America was not an event that was physically impossible except along circumscribed routes within narrow time windows. There was not one, but many possible routes . . . open at many different times. Beringia was a passageway through which there could have been hundreds, perhaps thousands of separate arrivals of small

diversity of linguistic types in the new World would have required "tens of millenia" to have either filtered into the Americas or developed there.

<sup>5</sup> Lamb (1964:462), assuming 23 extant North American linguistic units with time depths of roughly 6000 to 7000 years, calculated that these continued only 11 to 15 percent of the total number of languages present at 6000 to 7000 yr B.P.

<sup>6</sup> Austerlitz (1974) calculated that there were 71 well-established aboriginal language families and isolates in

populations from Asia, and many movements back to Asia over tens of thousands of years. Even if we did know the precise timing of the Land Bridge . . . or the timing of the ice-free corridor, which we do not . . . , that would all be irrelevant if the earliest migrants had boats and traveled down the Pacific coast. [Meltzer 1989:474].

Indeed, the speculative literature that has attempted to enumerate how many migrations into the Americas there were does not even provide a consistent and methodologically precise definition of what "a migration" is. Acceptance of Hrdlička's more realistic picture of "dribbles" of people entering the Americas (Meltzer 1989:481) would leave few or no discrete migration events to count.

There are, of course, a number of less plausible, non-Beringian hypotheses and beliefs about how people arrived in the Americas. Some of these involve immigrants coming relatively recently and more or less directly from Europe, Africa, Japan, China, India, and Polynesia, including Lost Tribes of Israel, Egyptians, Phoenicians, Greeks, Romans, Welsh, and Vikings. To say no more about them, we can simply observe that there is no accepted demonstration that any such migrations have left an impact on the languages of the Americas. A general idea of this literature can be gained from Goddard and Fitzhugh (1979).

## LINGUISTICS AND AMERICAN PREHISTORY

The standard historical-linguistic approach is compatible with a number of scenarios for the peopling of the Americas, but developments in the future should help to narrow the range of possibilities. There is every reason to hope that careful historical-linguistic research will find more and more American Indian groups to be linked, and archaeological and other evidence may help to narrow the scope further. Nevertheless, we must be prepared to accept the possibility that we may never know—the full story may be irretrievable owing to the amount of linguistic change that has taken place since, if not also before, the first movements to the Americas.

Even in our present state of knowledge, however, some of the specific claims that have been made for linguistic and human biological correlations can be shown to be misleading. For example, Greenberg (1989:113) emphasizes "that [his] linguistic classification shows an almost exact match with genetic classification by population biologists and with fossil teeth evidence." Greenberg et al. (1986:477) claim that linguistic, dental,

North and Central America alone, as opposed to only 37 in all of continental Eurasia.

<sup>7</sup> Their choice of words is "the fit . . . is not as precise;" we

and genetic "lines of evidence agree that the Americas were settled by three separate population movements." And, "The following historical inferences may be derived from [Greenberg's] classification: There were three migrations. . . . The oldest is probably Amerind, since it centers farther to the south . . . and shows greater internal differentiation. . . . Aleut-Eskimo is probably the most recent" (Greenberg et al. 1986:479). "For Amerind we are dealing with a time period probably greater than 11,000"[yr B.P.] (Greenberg et al. 1986:480). (Ruhlen [1987b:10] actually allows for the possibility of fewer migrations, insisting that "at most we can conclude that there were not more than three.") As noted above, however, there is no deterministic connection between language and gene pools. A single language can be spoken by a genetically diverse population; e.g., whites, blacks, American Indians, Asians and others speak American English. A genetically homogeneous group may speak more than one language, e.g., the many multilingual Indian communities of Latin America, speaking Spanish and the native language. That is, both language shift or loss and multilingualism are facts of linguistic life—genes neither cause nor cater to these phenomena. The principled basis for attempts to correlate human phylogeny and linguistic history has been severely criticized by evolutionary biologists (Bateman et al. 1990a, 1990b; O'Grady et al. 1989). Meltzer has concluded (cf. Zegura 1987:11):

Genetic evidence from modern North American populations is somewhat equivocal. . . . The picture that emerges from comparing various gene distributions across those populations is one of 'discordant variation'—even within major groupings such as 'Amerind'. Genetic studies thus far cannot confirm conclusively how many major groupings there are of modern native North Americans, much less the presumed number of migrations [Meltzer 1989:481].

All this notwithstanding, Greenberg and his associates make claims based on assumed but unfounded genetic-linguistic correlations. For example, Turner's "Greater Northwest Coast or Na-Dene" dental cluster includes four population samples, "Southwest [United States, Northwest] United States and Canada, Gulf of Alaska, and Athapaskan," and is conceded not to match the ethnic or geographical distribution of the proposed Na-Dene linguistic grouping very well (Greenberg et al. 1986:483–485).<sup>7</sup> The Northwest Coast has few Na-Dene languages and many non-Na-Dene languages. It is notorious for intermarriage, slaving, linguistic and cultural diffusion, and multilingualism. The Northwest Coast is, therefore, precisely an area where one would not expect

assume that the printer has dropped the bracketed words from the list of the population samples in the cluster, as there is not, and could hardly be, a "Southwest United States and Canada" sample.

linguistic and genetic traits to match, and in fact their claim that there is a match, even though slightly tempered, has been variously criticized by specialists. For example, Laughlin (1986:490) pointed out that "the dental evidence is displayed in a dendrogram that carries no hint of a triple division but rather is eloquent evidence of a single migration. Clearly dental evidence comprehends greater time depth than linguistic evidence. . . . Turner proves the Asiatic affinities of [all] Indians." Szathmari (1986:490) commented that "Turner's Greater Northwest Coast includes Kachemak, Kodiak and Alaska Peninsula samples that are likely Eskimoan. . . . Turner's 'Na-Dene' in fact includes representatives of what Greenberg calls 'Amerind' and 'Aleut-Eskimo'. . . . I found that the Nootka . . . , Haida, Tlingit, and Northern Athapaskan, and South Alaskan Eskimos . . . did not cluster together." With respect to genetic correlations, Laughlin (1986:490) calculated that "a chi-square test reveals no significant difference between right and wrong assignments [allocation of gene frequencies into language phyla] for these three groups [Greenberg's big three]"; and "the [genetic] differences between American populations are not large enough to postulate more than one migration." Weiss and Woolford (1986:492) noted that "isolation by distance among groups with a long history of habitation in a single local area can produce generally the same kind of [genetic] diversity as is observed, especially if a certain amount of population movement and expansion or contraction over long time periods occurs. Thus, even if there is a *general* three-way division of Arctic peoples, this proves neither that they have a three-part phylogenetic relationship nor that any such relationship as exists is due to separate waves of immigration." Even Greenberg et al. (1986:487) consider the hypothesis of three migrations as "still without strong confirmation" from their genetic data, which they therefore regard as "supplementary." Since, therefore, their claims about the genetic and dental history of the Americas are so far poorly supported, conclusions about correlations with postulated linguistic classifications and migrations would at best be premature, even if there were no problems with the hypotheses they rely on in these other areas.

In trying to correlate linguistic evidence and nonlinguistic evidence concerning the peopling of the New World, we need explicit, well-founded historical hypotheses, and we need crucially to pay attention to the interdependency of these hypotheses. For example, the Amerind linguistic hypothesis (that most of the New World's languages are related) requires a single and therefore brief influx of population for most of the New World. But if this influx lasted more than a short time, or if it came in more than one wave, say before and after the last glaciation, Greenberg's Amerind hypothesis would appear to be incompatible with the nonlinguistic facts.

Another early notion that still has some following is the coastal-entry model (most recently Gruhn 1988). This is offered in part as an explanation of an apparent

anomaly in the distribution of languages in North America, the fact that eastern North America is dominated by a small number of language families (Algonquian, Iroquoian, Siouan, Muskogean, and not many more), while there is great linguistic diversity on the West Coast. Thus, for example, of Powell's (1891) famous 58 linguistic families in North America, 22 were represented in California. Under the coastal-entry hypothesis it is assumed that the earliest waves of immigrants moved down the West Coast, thus allowing more time for linguistic diversity to develop in that area, while other immigrants, perhaps hampered by glaciers (Rogers 1987), arrived in the East much later and had less time to differentiate linguistically.

There are serious problems with this notion, however. For example, the time depth for the language families of eastern North America is extremely shallow, not more than 4000 years (to take a high estimate for Iroquoian; [Lounsbury 1978:334]), and thus the relatively small linguistic diversity in the East can have little or nothing to do with events connected with the last glaciation. In fact, it must have come about long after the first peopling of this area. Between 12,000 and 4000 yr B.P., a great many languages could have come and gone in eastern North America, being replaced by other languages or becoming extinct with the deaths of their speakers. It is further discouraging to note that the correlation of even the recent and relatively accessible language families in the East with archaeological data has been notoriously difficult. Nevertheless, it is only by building explicit historical hypotheses addressed to specific problems that historically significant correlations between linguistics, archaeology, and other evidence can be discovered (cf. Gruhn 1990).

Meltzer considers other problems with the reasoning behind the coastal-entry hypothesis:

There are more native American languages along the Pacific Northwest and California coasts than in any other area of North America, which is said to imply 'great time depth for human occupation' and thereby the corridor of entry (Gruhn 1988:84). The number of languages in any given region of North America, however, is hardly a function of time alone. There are a greater number of languages known from the Pacific Northwest and California primarily because it is one of the areas on the continent where indigenous populations weathered the deadly effects of European contact and disease and survived (though in an altered form) at least until the end of the nineteenth century when intensive linguistic fieldwork began in North America. . . . It is probably no more realistic to infer Pleistocene migration routes to North America by the number and distribution of modern language groups than it would be to infer Hernando de Soto's route by looking at the number

and distribution of Spanish dialects in the Southeast today—and at least we know that de Soto spoke Spanish [Meltzer 1989:475].

In fact, as Gruhn (1988:82) notes, there is good evidence that linguistic diversity comparable to that in California was present at the time of contact along the Gulf coast and in southern Texas (Goddard 1979), areas that are not candidates for the earliest migration routes.

## METHODOLOGICAL CONSIDERATIONS

It is not just the correlations that have been claimed by Greenberg and his supporters between his American Indian language classification and other sources of information on prehistory that are weak. The linguistic classification itself and the methodology that underlies it have also been shown to be unreliable (e.g., Adelaar 1989; Campbell 1986, 1989; Chafe 1986; Goddard 1986, 1987, 1990; Mithun 1990:320–325). Here we present only a brief discussion, with an assessment of some examples repeatedly put forth by Greenberg and Ruhlen as particularly strong evidence.

Greenberg's classification is a codification of his judgments of inspectional similarity and is thus, in principle, ahistorical. It is well known, however, in historical linguistics and many other fields, that classifications based on inspectional resemblances are unreliable guides to history, and that this unreliability increases with the time depth of a putative relationship. After related languages have been separated for only a few thousand years, the resemblances between them that are due to their historical connections decrease, through normal linguistic changes, to the point where they become lost among the accidental or nonhistorical resemblances. The only way to determine which of these resemblances are historically genuine is to use the techniques of historical linguistics. Greenberg defends his ahistorical approach by pointing out that it gives correct results for the Indo-European languages, but success at a time depth of what can hardly be much more than 6000 years obviously does not guarantee success at the time depths that are involved in the early peopling of the Americas. A sorting of any entities based on judgments of similarity will always produce a classification, but the fact of a classification cannot be taken as an existential proof of its validity as a reflection of history.

Greenberg has estimated that "80 to 90% of linguists would probably agree with Campbell [1988]" (Lewin 1988:1632), probably an overly optimistic figure, and Ruhlen (n.d. a:12) concedes the truth of Bright's (1988)

statement that "most scholars in native American comparative linguistics regard Greenberg's methodology as unsound." In fact, we are not aware of a single specialist working on American Indian historical linguistics who thinks that Greenberg has established the validity of his postulated Amerind phylum. Nor have the other deep-level groupings of languages proposed or revived by Greenberg attracted much of a following among practicing specialists. There is not, for example, any observable inclination by specialists to accept "Northern Amerind" as valid, or its component "Almosan-Keresiouan," or its subcomponent "Almosan," or its subcomponent "Mosan," the last two being 60-year-old proposals of Edward Sapir (1949a). To put it another way, if there really are similarities between, for example, the Algonquian and Iroquoian families that require an historical explanation, it should be possible to say what they are. These are well-known families, however, and the fact that no such similarities have caught the attention of the linguists who know them best must be considered significant. Furthermore, discussions of Greenberg's (1987a) book by specialists indicate that his word equations, such as those he proposes for Algonquian and Iroquoian, contain so many errors that they do not even provide a reliable data base that could be used to explore alternative hypotheses (Chafe 1987; Goddard 1987).

The differences between Greenberg's word-comparison approach and the standard historical-linguistic method are so vast that rational discussion between their respective proponents seems almost impossible. Consider, for example, some of the claims that have been repeatedly made about pronouns and pronominal markers. Ruhlen (1987b:10) has stated that "Amerind languages are characterized by first-person *n* and second-person *m*," following Greenberg (1987a:48–49), who wrote that "in Amerind languages . . . it would probably be easier to enumerate where *nV*- and *mV*- are not found than where they are" (see also Greenberg 1987b:650–651). More explicitly, Ruhlen (this volume) claims that "one of the most salient traits of the Amerind family . . . is the presence of first-person *n*- and second-person *m*- throughout the languages of North and South America. Furthermore, not only does this trait connect all eleven Amerind subgroups, it also serves to distinguish the Amerind family from the world's other language families." In his oral presentation Ruhlen stressed that "all eleven branches show" these pronouns. It should be noted that these observations about putative Amerind pronouns quoted from Greenberg and Ruhlen are not incidental comments but are put forth as particularly strong evidence supporting their claims.<sup>8</sup>

To evaluate these claims we may consider the first-

<sup>8</sup> Greenberg and Ruhlen usually write these affixes with a following hyphen, indicating that they intend them as prefixes. In some of their discussions, however, suffixes con-

taining these consonants are included, but with no historical hypothesis relating the two types of affix. In supporting Greenberg's claim, Fleming (1987:196) presents it as refer-

and second-person singular pronouns in just one of the eleven subgroups proposed for Amerind by Greenberg, Almosan-Keresiouan (Table 1).<sup>9</sup> It would not occur to us to say that this set of languages is "characterized" by first-person *n*- and second-person *m*-, or that they exhibit this pair of prefixes (or affixes) as a "salient trait." Furthermore, we frankly find it hard to imagine that anyone examining these numerous and diverse sets of pronouns would want to claim that they are similar in this way. Such an assertion is simply too astonishing to warrant serious discussion. First-person *n* is no more common than second-person *n*. There is no second-person *m*- prefix, the only instances of second-person *m* being a suffix in a single sub-family, Ritwan, and the reflexive imperative in Kutenai, a category that has little likelihood of being historically equivalent to the simple second person. Four of the sets have *n* or *m*, or both, in both first- and second-person affixes (Algonquian suffixes, Cheyenne prefixes, Salish, and Kwakiutl). There are also vowels in most of these affixes, and often more than one consonant, but these additional segments appear to receive no systematic attention.

Greenberg and Ruhlen themselves admit more diversity in the pronouns of "Amerind" than might be implied by their repeated claims about *n*- and *m*-. Greenberg finds South America typified by first person *i*, second person *a*, and third person *i* (Greenberg 1987a:44-49, 273-275, 277-281), a totally distinct pattern, with second person *m* particularly absent. But if the *i/a/i* pattern is the hallmark of South America, the claim that the *n/m* pattern is a diagnostic for Amerind as a whole is weakened. Moreover, Greenberg (1987a:276) presents a first person *m* as characteristic of several groups, while several others have second person *ka* or *s* (Greenberg 1987a:278). Reflecting some of this diversity, Ruhlen (1989) reconstructs Amerind *naʔ*, *?i*, and *mai* as first-person singular and *ami* ~ *ama*, *a-*, and *ka* ~ *kai* as second-person singular. Far from offering an overall hypothesis of the history of New World pronominal systems, Greenberg and Ruhlen do not even have an explanation for the variation that they concede to exist.

Beyond refuting the claims of Greenberg and Ruhlen, however, there are some important lessons to be learned from the variety of pronouns that those of "Almosan-Keresiouan" illustrate. The first is that even this small segment of the languages of North America is astoundingly diverse. Any hypothesis of ultimate unity must postulate a time depth of many thousands of years to allow for the development of this diversity, and any

historical-linguistic hypothesis worthy of the name must outline how these various sets of affixes could be derived from a single protogrammar. Secondly, under the hypothesis that the Almosan-Keresiouan languages form a genetic unit, it follows that its pronominal affixes have undergone a great deal of change since the time of their uniform protolanguage, resulting in entirely different systems of pronominal marking in putatively related languages. Almosan-Keresiouan would thus refute the assumption that pronominal morphemes are extremely stable through time, and it would demonstrate that new pronominal affixes have arisen repeatedly even in the last several thousand years of the linguistic history of the Americas.<sup>10</sup> But the assumption that, relatively speaking, pronouns are stable and not subject to replacement or renewal is a necessary premise of the claims of Greenberg and Ruhlen that consonants appearing in pronouns can be validly compared across all the languages of the world without doing historical-linguistic analysis. Thirdly, whether the diverse pronouns of Almosan-Keresiouan are relatively recent divergences or relatively old differences, they illustrate the independent use of the same consonants over and over again in different values. In the languages in Table 1, *m*, *n*, *t*, *k*, *c/ç*, *s*, and *l/l* are used sometimes for first person and sometimes for second person.

The repeated appearance in different languages of the same consonants in grammatical functions is a real phenomenon of human language and as such requires an explanation. One contributing factor is the well-known general linguistic trait that a single language typically uses only a fraction of its full complement of consonants to form its primary grammatical morphemes and hence must use the same consonants over and over in different functions (Floyd 1981). The consonants that are used tend to be the ones that are least marked from the perspective of phonological theory. Among other traits, the least-marked consonants are the most commonplace across languages and the most frequently used within each language; specifically, the least-marked consonants of the languages of the world include *m*, *n*, *t*, *k*, and *s* (cf. Ruhlen 1987a:11). As a result of this economy and, so to speak, lack of originality in the use of consonants, there is a much greater than chance agreement among the languages of the world on what consonants are used in grammatical elements. It is thus to be expected a priori that these consonants will show up again and again in different languages and language groups marking, say, first or second person, and many languages will therefore

ring to either prefixes or suffixes. Another variable is the presence of absence of a vowel (symbolized by V).

<sup>9</sup> Addition of the plural affixes for those languages in which they are distinct would increase the variety displayed but not the attestation of first-person *n*- or second-person *m*-. See note 16.

<sup>10</sup> We say "several thousand years" in allusion to the status of Almosan-Keresiouan as only a second-order subdivision of Amerind; since Greenberg and Ruhlen compare pronouns on a world-wide basis, however, the point here is valid on any specific hypothesis of the time depth of this putative tiny sliver of the totality of languages.



Table 1. First and Second Singular Pronouns in "Almosan-Keresiouan."

	WORDS AND PREFIXES		SUFFIXES	
	1sg	2sg	1sg	2sg
<b>Almosan</b>				
Algic				
Algonquian	*ne-	*ke-	*(y)a-n, *-ak <sup>1</sup>	*(y)an, *-at, <sup>1</sup> *-lwe <sup>2</sup>
Cheyenne	na-	ne-	-(t)ó, -o <sup>1</sup>	-(t)o, -os ~ -ot, <sup>1</sup> -ce <sup>2</sup>
Ritwan				
Wiyot	d-	kh-	-Ø, -ak <sup>3</sup>	-t, -am <sup>3</sup>
Yurok	?ne-	ke-	-k <sup>3</sup>	-?m
Kutenai	hu-, ka <sup>4</sup>	hin-	-a(·)p <sup>5</sup>	-i(·)s, <sup>4,5</sup> -(e·)n, <sup>2</sup> -m <sup>6</sup>
<b>Mosan</b>				
Wakashan				
Kwakiutl			-ənɪ	-əns
Nootkan	*siy	*suw	*-s	*-suk
Chimakuan				
Quileute	lá·b; ?al <sup>7</sup>	či; č <sup>7</sup>	-li, -s, <sup>4</sup> -sta <sup>5</sup>	-lič, -č, <sup>4</sup> -swo <sup>5</sup>
Salish	*?əncá; *n <sup>4</sup>	*nəwí; *?ən <sup>4</sup>	*(a)n, *-c, <sup>5</sup> *-mx <sup>8</sup>	*(a)x <sup>w</sup> , *-ci, <sup>5</sup> *-mi <sup>8</sup>
<b>Keresiouan</b>				
Caddoan	*k-, *t-	*s-		
Caddo	ci-, ku <sup>5</sup>	yah?, si <sup>5</sup>		
Iroquoian				
No. Iroqu.	*k-, *wak <sup>5</sup>	*(-h)s-, *(-e)s(a) <sup>5</sup>		
Seneca	k(e)-, wak(e) <sup>5</sup>	s(e)-, sa <sup>5</sup>		
Keresan				
Santa Ana	hínu; s-, t <sup>h</sup> -, k <sup>h</sup> -, r- <sup>9</sup>	hísu; s- ~ š-, ç <sup>h</sup> - ~ c <sup>h</sup> -, p <sup>h</sup> - <sup>9</sup>		
Siouan-Yuchi				
Siouan	*w-	*r-		
Catawba	d- (~ n-)	y-	-na <sup>10</sup>	-ya <sup>10</sup>
Sioux	wa-, mā <sup>4,5</sup>	ya-, nī <sup>4,5</sup>		
Yuchi	di; di-, ce <sup>5</sup>	ce; ne- ~ yo-, nɛŋzɛ-, <sup>5</sup> so <sup>10</sup>		

Intransitive subject markers given first in sets; others are:

- <sup>1</sup> Transitive subject.
- <sup>2</sup> Imperative.
- <sup>3</sup> Subjunctive.
- <sup>4</sup> Possessor.
- <sup>5</sup> Object (Siouan and Iroquoian: patient)
- <sup>6</sup> Reflexive imperative.
- <sup>7</sup> Conditional.
- <sup>8</sup> Causative object.

- <sup>9</sup> Indicative, dubitative, hortative, (first person) future hortative; single nonglottalized consonants only (there are many other class and modal allomorphs).
- <sup>10</sup> Indirect object.

Omitted:

- (1) Plurals, pluralizers, transitive combinations; in some languages these add many variants.
- (2) Minor variants, especially if only vowels are involved or if additional material looks segmentable.

come to have similar pronominal systems by this factor alone.<sup>11</sup> An additional factor helping to explain the appearance of first- and second-person *m* and *n* in different

languages with a frequency that is greater than chance is what might be called universal tendencies. Among the most likely sources of new pronouns is child language,

<sup>11</sup> Ruhlen (1989) reconstructs the first-person singular pronoun in Niger-Congo as *i* - (*m*)*i* - (*n*)*i* and the second-singular pronoun of another African linguistic phylum, Nilo-

Saharan, as *i* - (*m*)*i* - (*n*)*i* - (*ŋ*)*i*. Such cases make it clear that factors other than genetic relationship may be involved in making pronominal morphemes similar across languages.

and child-language expressions around the world abound in self-directed and other-directed words and vocables containing nasal consonants. The ultimate reason for this is a universal physical fact: a gesture equivalent to that used to articulate the sound *n* is the single most important voluntary muscular activity of a nursing infant (Goddard 1986:202). The accompanying oral gesture is a bilabial with lowered velum, which permits the epiglottis to interlock the nasal cavity with the raised larynx during ingestion (Laitman 1985:282); with voicing, this gesture produces an *m*. Also, the areal diffusion of pronouns among the various early groups which may have come into America—before, during, or after the crossing of Beringia—cannot be ruled out a priori. Diffusion of pronouns between languages is not excessively rare (Newman 1980:156; Thomason and Kaufman 1988:219–20, 223–8, 235, 293, 323). In any event, Greenberg (1989:113) greatly exaggerates when he asserts that the distribution of first-person *n*- and second-person *m*- in the Americas can only be explained by assuming either a single genetic unity for Amerind or “more than a hundred” instances of borrowing between the attested languages in their present locations, concededly “a highly improbable event.”<sup>12</sup> Even under his assumptions, the maximum number of statistically probable borrowing events plus a number attributable to chance would be the maximum number of separate language groups in the Americas, a number that is certainly greater than one. But his underlying premise that genetic relationship and, however improbably, borrowing are the only positive factors that can result in languages having similar pronouns is simply false.<sup>13</sup>

It is easy to illustrate why, even in cases of apparently straightforward comparison, the method of historical linguistics produces valid hypotheses of relationship while the word-comparison method misses these valid hypotheses and leads instead to incorrect conclusions.<sup>14</sup> Three second-person prefixes in Table 1 are compared in Table 2 using each of these two methods. The word-comparison

<sup>12</sup> Greenberg (1989:113) seems to imply that he means his statement about borrowing to refer to the attested languages in their present locations when he says “over a distance far greater than that covered by IE” and “contacts of virtually every language with every other one.” But surely if the languages could preserve traces of genetic inheritance dating back to a single migration through Beringia, they could preserve traces of borrowings from the same period.

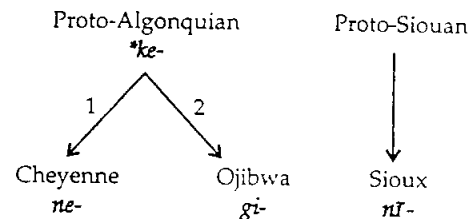
<sup>13</sup> Another source of new consonants in pronouns is the resegmentation of concatenated elements, which may result in the incorporation into a pronoun of a consonant from another word or element that happened to be adjacent to the pronoun in some expressions (Campbell 1988:601–602). Starting in the seventeenth century Swedish *ni* replaced the old second-person plural pronoun *i*; the added *n*- was from the second-plural suffix *-ni* on verbs, which preceded the pronoun in some constructions, but even this suffixal *-ni* had

Table 2. Comparison of Three “Almosan-Keresiouan” Second-Person Pronominal Prefixes by Two Methods.

A. Word comparison:

Sioux *ni-* ≈ Cheyenne *ne-* || Ojibwa *gi-*

B. Historical linguistics:



method would judge Sioux *n*- and Cheyenne *ne*- to be “similar in sound and meaning” and Ojibwa *gi*- to be dissimilar in sound (Table 2: A). Standard historical linguistics would approach these data within the framework of an attempt to work out the histories of these languages. The sequence of the hypotheses that were actually offered in this case shows how the understanding of Cheyenne increased as the historical hypotheses became more detailed and precise:

1. Cheyenne second person *ne*- is “analogical” or borrowed from Siouan (Goddard 1967:82; Michelson 1935:153).
2. Cheyenne *n*-<sup>15</sup> is a regular correspondence of *k*- in other Algonquian languages, e.g., Cheyenne *nehp*- ‘covered’ is the direct reflex of Proto-Algonquian *\*kep*- ‘closed, covered’, which is continued in Fox as *kep*- and in Cree as *kip*- (Leman 1980). It was previously established that Ojibwa *g*- comes from Proto-Algonquian *\*k*-. Thus Cheyenne *n*- is a regular

been a recent innovation (Haugen 1976:375, 304). Greenberg (1989:111) pleads that he was not misled by Campbell’s specific example, but the point here is that the renewal of consonants in pronouns is a common feature in the historical development of languages and, as such, is a major potential source of error in ahistorical comparisons.

<sup>14</sup> Historical linguists often point out that a premise of relationship logically precedes the use of the comparative method to study linguistic history. Contrary to what Ruhlen (1987a:122) appears to argue, however, it does not follow from this that it makes sense to try to hypothesize an entire, detailed classification for hundreds of languages without doing any historical linguistics at all.

<sup>15</sup> By the standard notational convention used by linguists, *n*- (with a following hyphen) indicates any word-initial *n*.

correspondence of Ojibwa *g-*, both reflecting Proto-Algonquian *\*k-*.

3. Cheyenne *n* regularly reflects Proto-Algonquian *\*k* before *\*e*, via the intermediate stages *\*ky* and *\*y* (Picard 1984; Proulx 1982b).
4. The development of Cheyenne *n-* from Proto-Algonquian *\*k-* is the result of a sequence of changes: Proto-Algonquian *\*ke* became pre-Cheyenne *\*kye*; then Proto-Algonquian *\*k-* disappeared in Cheyenne, leaving *\*ye-* from *\*kye-*; then pre-Cheyenne *\*y* became Cheyenne *n*. These postulated changes are part of a complex of partially interdependent innovations affecting Proto-Algonquian *\*k* and *\*e* in Cheyenne, and pre-Cheyenne *\*y* from various sources (Goddard 1988).

As a consequence of working out the phonological history of Cheyenne (Table 2: B, arrow 1) and the much simpler phonological history of Ojibwa (Table 2: B, arrow 2) it is possible to identify the second-person prefixes Cheyenne *ne-* and Ojibwa *gi-* as exact cognates, historical developments from an identical original form *\*ke-* inherited independently in two related languages. The Sioux prefix reflects a Proto-Siouan form. These results correspond to the fact that Cheyenne and Ojibwa are Algonquian languages and Sioux is Siouan. The equation between Cheyenne and Ojibwa is based on and accounted for by an explicitly reconstructed (that is, hypothesized) history of these languages, consisting of a complex of interconnected hypotheses of recurring patterns of change. Hypotheses of this type are absent from Greenberg's book. Instead, the word-comparison method would falsely equate the superficially similar Sioux and Cheyenne prefixes, while missing the real relationship between the Cheyenne and Ojibwa.

It is important to note also that using the word-comparison method, such incorrect equations cannot be refuted, even if they are inconsistent with the classification of the languages. The family relationships of the Algonquian and Siouan languages and the separateness of the two families from each other are obvious enough to be discovered by the word-comparison method. The dis-

covery of these low-level relationships, however, does not invalidate incorrect equations between families. Using Greenberg's methodology, resemblances that cross the lines of language families (or of larger classificatory units), even isolated resemblances, can only be interpreted as historically significant similarities that result from deeper relationships between these lower-level groupings. Greenberg's (1987c:665, 1990) hints that such false equations can be identified in an objective way have not been accompanied by a formulation of a procedure by which this could be done, beyond his repeated assurances that the total mass of compared vocabulary would make the correct classification evident.

In fact, the acceptance of sporadic resemblances between language families as historically significant is the whole basis of the deeper levels of Greenberg's classification and the work Ruhlen (this volume) has erected on it. Consider again the claims about first-person *n-* and second-person *m-* in Almosan-Keresiouan. Greenberg's evidence that Algonquian reflects Amerind second-person *m-* is "Cree second-person plural, *-mwa*," and his evidence for second-person *m-* in Salish is "Kalispel . . . second-person plural subject *-m*" (Greenberg 1987a:49,54). His source for the Algonquian data was Sapir (1913:634), who correctly labels the suffix *-m* *-mwa-* as Ojibwa, and his source for Kalispel was presumably Vogt (1940:35), where *-am* is listed as marking a second-singular object on resultative verbs. More recent publications on the historical grammars of Algonquian and Salish have established that *m* cannot be reconstructed as a second-person marker in either family (Goddard 1967, 1974; Newman 1977:304, 1980:156; Proulx 1982a:397-400); rather, an *m* characterizes some paradigms in both the first and second person.<sup>16</sup> In fact, Sapir (1915:193) himself already accepted as "very plausible" the refutation of his claim about Algonquian second-person *\*-m* by Michelson (1914:364).<sup>17</sup> Thus Greenberg is quite willing to accept the isolated testimony of a single language as valid for the family as a whole, if this language matches languages outside the family that he wishes to link up with it, and he is not dissuaded by counterevidence from historical

<sup>16</sup> Salish singular and plural second-person affixes with various functions contain the consonants *p*, *k*, *c*, *xʷ*, *m*, *n*, *l*, and *ɬ* (Newman 1980:156). Kalispel second-person singular resultative object *-am* reflects Proto-Salish second-person singular causative object *\*-mi* (Table 1), in which *m* is a marker of the causative-object paradigm appearing in all the first- and second-person endings. Although *m* is found in one set of endings (or perhaps two) in the second-person plural but not in the first-person plural, each of these second-person plural endings includes a *p* or an *l* in addition to *m*, and the *m* cannot be shown to be the primary marker of person. In the Proto-Salish independent pronouns, *m* is found only in the first-person plural, while the second-person plural contains both *p* and *l* (Newman 1977:304).

Taken together, these data would provide extremely weak support for the postulation of *m* as originally a mark of the second person in Salish. (We thank Paul Kroeber for help in interpreting Vogt's Kalispel data.)

<sup>17</sup> In the writings of Greenberg and Ruhlen the distinguished Algonquianist Truman Michelson (b. 1879, d. 1938) plays the role of bogeyman, a veritable ogre of hidebound historical linguistics. Only by recognizing that Michelson's name is expected to have this resonance can the reader appreciate the intended negative force of Ruhlen's (n.d. a) otherwise pointless description of Goddard as "like Michelson an Algonquianist with a Ph.D. from Harvard and effectively holding Michelson's 'chair' at the Smithsonian Institution."

Table 3. Stem-Formation Templates of Algonquian Forms Compared by Greenberg.

- A) PA *\*naθkw-*: Northern Wakashan *nīk-* 'say' (ANSWER; Greenberg 1987a:165).  
 Source: PA *\*naθkw-* 'correspond, answer, hit on fly' (Bloomfield 1925:137), based on:  
 PA *\*naθkw-* + *-m* 'act on (anim.) by speech' → *\*naθkom-* 'answer, say yes to';  
 PA *\*naθkwe-* + *\*-eškaw-* 'act on (anim.) by foot, body' → *\*naθkwe·škaw-* 'go so as to encounter (anim.)'.  
 Also occurring in:  
*\*naθkwe-* + *\*-en-* 'act on (anim.) by hand' (cf. B) → *\*naθkwe·n-* 'catch on the fly';  
*\*naθkw-* + *\*-ete-* '(inan.) to be affected by heat, fire' (cf. C) → *\*naθkwete-* 'catch fire';  
 And with abstract final: Cree *naskwa-* 'retaliate'; reduplicated particle: Fox *nana·hkawi* 'in hostile manner'.
- B) "Arapaho *bæsæ*, Fox *ne-peʔšena* 'I feel it'": (Salish) Shuswap *mu·s*, Coeur d'Alene *mus* 'fumble, feel about' (FEEL; Greenberg 1987a:170).  
 Sources: Arapaho (*bāsā-n-*) 'touch' (Kroeber 1916:116); Shawnee *nipeʔšena* 'I touch it' (Voegelin 1938-1940:85).  
 Correctly: Arapaho *besen-* < PA *\*meš-en-* (> Menominee 'get one's hand on, catch'; Maliseet 'catch').  
 PA *\*meš-* 'arrive at, reach, hit, hit upon' (Cuoq 1886:218, for Nipissing Ojibwa): *\*mešw-* 'shoot at and hit (anim.)';  
*\*mešesi-* 'be infected, afflicted by disease'; Ojibwa *mišitto-* 'injure', *mišikkaw-* 'reach with the foot; (disease) to infect'; *mišakkisse-* 'touch bottom'.
- C) PA *\*kešy-*, "Cree . . . *kis*, Natick *kussitau* 'it is hot': Proto-Salish *\*kʷas* 'hot, scorch' " (HOT; Greenberg 1987a:172).  
 Sources: PA *\*kešite·wi* 'it is hot' (Hockett 1957:258); Massachusetts (*kussitteau*) 'it is hot' (Silver 1960:119).  
 Analysis: PA *\*kešy-* (intensive of heat, speed) + *\*-ete-* '(inan.) to be affected by heat, fire'.  
 Cree *kisite·w*, Massachusetts (*kussitt(e)au*) / *kəsəta·w* / < PA *\*kešite·wi* (PA *\*s, š > C, Ma s; PA *\*e > Ma ə*).  
 Cf. Massachusetts (*kussitchuan*) / *kəsəčəwan* / 'it flows in a rapid stream' (< PA *\*kešy-* + *\*-čəwan-* '(inan.) to flow';  
 Munsee *kšf·te·w* 'soup' (< PA *\*kešite·wi*, nominalized); *kššte·w* 'it is hot' (recomposition: |kəš-| + |-əte-|);  
*kšf·la·n* 'it's raining hard' (-*la·n* 'rain'; old morphophonemics); *kšó·xwe·w* 'he walks fast' (-*o·xwe-* 'walk').*

Non-quoted italic forms are in phonemic transcription (in some cases updated and corrected), pointed brackets indicate unphonemicized forms written as in the source, and slashes mark their phonemicized equivalents.

PA = Proto-Algonquian

< = comes from (historically)

> = becomes (historically)

→ = makes, forms (as a derivational formation).

linguistics.<sup>18</sup> It is evident, however, that a methodology that accepts second-person *m* for Algonquian and Salish on the testimony of single languages in each will, if consistently applied, also accept second-person *n-* for Algonquian on the testimony of Cheyenne, given that it is "similar in sound and meaning" to the second-person *n-* of other putative Almosan-Keresiouan languages (Table 1). Any ad hoc principle that would eliminate the second-person *ne-* of Cheyenne as an inherited Algonquian feature would endanger a basic premise of Greenberg's methodology, that equations do not have to be consistent with the shallower levels of the classification to be valid for the deeper levels. In the present instance, an ahistorical argument that would reject Cheyenne second-

person *ne-* as characterizing Algonquian would also have to reject Ritwan second-person *-m* as characterizing Almosan-Keresiouan.

Another way to evaluate the claims of Greenberg and Ruhlen about the saliency of pronominal similarities is to look at languages outside the Americas. Greenberg (1987a:49,54) repeatedly singles out the presence of Algonquian first-person *n-* and (he believed) "Cree second-person plural, *-mwa*" as a solid indication of the linkage of Algonquian to other languages having a similar pair of pronominal markers. Ruhlen (this volume) concluded that "the Amerind pattern . . . is virtually non-existent elsewhere in the world." Consider, however, the implications for these claims of the fact that the Swahili

<sup>18</sup> Not surprisingly, the fact that he reaches his conclusions despite or in studied ignorance of the results of historical linguistics has drawn heavy criticism from historical lin-

guists specializing in these languages; see the citations at the beginning of this section and the list of studies neglected by Greenberg in Campbell (1988:592, note 1).

subject prefixes include first-person singular *ni-* and second-person plural *m-*.<sup>19</sup> Exactly the same argument that would link Algonquian to the *n/m* pronoun set of "Amerind" on the supposed evidence of Cree would link Niger-Congo to it on the evidence of Swahili. Once again, other factors besides genetic relationship, or even borrowing, must be involved in producing similar pronominal marking in different languages.

A further demonstration of why reliable long-range comparison cannot be done without the historical-linguistic approach is presented by the problems that arise when comparing words between language families that have different stem-formation templates. In Table 3 (A, B, and C) we give three of Greenberg's Almosan-Keresiouan "etymologies." Each is followed by a summary of what is in the sources he apparently used for the Algonquian forms. From this one can judge how accurately Greenberg has conveyed the data in the sources, but the point here is not to illustrate his numerous errors on this score; in fact, we have tried to find examples which were not vitiated from the outset by miscues in the handling of the primary data. We then give additional data that show that the elements Greenberg takes as verb stems with concrete meanings are actually only parts of stems and have meanings that are quite abstract. This is because, as Table 3 illustrates, almost all Algonquian verb stems consist of at least two components, called the initial and the final (the only exceptions being a very few monosyllabic stems, mostly intransitives). This basic fact of the structure of Algonquian word stems presents a critical problem for attempts to relate Algonquian to other languages, since it means that Algonquian stems with the same meanings as unanalyzable, primary verbs in, say, English, Salish, or Wakashan typically have two lexical components, and that the meaning of an Algonquian stem cannot be ascribed to its initial alone. The initial that Greenberg takes as ANSWER has no necessary reference to speaking, which is what is required by his comparison. It is the use of this initial together with a final meaning 'speak to' that gives the combination the meaning 'answer'. The initial taken as

FEEL is closer to English *get*, *get to* and can be translated 'touch' only in particular combinations, such as with the final meaning 'by hand, handle'.<sup>20</sup> The initial assumed to mean HOT is a general intensive used also for speed and the like. It only refers to heat when used with a final that specifies heat or fire as the cause of the condition or action being specified.<sup>21</sup> Thus, in each of these three cases the meaning assumed by Greenberg for the initial is found only when the initial is followed by a final that has that meaning. In fact, the first of the three initials (Table 3: A) can combine with any one of these three finals. Such examples show that for lexical items in different languages to be validly compared it is not sufficient for them to be "similar in sound and meaning"; they must be similar in sound, meaning, and grammar (or else, the historical linguist would say, the differences must be explicitly accounted for).

There is another significant aspect of Greenberg and Ruhlen's method of multilateral comparison that is illustrated in Table 3. In addition to citing Proto-Algonquian \**kešy-* Greenberg (1987a:172) cites forms that are later historical developments from this: Cree *kis-* and Massachusett (*kussitau*).<sup>22</sup> In fact, the very sources from which Greenberg took these forms expressly cite Cree *kisite-w* and Massachusett (*kussitt(e)au*) as reflexes of Proto-Algonquian \**kešite-wi* 'it is hot' (Hockett 1957:258; Silver 1960:119). The Cree and Massachusett forms add no information about Proto-Algonquian that is not already encompassed by the reconstruction of the Proto-Algonquian form. Their developments from Proto-Algonquian are entirely regular; for example, in both languages Proto-Algonquian \**s* and \**š* fall together to *s*. The reason for citing these descendant forms appears to be to provide a bridge between the Proto-Algonquian form and Proto-Salish \**kʷas* 'hot, scorch': Cree and Massachusett have *s*, which can be compared with Salish *s*, and Massachusett has an orthographic (*u*) that can be compared with the labialization of the first segment in Salish.<sup>23</sup> This is a typical function of multilateral comparison, as Greenberg's (1987b:649) explication makes clear. But while such chaining together of partially similar

<sup>19</sup> No particular effort was needed to find this example. Swahili was simply the first language Goddard checked after Ruhlen's claim brought to mind Swahili *ni*.

<sup>20</sup> We ignore for present purposes the fact that the cited Fox word is actually a Shawnee word with an initial unrelated to the one in the cited Arapaho stem.

<sup>21</sup> This element shows up as an Amerind word for 'hot' in Ruhlen and Shevoroshkin (1989, ex. 40).

<sup>22</sup> Greenberg (1987a:172) uses the older name Natick for Massachusett. He also cites "Shawnee *kis*," but this is simply a mistake; Shawnee has *kis-* in stems meaning 'hot', 'pain', 'angry', and 'fast' (Voegelin 1938-1940:301). The Blackfoot

form he cites is not related; Blackfoot (*iksisto-* 'warm' reflects PA \**ki-šow-* 'warm'. He also adds (after "cf.," hence perhaps with less confidence) Yurok *kecoyn hego-* 'sun', explained in his source as a derivative of *kecoy-* 'to be day' (Robins), 'to be daylight' (Berman), which literally means 'day traveler' (Robins 1958:204); a good case has been made by Berman (1982:418) that this is cognate with Proto-Algonquian \**ki-š-*, appearing in \**ki-šekwi* 'day, sky' and \**ki-šoʔθwa* 'sun'. It is not clear how a possible Proto-Algonquian \**ki-š-*, apparently with an original meaning 'daylight, sky', might be related to \**ki-šow-* 'warm', but in any event neither of these has anything to do with \**kešy-* 'intensively'.

<sup>23</sup> Actually, as Silver (1960:119) makes clear, since Massachusett orthography is based on English rather than

words can lead to correct results when the words are in fact close cognates, as in Greenberg's example of the Indo-European words for 'tooth', it at best begs the question to apply it to sets of words whose relationship is in question, in the absence of explicit historical hypotheses. The use of historically secondary features to provide ostensible links of similarity, as in the present example, is entirely indefensible.<sup>24</sup>

The point is not simply that the equations of Greenberg's in Table 3 are incorrect, but that the method that leads to them is fundamentally flawed. It substitutes specious matchings for real history. From the perspective of historical linguistics it is clear that to validly compare verb stems with different structures requires a historical-linguistic hypothesis that accounts for the different structures. The comparison of Algonquian with any other language family faces this challenge (Goddard 1975:250). But this challenge can only be met by recognizing and approaching the problem of comparison as fundamentally a problem of reconstructing history, a problem that, being historical, can only be addressed by formulating explicit historical hypotheses. However sketchy and tentative such hypotheses may be to start with, they will only be worth our while if they have the triangular configuration of historical hypotheses rather than the linear configuration of ahistorical comparisons (B rather than A in Table 2). Since Greenberg (1987a), on principle, completely excludes from his book explicit hypotheses of history, his book contains no historical linguistics and has nothing to tell us about the linguistic history of the New World. There are no historical-linguistic hypotheses that can be compared with historical hypotheses from other fields of research on prehistory.

Finally, we may comment on the usefulness in principle of word comparisons of the sort Greenberg and Ruhlen have assembled. The fundamental problem with ahistorical word comparisons between languages, as with ahistorical grammatical comparisons (Table 2: A), is the absence of any principled basis for determining the extent to which the sets of words that are "similar in sound and meaning" are in fact the word sets that are each empirically the historical continuations of a single original, if indeed there are any. The word-comparison method has been defended by its proponents as overcoming this difficulty by the sheer weight of the numbers of languages compared, but it has never been satisfactorily demonstrated just how it does this in practice. The demonstration offered by Greenberg (1987a:24; cf. Ruhlen 1987a:10) is a table showing the classification of

the languages of Europe, a problem that requires Indo-European and Finno-Ugric languages to be grouped and subgrouped correctly and separated from each other and from Basque. But these relationships and groupings are so obvious that they are, undeniably, easily discovered by the word-comparison method. After all, these groups of languages have been diverging for only a few thousand years, too short a time to mask their similarities but long enough to result in clearcut differences among their subbranches. The question at issue, however, is whether the word-comparison method can correctly recover and rank language relationships at time depths that date back to the first peopling of the Americas and must therefore be at least twice as great as those of the language groupings of Europe. To demonstrate that the word-comparison method can accomplish this would require only the presentation of a table, like Greenberg's table of the languages of Europe, showing how the tabulation of words demonstrates the relationships of Amerind and its branches or, say, the connections and subgrouping of Almosan-Keresiouan. We imagine, however, that if it were possible to draw up such a table it would have appeared in Greenberg's book. The numerous sets of similar words Greenberg presents instead do not address the question of the validity of the method of multilateral comparison; they merely demonstrate the undoubted fact that using Greenberg's criteria and procedures many sets of ostensibly similar words can be assembled. The classificatory function of the method of multilateral comparison rests, in principle, on delineating language groups, each of which exhibits more similarities internally than it shares with other groups at the same level of the classification. Greenberg does not demonstrate that the new groupings he proposes have this property.

The problem of the evaluation of word comparisons is exactly the problem that historical linguistics addresses. The techniques of historical linguistics have been developed precisely in order to permit principled distinctions to be made between accidental and historically probative similarities. This is done by the postulation of a complex of historical hypotheses that provides the framework for evaluating proposed comparisons and discovering new historical connections. In contrast, the only validation possible for an equation produced by the word-comparison method is the equation itself. A telling example is furnished by Ruhlen (n.d. a), who singles out the following set of similar words as an "etymology" of bedrock certainty:

forms in Arapaho and Seneca that are accidentally convergent and hence only speciously similar (Goddard 1987:657). Ruhlen's (n.d. a) discussion of this example ignores Goddard's criticism of the illogical and methodologically illegitimate use of descendant forms in addition to their protoforms and instead argues other completely non-germane points.

on continental alphabets, Massachusett (u) does not represent the rounded vowel [u] but the central vowel [ɨ] (the pronunciation corresponding to the apostrophe in English *c'mon*).

<sup>24</sup> Another example is Greenberg's (1987a:166) comparison of Algonquian and Iroquoian words for 'arm', which includes

Blackfoot (*mo-kiŋs(-is)* 'finger', Wiyot (*mo-kič* 'fingers', Yurok (*cey-kičew* 'little finger').

This is an updating, with some adjustments in the way the forms are cited, of a word set taken by Ruhlen and Shevoroshkin (1989:ex. 16) from Greenberg (1987a:172, Almosan-Keresiouan ex. 93) that incorporates a comparison between the Wiyot and Blackfoot words made by Sapir (1913:624). In fact, however, Blackfoot *mookiŋsis-* 'toe, finger, claw' regularly reflects Proto-Algonquian *\*(x)kašy-* '(finger)nail, claw, hoof' (Proulx 1989:60). Wiyot *-ukhiʔs* 'finger(s)' (*-ukhiʔson-* before suffixes) is the noninitial form of *khiʔs* (*khiʔson-*); it contains an element *-ʔson-* 'hand', found in a series of words referring to the arm, hand, and fingers (Teeter 1964:50).<sup>25</sup> Yurok *ceykičew* 'little finger' is made up of the well-attested elements *ceyk-* 'small' and *-etew* 'hand, finger' (Robins 1958:190, 222, 238, 239, 280, 293, etc.).<sup>26</sup> Thus correct analysis shows that the elements in these forms that have similar meanings are actually quite dissimilar in sound: Proto-Algonquian *\*-xkašy-* '(finger)nail, claw, hoof', Wiyot *-ʔson-* 'hand', and Yurok *-etew* 'hand, finger'. Of apparent similarities like that of the Wiyot and Blackfoot words for

'finger' Sapir asked rhetorically, "Are these 'accidents'?" and answered, "Fiddlesticks!" (cited with evident relish by Ruhlen n.d. a). A glance at the known facts about these forms shows, however, that the correct answer in this case was "Yes."<sup>27</sup> Ruhlen ridicules the idea that Greenberg's book could be largely a collection of coincidences, but examples like the foregoing show that this is not an unlikely possibility. In the present case the languages being compared are well enough known so that the falseness of the proposed comparison can be made immediately obvious. But the words in Greenberg's book are the end results of thousands of years of mostly unknown historical changes, often further distorted, at the final stage, by misapprehension and misinterpretation. It is thus indeed likely that errors and accidents have completely drowned out the differential proportions of whatever true cognate sets among linguistic groups of the Americas might, in principle, define a classification.<sup>28</sup>

It has been shown elsewhere that the method of word comparison cannot distinguish non-American Indian languages from languages of the Amerind grouping. For example, Finnish can be demonstrated to be a perfectly

<sup>25</sup> E.g., *-eʔson-* 'hand' in *doteʔsóniŋ* 'his hands are large' (*dot-* 'large'; *-iŋ* 'third person'; Teeter 1964:39). Kroeber's ((m)okèc) would be phonemically *-ukhiʔš*, with substitution of diminutive *š* for *s*; Reichard (1925:129) gives the presuffixal variant of this as the diminutive of a form equivalent to Teeter's *khiʔson-*.

<sup>26</sup> Perhaps Greenberg was misled by Robins' entry *cey(kel-)* 'to be small (human beings, etc.)', but according to standard linguistic conventions the parentheses mark a variable portion, not a separate element; the notation *cey(kel-)* abbreviates an alternation between *cey* (a complete word) and *ceykel-* (the form taken by *cey* before suffixes). The loss of word-final syllables and the simplification of word-final consonant clusters are common phonological processes in Yurok. The full form of *ceyk-* 'small' is attested in *ceykoŋ* 'to be small (round things)' and other words (for the segmentation of *-oh*, cf. *noʔoh* 'two (round things)', with *noʔ-* 'two'). For *-etew* 'hand, finger' compare *pletew* 'thumb, big toe' (*pl-* 'big') and *peʔwetew-* 'to wash the hands' (*peʔw-* 'wash'). But the point is not to criticize Greenberg and Ruhlen for not having checked the descriptive facts more carefully, but rather that such errors are inevitable when the comparison of languages is pursued using his methodology.

<sup>27</sup> Although Sapir at times showed great insight in proposing distant linguistic comparisons, he greatly overestimated the accuracy of his conjectures (Campbell 1988:593; Goddard 1986).

<sup>28</sup> For Ruhlen the word comparison discussed in this paragraph is an illustration of why Blackfoot words not found in other Algonquian languages can validly be used for comparisons outside of Algonquian. In this he states his opposi-

tion to the contrary view in Goddard (1987:656), though without direct counterarguments to the points made there regarding general methodological principles and the incompleteness of current knowledge of Blackfoot linguistic history. For any attempt to derive historical inferences from linguistic data to be useful, whatever lines of reasoning it employs must rest on only the most firmly established and best understood data. As Bray (1986) has written about archaeological data, "piling up dubious cases proves absolutely nothing." Judged from the perspective of the ordinary canons of reasoning, the defense of the use of poorly understood Blackfoot words is incomprehensible, but it is precisely the largely unique and obscure character of Blackfoot vocabulary (conveniently available in an extensive English-Blackfoot dictionary) that makes it an ideal language for use in multilateral comparison. Ruhlen and Shevoroshkin (1989) argue that the likelihood of there being an Algonquian source for words found only in Blackfoot is comparable to the likelihood of the inherited Indo-European status of words found in only one branch of Germanic (say, in Old Norse) but having other Indo-European cognates (say, in Greek). But in comparing Old Norse and Greek words, every step of the historical developments of the two languages is supported by detailed and explicit hypotheses of linguistic history, developed using historical-linguistic methods, while no such hypotheses exist for comparing Blackfoot alone to languages outside Algonquian. The example thus succinctly reveals the fundamental deficit of the word-comparison method, its absolute lack of a historical dimension, as well as the blindness of its defenders to the difference between the presence and absence of a historical-linguistic hypothesis.

good Amerind language using Greenberg's own techniques (Campbell 1988).<sup>29</sup> Indeed, Ruhlen's (this volume) paper for this conference, while unintentionally so, is in effect a clear admission of the inability of Greenberg's methodology to exclude many non-Amerind languages from Amerind. Specifically, he and Greenberg believe that Amerind and Eskimo-Aleut are related to their postulated Eurasiatic family (Indo-European, Uralic-Yukaghir, Altaic, Korean-Japanese-Ainu, Gilyak, Chukchi-Kamchatkan and Eskimo-Aleut), with Amerind related to Eurasiatic as a whole and Eskimo-Aleut as "simply one constituent of Eurasiatic." Their Na-Dene is paired with at least Sino-Tibetan and "Caucasian." Ruhlen (this volume) struggles to distinguish this vast (and to us incredible) array from the Nostratic hypothesis, which also includes a large quantity of far-flung languages, concluding that "[p]erhaps the best way to view Nostratic is as a vast family, still not completely defined, of which Eurasiatic is but one subgroup." To those less disposed to linguistic classifications as matters of faith, this Amerind-Eskimo-Aleut-Eurasiatic-Nostratic agglomeration simply constitutes the evidence that the methods and data used by Greenberg and Ruhlen are unable to exclude other, unrelated languages, a property which renders the postulation of Amerind as a linguistic unity a vacuous hypothesis.

## CONCLUSION

We conclude that reliable knowledge of the linguistic history of the American Indians is currently so incomplete, for all but the shallowest levels, that it is compatible with a wide range of possible scenarios for the peopling of the Americas. This being the case, we urge caution in proposing hypotheses for the peopling of the Americas that are based on classifications of American Indian languages, even when they may have the attraction of appearing to help restrict that range of possibilities. We are particularly concerned that the classification presented by Greenberg (1987a) should not be accepted as a reasonable working hypothesis simply because there is nothing else with the same far-reaching scope. Greenberg's insistence that hypotheses of classification validly precede hypotheses of history has produced an indiscriminate mass of unverifiable conclusions. As Boas (1940:212) cautioned, "It should be borne in mind that the problem of the study of languages is not one of classification but that our task is to trace the history of the development of human speech." Explicit hypotheses of history will prove to be the only effective tool in the study of the history of languages and their speakers.

<sup>29</sup> A rebuttal of Greenberg's (1989) objections to this demonstration is in Campbell 1993.

## REFERENCES CITED

- Adelaar, W. F. H.  
1989 Review of *Language in the Americas*, by J. H. Greenberg. *Lingua* 78:249-255.
- Austerlitz, R.  
1980 Language-Family Density in North America and Eurasia. *Ural-Altische Jahrbücher* 52:1-10.
- Bateman, R. M., I. Goddard, R. T. O'Grady, V. A. Funk, R. Mooi, W. J. Kress, and P. F. Cannell.  
1990a Speaking of Forked Tongues: The Feasibility of Reconciling Human Phylogeny and the History of Language. *Current Anthropology* 31:1-24.  
1990b On Human Phylogeny and Linguistic History: Reply to Comments. *Current Anthropology* 31:177-82.
- Berman, H.  
1982 Two Phonological Innovations in Ritwan. *International Journal of American Linguistics* 48:412-220.
- Bloomfield, L.  
1925 On the Sound-System of Central Algonquian. *Language* 1:130-56.
- Boas, F.  
1940 *Race, Language and Culture*. Macmillan, New York.
- Bray, W.  
1986 Finding the Earliest Americans. *Nature* 321:726.
- Bright, W.  
1988 Review of *Language in the Americas*, by J. H. Greenberg. In *American Reference Books Annual*, vol. 19. p. 440.
- Campbell, L.  
1986 Comment on *The Settlement of the Americas: A Comparison of the Linguistic, Dental and Genetic Evidence*, by J. H. Greenberg, C. G. Turner II, and S. Zegura. *Current Anthropology* 27:488.  
1988 Review of *Language in the Americas*, by J. H. Greenberg. *Language* 64:591-615.  
1993 The Classification of American Indian Languages and Its Implications for the Earliest Peopling of the Americas. In *Language and Prehistory in the Americas: An Examination of the Greenberg Classification*, edited by A. R. Taylor. Stanford University Press, Stanford. In press.
- Campbell, L., and M. Mithun.  
1979 North American Indian Historical Linguistics in Current Perspective. In *The Languages of Native America: An Historical and Comparative Assessment*, edited by L. Campbell and M. Mithun, pp. 3-69. University of Texas Press, Austin.



- Chafe, W.  
1964 Another Look at Siouan and Iroquoian. *American Anthropologist* 66:852–862.  
1973 Siouan, Iroquoian, and Caddoan. In *Current Trends in Linguistics*, vol. 10, part 2, edited by T. A. Sebeok, pp. 1164–1209. Mouton, The Hague.  
1976 *The Caddoan, Iroquoian, and Siouan Languages*. Mouton, The Hague.  
1987 Review of *Language in the Americas*, by J. H. Greenberg. *Current Anthropology* 28:652–653.
- Cuoq, Jean-André  
1886 *Lexique de la Langue Algonquine*. J. Chapleau and Fils, Montreal.
- Fagan, B. M.  
1987 *The Great Journey*. Thames and Hudson, London.
- Fleming, H. C.  
1987 Toward a Definitive Classification of the World's Languages. *Diachronica* 4:159–223.
- Floyd, E. D.  
1981 Levels of Phonological Restriction in Greek Affixes. In *Bono Homini Donum: Essays in Historical Linguistics, in Memory of J. Alexander Kerns*, edited by Y. L. Arbeitman and A. R. Bomhard, pp. 87–106. John Benjamins, Amsterdam.
- Goddard, I.  
1967 The Algonquian Independent Indicative. In *Contributions to Anthropology: Linguistics I*, pp. 66–106. National Museum of Canada Bulletin No. 214. Ottawa.  
1974 Remarks on the Algonquian Independent Indicative. *International Journal of American Linguistics* 40:317–327.  
1975 Algonquian, Wiyot, and Yurok: Proving a Distant Linguistic Relationship. In *Linguistics and Anthropology: In Honor of C. F. Voegelin*, edited by M. D. Kinkade, K. L. Hale, and O. Werner, pp. 249–262. Peter de Ridder Press, Lisse.  
1979 The Languages of South Texas and the Lower Rio Grande. In *The Languages of Native America: an Historical and Comparative Assessment*, edited by L. Campbell and M. Mithun, pp. 355–389. University of Texas Press, Austin.  
1986 Sapir's Comparative Method. In *New Perspectives in Language, Culture, and Personality: Proceedings of the Edward Sapir Centenary Conference, Ottawa*, edited by W. Cowan, M. K. Foster, and K. Koerner, pp. 191–214. Studies in the History of the Language Sciences, vol. 41. John Benjamins, Amsterdam.  
1987 Review of *Language in the Americas*, by J. H. Greenberg. *Current Anthropology* 28:656–657; Errata 29:435.  
1988 Pre-Cheyenne \*y. In *In Honor of Mary Haas: From the Haas Festival Conference on Native American Linguistics*, edited by W. Shipley, pp. 345–360. Mouton de Gruyter, Berlin.  
1990 Review of *Language in the Americas*, by J. H. Greenberg. *Linguistics* 28:556–58.
- Goddard, I., and W. Fitzhugh  
1979 A Statement Concerning America B.C. *Man in the Northeast* 17:166–172. (Also: *Biblical Archeologist* 41(3):85–88.)
- Greenberg, J. H.  
1987a *Language in the Americas*. Stanford University Press, Stanford.  
1987b *Language in the Americas*. Author's Précis. *Current Anthropology* 28:647–656.  
1987c Reply. *Current Anthropology* 28:664–666.  
1989 Classification of American Indian Languages: A Reply to Campbell. *Language* 65:107–114.  
1990 Comment on "Speaking of Forked Tongues: The Feasibility of Reconciling Human Phylogeny and the History of Language," by R. M. Bateman, I. Goddard, R. T. O'Grady, V. A. Funk, R. Mooi, W. J. Kress, and P.F. Cannell. *Current Anthropology* 31:18–19.
- Greenberg, J. H., C. G. Turner II, and S. L. Zegura.  
1986 The Settlement of the Americas: A Comparison of the Linguistic, Dental, and Genetic Evidence. *Current Anthropology* 27:477–497.
- Gruhn, R.  
1988 Linguistic Evidence in Support of the Coastal Route of Earliest Entry into the New World. *Man* 23:77–100.
- Haugen, E.  
1976 *The Scandinavian Languages: An Introduction to Their History*. Harvard University Press, Cambridge.
- Hockett, C.F.  
1957 Central Algonquian Vocabulary: Stems in /k-/. *International Journal of American Linguistics* 23:247–268.
- Kroeber, A. L.  
1916 Arapaho Dialects. *University of California Publications in American Archaeology and Ethnology*, vol. 12, No. 3, pp. 71–138. Berkeley.
- Laitman, J. T.  
1985 Evolution of the Upper Respiratory Tract: The Fossil Evidence. In *Hominid Evolution: Past, Present, and Future*, pp. 281–286. Alan R. Liss, New York.

- Lamb, S. M.  
1964 Linguistic Extinction in North America. In *Proceedings of the 35th International Congress of Americanists, Mexico, 1962*, vol. 2, pp. 457-464.
- Laughlin, W. S.  
1986 Comment on "The Settlement of the Americas: A Comparison of the Linguistic, Dental and Genetic Evidence," by J. H. Greenberg, C. G. Turner II, and S. Zegura. *Current Anthropology* 27:489-490.
- Leman, W.  
1980 Evidence for a PA \*k. Cheyenne n Correspondence. *International Journal of American Linguistics* 46:316-318.
- Lewin, Roger  
1988 American Indian Language Dispute. *Science* 242:1632-1633.
- Lounsbury, F. G.  
1978 Iroquoian Languages. In *Northeast*, edited by B.G. Trigger, pp. 334-343. *Handbook of North American Indians*, vol. 15, W. C. Sturtevant, general editor. Smithsonian Institution, Washington, D.C.
- Meltzer, D. J.  
1989 Why Don't We Know When the First People Came to North America? *American Antiquity* 54:471-90.
- Michelson, T.  
1914 Two Alleged Algonquian Languages of California. *American Anthropologist* 16:361-366.  
1935 Phonetic Shifts in Algonquian Languages. *International Journal of American Linguistics* 8:131-71.
- Mithun, M.  
1990 Studies of North American Indian Languages. In *Annual Review of Anthropology* 19:309-330.
- Newman, S.  
1977 The Salish Independent Pronoun System. *International Journal of American Linguistics* 43:302-314.  
1980 Functional Changes in the Salish Pronominal System. *International Journal of American Linguistics* 46:155-167.
- Nichols, J.  
1990 Linguistic Diversity and the First Settlement of the New World. *Language* 66:475-521.
- O'Grady, R. T., I. Goddard, R. M. Bateman, W. A. DiMichele, V. A. Funk, W. J. Kress, R. Mooi, and P. F. Cannell  
1989 Genes and Tongues. *Science* 243:1651.
- Picard, M.  
1984 The Case Against Cheyenne n from PA \*k. *International Journal of American Linguistics* 50:111-117.
- Powell, J. W.  
1891 *Indian Linguistic Families of America North of Mexico*. Bureau of American Ethnology, Seventh Annual Report, pp. 1-142. Smithsonian Institution, Washington, D.C.
- Proulx, P.  
1982a The Origin of the Absolute Verbs of the Algonquian Independent Order. *International Journal of American Linguistics* 48:394-411.  
1982b Proto-Algonquian \*k in Cheyenne. *International Journal of American Linguistics* 48:467-471.  
1989 A Sketch of Blackfoot Historical Phonology. *International Journal of American Linguistics* 55:43-82.
- Reichard, G. A.  
1925 Wiyot Grammar and Texts. *University of California Publications in American Archaeology and Ethnology*, vol. 22, No. 1, pp. 1-215. Berkeley.
- Robins, R. W.  
1958 *The Yurok Language: Grammar, Texts, Lexicon*. University of California Publications in Linguistics, vol 15. Berkeley.
- Rogers, R. A.  
1987 Review of *Language in the Americas*, by J. H. Greenberg. *Current Anthropology* 28:662-663.
- Ruhlen, M.  
1987a *A Guide to the World's Languages*. Vol. 1. Stanford University Press, Stanford.  
1987b Voices from the Past. *Natural History* 96(3):6-10.  
n.d.a Is Algonquian Amerind? In *Genetic Classification of Languages*, edited by V. V. Shevoroshkin. University of Texas Press, Austin. In press.  
1989 Materials for a Global Etymological Dictionary. 9. First- and Second-Person Pronouns in the World's Languages. Manuscript distributed to members of the World Summit Conference on the Peopling of the Americas, University of Maine, Orono.
- Ruhlen, M., and V. V. Shevoroshkin  
1989 Linguistic Origins of Native Americans. Manuscript distributed to members of the World Summit Conference on the Peopling of the Americas, University of Maine, Orono.
- Sapir, E.  
1913 Wiyot and Yurok, Algonkin Languages of California. *American Anthropologist* 15:617-646.  
1915 Algonkin Languages of California: A Reply. *American Anthropologist* 17:188-194.  
1949a Central and North American Languages [1929].

- In *Selected Writings of Edward Sapir*, edited by D. G. Mandelbaum, pp. 169–178. University of California Press, Berkeley.
- 1949b Time Perspective in Aboriginal American Culture: A Study in Method [1916]. In *Selected Writings of Edward Sapir*, edited by D. G. Mandelbaum, pp. 389–467. University of California Press, Berkeley.
- Silver, S.  
1960 Natick Consonants in Reference to Proto-Central Algonquian. *International Journal of American Linguistics* 26:112–119, 234–241.
- Szathmary, E. J.  
1986 Comment on *The Settlement of the Americas: A Comparison of the Linguistic, Dental and Genetic Evidence*, by J. H. Greenberg, C. G. Turner II, and S. Zegura. *Current Anthropology* 27:490–491.
- Teeter, K. V.  
1964 *The Wiyot Language*. University of California Publications in Linguistics, vol. 37. University of California Press, Berkeley and Los Angeles.
- Thomason, S. G., and T. Kaufman  
1988 *Language Contact, Creolization, and Genetic Linguistics*. University of California Press, Berkeley.
- Voegelin, C.F.  
1938–  
1940 Shawnee Stems and the Jacob P. Dunn Miami Dictionary. *Indiana Historical Society Prehistory Research Series*, 1:63–108, 135–167, 289–341, 345–389, 409–478. Indianapolis.
- Vogt, Hans  
1940 *The Kalispel Language*. Det Norske Videnskaps-Akademi, Oslo.
- Weiss, K. M., and E. Woolford  
1986 Comment on *The Settlement of the Americas: A Comparison of the Linguistic, Dental and Genetic Evidence*, by J. H. Greenberg, C. G. Turner II, and S. Zegura. *Current Anthropology* 27:491–492.
- Zegura, S.  
1987 Blood Test. *Natural History* 96(7):8–11.

