

The Languages of Native America:

HISTORICAL AND COMPARATIVE ASSESSMENT

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UNIVERSITY OF TEXAS PRESS

AUSTIN AND LONDON

This material is based upon work supported by the National Science Foundation under Grant No. BNS-7824930. Any opinions, findings, and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of the National Science Foundation.

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International Standard Book Number 0-292-74624-5
Library of Congress Catalog Card Number 79-65784

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The Languages of Native America

Introduction: North American Indian Historical Linguistics in Current Perspective

Lyle Campbell and Marianne Mithun

Some fifty years ago, Edward Sapir could say that "the real problems of American Indian linguistics have hardly been stated, let alone studied" (1925:527). We can now report that the problems have been stated, and their resolution is progressing encouragingly. This book is an assessment of the current state of the historical linguistics of North American Indian languages. Work on the recognized language families of native North America is surveyed by linguists who have, themselves, contributed significantly to research in these areas.¹ Both working hypotheses and controversial claims are evaluated, and gaps in our knowledge are identified. The goal of this volume is to draw together and appraise accomplishments in the field up to the present moment and to indicate critical needs and directions for future investigation.

This introduction outlines the historical development of the field. The historical and methodological heritage in which American Indian linguistic studies have been carried out is, in many ways, the result of the intersection of influential personalities and historical accident. Viewed from this perspective, many widely accepted but poorly founded

hypotheses reemerge as empirical issues which merit reexamination. We approach our historical survey from this perspective.

1. Early Work

The goals of early American Indian linguistic studies were naturally shaped by intellectual and philosophical currents of the day. In the face of the extreme linguistic diversity in the Americas, one early task was obviously classification, the creation of order from chaos. Much of the motivation for such work, however, originated in a desire to prove the relationship of certain New World languages to particular Old World languages, or to find some still-spoken ancestor for related languages of particular families. At the same time, acceptance of biblical interpretations which imposed a limited age for the earth restricted the views of how America's extensive linguistic diversity could have arisen.

All modern genetic classifications of North American Indian languages harken back to Major John Wesley Powell's classification, first presented in 1891, although Powell's classification rests on a foundation of much earlier work. (See, for example, Buschmann 1858, 1859, Duponceau 1819, 1838, Gallatin 1836, 1848, Gatschet 1877, 1882, Gibbs 1853, 1877, Latham 1846, 1848a, 1848b, Pickering 1831, Pilling 1885, Trumbull 1871, 1876). The pre-Powellian period was aptly

characterized by the controversial scholar Max Müller:

The greatest diversity of opinion prevails with regard to the languages of America. Some scholars see nothing but diversity, others discover everywhere traces of uniformity. (Quoted by Haas 1969a:99).

In this context, typological classification emerged as a dominant interest early in the 19th Century. Furthermore, since the structural types were frequently ranked along an assumed evolutionary scale, typological and genetic classification were often not distinguished.

1.1. Duponceau.

An extremely influential early contributor to this kind of typological classification was (Peter) Stephen Duponceau (1819, 1838), whose view of the nature of American Indian languages was to have a lasting impact on subsequent studies. He characterized American languages as follows:

Le caractère général des langues américaines consiste en ce qu'elles réunissent un grand nombre d'idées sous la forme d'un seul mot; c'est ce qui leur a fait donner par les philologues américains le nom de langues polysynthétiques. Ce nom leur convient à toutes (au moins à celles que nous connaissons), depuis le Groenland jusqu'au Chili, sans qu'il nous ait été possible d'y découvrir une seule exception, de sorte que nous nous croyons en droit de présumer qu'il n'en existe point. (Duponceau 1838:89; cf. also Haas 1969b.)

Duponceau's conviction that the languages of America were structurally alike--polysynthetic--and that this structural

type was unique to America had important methodological consequences for the subsequent study of American genetic relationships. Unfortunately, this assumption of structural similarity led scholars to discount the value of grammatical resemblances as evidence of relationship and to emphasize vocabulary as the only clue to closer genetic affinity.

1.2. Gallatin.

Albert Gallatin illustrates Duponceau's influence on the the preferential role accorded vocabulary in genetic classification:

The only object I had...was to ascertain by their vocabularies alone, the different languages of the Indians within the United States; and amongst these, to discover the affinities sufficient to distinguish those belonging to the same family...

The word "family" must, in the Indian languages, be taken in its most enlarged sense. Those have been considered as belonging to the same family which had affinities similar to those found amongst the various European languages, designated by the generic term, "Indo-European". But...this has been done without any reference to their grammar or structure; for it will be seen...that, however entirely differing in their words, the most striking uniformity in their grammatical forms and structure, appears to exist in all the American languages, from Greenland to Cape Horn, which have been examined (Gallatin 1836:cxix).

Gallatin's contribution was considerable. He "succeeded in ascertaining 32 distinct families in and north of the United States" (1848:xcviii). This landmark classification was

extremely influential, since Powell (1891, see below) took Gallatin as his starting point. Powell wrote of Gallatin:

As Linnaeus is to be regarded as the founder of biologic classification, so Gallatin may be considered the founder of systematic philology relating to the North American Indians ... he so thoroughly introduced comparative methods, and because he circumscribed the boundaries of many families, so that a large part of his work remains and is still to be considered sound. There is no safe resting place anterior to Gallatin, because no scholar prior to his time had properly adopted comparative methods of research, and because no scholar was privileged to work with so large a body of material ... Gallatin's work has therefore been taken as the starting point, back of which we may not go in the historic consideration of the systematic philology of North America (Powell 1891 [1966]:85).

1.3. Trumbull.

Powell's methods were also influenced by the work of J. Hammond Trumbull. Trumbull echoed Duponceau in saying of the American languages that "uniformity in plan of thought and verbal structure ... establishes something like a family likeness among them all (Trumbull 1876:1155)." He departs from Duponceau, however, in claiming that:

... it has been discovered not only that American tongues differ among themselves in some of the features which formerly were regarded as distinctive of the class, but that no one of these features is, in kind if in degree, peculiarly American. No morphological classification which has yet been proposed provides a place for American languages exclusively, nor in fact can their separation as a class be established by morphological

characteristics or external peculiarities of structure (Trumbull 1876:1157).

Trumbull's most influential methodological recommendations were to urge the use of the comparative method in conjunction with more detailed grammatical description, rather than the collection of vocabulary as an end in itself. His oft-repeated, slogan-like statement was "resolution of synthesis by analysis". Powell was much impressed by Trumbull's emphasis of grammatical analysis:

On reading the paper [by Mr. J. Hammond Trumbull] again it was thought best to cut out what had been written [by Powell] on this subject [methods of analyzing Indian languages] and to insert in lieu thereof a large portion of Trumbull's paper (Powell 1880:vii).

1.4. Brinton.

Daniel G. Brinton's contribution to the history of American Indian studies is peculiar. He and Powell competed to achieve the first definitive classification of American Indian languages. Brinton's 1891 classification was presented without benefit of the large collection of materials in the Bureau of American Ethnology, and consequently Powell's 1891 classification, which actually appeared in 1892, soon superseded that of Brinton for North America, although Brinton's has remained the basis of all subsequent classifications of South American languages.

Brinton (1891:56-7) estimated the number of families at "about 80 in North and as many in South America." He knew well that he differed from Powell and the Bureau of Ethnology:

The precise number of linguistic stocks in use in America at the discovery has not been made out. In that portion of the continent north of Mexico the researchers of the Bureau of Ethnology of the United States have defined 59 stocks, no less than 40 of which were confined to the narrow strip of land between the Rocky mountains and the Pacific ocean (Brinton 1891:57).

Because of his competition with Powell, Brinton lacked the superior information held by Powell and his staff in the Bureau of Ethnology. Brinton laments this in the last paragraph of his preface:

I regret that I have not been able to avail myself of the unpublished material in the Bureau of Ethnology at Washington; but access to this was denied me except under the condition that I should not use in any published work the information thus obtained; a proviso scarcely so liberal as I had expected (Brinton 1891:xii).

Perhaps, then, Brinton's major contribution resides in his competition with Powell, which apparently prompted Powell to speed his classification to completion and present it at a time when he was having methodological second thoughts (see below).

Nevertheless, Brinton presented influential proposals that survived the appearance of the Powell classification. He coined the name Uto-Aztecan, combining Aztecan (Nahuatlan

branch) with Sonoran and Shoshonean, a classification rejected by Powell (1966[1891]:216), but later confirmed by Sapir (1913-1914); he joined Seri and Yuman, later taken up by Kroeber (1915) as a key part of wider Hokan groupings. Like Powell, he followed Orozco y Berra (1864) in grouping the so-called Coahuiltecan languages, now assumed not to bear any close relationship among themselves (Goddard, this volume).

2. Powell

Major John Wesley Powell, founding director of the Bureau of American Ethnology, aided by his remarkable staff, achieved a manageable classification of the enormous linguistic genetic diversity in North America with 58 families (or "stocks") (Powell 1891). This became "the cornerstone of the linguistic edifice in aboriginal North America ... [which] has served ... as the basis of all classificatory work in North American linguistics" (Sapir 1917a:79).

Powell's method was the inspection of crude word lists for resemblances:

... languages are supposed to be cognate when fundamental similarities are discovered in their lexical elements. When the members of a family of languages are to be classed in subdivisions and the history of such languages investigated, grammatic characteristics become of primary importance. The words of a language change by the methods described, but the fundamental elements or roots are more enduring. Grammatic methods

also change, perhaps even more rapidly than words, and the changes may go on to such an extent that primitive methods are entirely lost, there being no radical grammatic elements to be preserved. Grammatic structure is but a phase or accident of growth, and not a primordial element of language. The roots of a language are its most permanent characteristics, ... the grammatic structure or plan of a language is forever changing, and in this respect the language may become entirely transformed (Powell 1891:11).

Powell discounted grammatical evidence for relationship partly because he had not completely shaken the Duponceau tradition, but more specifically because of his own theory of language evolution. Powell accepted Lewis Henry Morgan's view of social evolution (from savagery to barbarism to civilization), applying them to language development. This is the source of his view that "grammatic structure was just a phase or accident of growth"; grammatical structure and its change for Powell was correlated to social evolution. Social evolution determined the stage of grammatical development, not strictly linguistic factors. Powell (1880) included a series of questions prepared by Morgan, and he credited Morgan:

... in many ways the author is indebted to Mr. Morgan as the pioneer investigator into the sociology of the North American Indians. The section on Kinship especially is a summary and condensation of a portion of his great work on "Consanguinity and Affinity", (Powell 1880:vii).

A typological "ranking" of Indian languages, with vague

allusions to correlations between stages of linguistic development and social evolution, can be found in Powell's section 32 (Powell 1880:69-74c).

Powell's conception of the comparative method was to group vocabularies in parallel columns under family headings, without further comment or analysis, nor indications of which similarities were taken to be cognates. "The difficult matter was to obtain the vocabularies; once these were in hand, simple juxtaposition was all that was required and this could have been done by almost anyone" (Sturtevant 1959:197). Thus Powell was concerned only with the most obvious relationships. As we will see later, Boas, Dixon, Kroeber, and Sapir follow Powell's method in their early work.

Powell was aided in his linguistic investigations by a considerable staff at the Bureau of American Ethnology: Curtin, Dorsey, Gatschet, Henshaw, Hewitt, Mooney, Pilling, even Boas briefly. Gatschet and Dorsey were the real "philologists". Kroeber's recollection of how the ultimate classification came about is as follows:

... [it] was made for Powell, who was a geologist and an army major, by Henshaw the ornithologist when Powell found that he would never get his philologist-linguists like Gatschet, Hewitt, and Pilling to come through with the commitment of a classification (Kroeber 1953:369).

(See also Kroeber 1913:390, where Powell's classification is

said to be "largely the result of the labors of H. W. Henshaw").

The Powell classification consisted of the following 58 families:

- | | |
|---------------------------------------|--|
| 1. Adaizan (later considered Caddoan) | 30. Muskhogean (Muskogean) |
| 2. Algonquian | 31. Natchesan (Natchez) |
| 3. Athapascan | 32. Palaihnihan |
| 4. Attacapan (Atakapa) | 33. Piman (part of Uto-Aztecan) |
| 5. Beothukan (Beothuk) | 34. Pujunan (Maiduan) |
| 6. Caddoan | 35. Quoratean (Karak) |
| 7. Chimakuan | 36. Salinan |
| 8. Chimarikan | 37. Salish |
| 9. Chimmesyan (Tsimshian) | 38. Sastean (Shastan) |
| 10. Chinookan | 39. Shahaptian (Sahaptian) |
| 11. Chitimachan (Chitimacha) | 40. Shoshonean (part of Uto-Aztecan) |
| 12. Chumashan | 41. Siouan (includes Catawba & Woccon) |
| 13. Coahuiltecan | 42. Skittagetan (Haida) |
| 14. Copehan (Wintuan) | 43. Takilman (Takelma) |
| 15. Costanoan | 44. Tañóan (Tanoan) |
| 16. Eskimauan | 45. Timuquanan (Timucua) |
| 17. Esselenian (Esselen) | 46. Tonikan (Tunica) |
| 18. Iroquoian | 47. Tonkawan (Tonkawa) |
| 19. Kalapooian (Kalapuya) | 48. Uchean (Yuchi) |
| 20. Karankawan (Karankawa) | 49. Waiilatpuan (Cayuse & Molala) |
| 21. Keresan | 50. Wakashan |
| 22. Kiowan (Kiowa) | 51. Washoan (Washo) |
| 23. Kitunahan (Kutenai) | 52. Weitspekan (Yurok) |
| 24. Kuluschan (Tlingit) | 53. Wishoskan (Wiyot) |
| 25. Kulnapan (Pomoan) | 54. Yakonan (Siuslaw and Alsea) |
| 26. Kusan (Coos) | 55. Yanan |
| 27. Lutuamian (Klamath-Modoc) | 56. Yukian |
| 28. Mariposan (Yokuts) | 57. Yuman |
| 29. Moquelumnan (Miwok) | 58. Zuñian (Zuni) |

This classification has been repeatedly praised for its thoroughness, accuracy, and conservatism, though undeservedly. The claim of thoroughness for the classification must be

qualified. The most notable gap is Eyak, known in Russian publications from 1781 onward, but overlooked by Powell and rediscovered by Americans in 1930. More importantly, however, as more detailed information has become available, many new language names within recognized groups have come to be recognized. Often previously known entities have had to be sectioned into more than one language. Thus we find many more languages when Powell's list is compared with Voegelin's (1941), still more in Chafe's (1962) conservative list, and many, many more in Lander's (1973) checklist.

Powell's accuracy and conservatism are also over emphasized. Praise of Powell for grouping only the most obviously related languages must be modified, since the following have had to be split in subsequent research:

Yakonan - into Yakonan and Siuslaw (Powell 1915)

Yuman - into Yuman and Seri, with Pericu and Waikuri
left out for lack of information (Gatschet
1900:558; Powell 1915)

Wailaptuan - into Cayuse and Molala (Rigsby 1966,
Voegelin and Voegelin 1965:123-4)

Coahuiltecan - into several (Goddard, this volume)

Perhaps, then, it is time to stop repeating the frequent claim that none of Powell's groupings have been discredited in subsequent research.

There is another less obvious way in which Powell was not so conservative. He attempted no internal classification or subgrouping, so that it is difficult to interpret the nature of the relationships posited for some languages. The core Siouan languages, for example, are much more closely related to one another than any is to Catawba, the most divergent. Catawba's relationship to Siouan is still controversial for some; nevertheless, Powell places it on the same level with his other Siouan languages. Similarly, Powell lumps Eskimoan and Aleutan, two distantly related families. Had Powell been consistent, he could never have grouped Catawba with Siouan nor Eskimoan and Aleutan by his conservative methods. These relationships, while accepted today, were in no way obvious in Powell's time.

Powell was inconsistent in his conservatism. While he grouped some less-than-obviously related languages, he considered but rejected other relationships which had been proposed before his classification and subsequently gained acceptance, for example, Shoshonean-Piman-Nahuatl (Uto-Aztecan), and Costanoan-Miwok (California Penutian).

Powell did "not desire that his work shall be considered final, but rather as initiatory and tentative" (Powell 1966 [1891]:215). In the course of the work "extending

through more than 20 years of time" Powell changed his ideas, coming to believe more and more that borrowing complicated the interpretation of the similarities upon which his groupings were based:

In arranging the scheme of linguistic families the author has proceeded very conservatively ... Notwithstanding all this care, there remain a number of doubtful cases ... this general conclusion has been reached: That borrowed materials exist in all the languages; and that some of these borrowed materials can be traced to original sources, while the larger part of such acquisitions can not be thus relegated to known families. In fact, it is believed that the existing languages, great in number though they are, give evidence of a more primitive condition, when a far greater number were spoken. When there are two or more languages of the same stock, it appears that this differentiation into diverse tongues is due mainly to the absorption of other material, and that thus the multiplication of dialects and languages of the same group furnishes evidence that at some prior time there existed other languages which are now lost except as they are partially preserved in the divergent elements of the group. The conclusion which has been reached, therefore, does not accord with the hypothesis upon which the investigation began, namely, that common elements would be discovered in all these languages, for the longer the study has proceeded the more clear it has been made to appear that the grand process of linguistic development among the tribes of North America has been toward unification rather than toward multiplication, that is, that the multiplied languages of the same stock owe their origin very largely to absorbed languages that are lost.

The opinion that the differentiation of languages within a single stock is mainly due to the absorption of materials from other stocks, often to the extinction of the latter, has grown from year to year as the investigation has proceeded ... In the presence of opinions that have slowly grown in this direction,

the author is inclined to think that some of the groups herein recognized as families will ultimately be divided, as the common materials of such languages, when they are more thoroughly studied, will be seen to have been borrowed (Powell 1891 [1966: 216-7]).

Had Brinton and Powell not been in keen competition to present a definitive classification, Powell's reservations stemming from borrowing might have delayed the publication considerably and ultimately given us a rather different classification from the 58 families presented then.

3. Post-Powellian approaches.

American Indian linguistics after Powell was shaped by historical accident and strong personalities. For this reason, it is fruitful to consider the ways in which the attitudes of influential scholars have come to determine the methods, goals, and overall character of our subject matter before continuing the discussion of the historical events themselves.

Voegelin and Voegelin (1965) speak of two co-tradition approaches, family linguistics (research within a family of related languages) and phylum linguistics (research on possible remote relationships). This dichotomy should not be overemphasized, since many of the same individuals and methods are associated with both. Nonetheless, the distinction proves useful in examining the contributions of individual scholars.

Family linguistics, i.e., historical linguistic research within established families, has a complex and important history within each of the language families. These histories are considered in the individual contributions to this volume, and therefore not presented here.

A major milestone in family linguistics in America and in linguistics generally was the demonstration that change in American Indian languages (and unwritten languages in general) is not different in kind from that in written languages. Bloomfield's and Sapir's demonstrations of the regularity of sound change and the applicability of the comparative method in Indian languages gave the encouragement, and confidence for intra-family historical reconstruction that stimulated much family-level work (see Bloomfield 1925:130 and Sapir 1931).

As is well known, Boas and Sapir disagreed over strategies for the investigation of genetic relationships (see Darnell and Sherzer 1971). Boas came to be skeptical about the possibility of demonstrating distant relationships, emphasizing instead solid intra-family work; Sapir came to direct his efforts more and more toward the investigation of distant genetic relationships. The history of their controversy is complex. Apparently quite similar at the outset, their attitudes were to polarize as time went on.

Boas' early linguistic strategy was largely a carryover

of the Powellian framework of the Bureau of American Ethnology, with which he had worked for a time. He maintained that structural similarities suggest genetic connections:

The structural resemblance of the two languages [Tlingit, Haida] and their contrast with the neighboring languages can be explained only by the assumption of a common origin. The number of words which may be connected by etymology is small, and the similarities are doubtful. Nevertheless, the structural resemblance must be considered final proof of a historical connection between the two (Boas 1974 [1894]:162).

In this early period he, like Sapir, discounted profound effects of structural borrowing:

I do not know ... of any observations which would point to a radical modification of the morphological traits of a language through the influence of another language (Boas 1966 [1911]:45).

Later Boas (1940 [1920]:211) came to doubt the strength of structural similarities as evidence of genetic relationship, and to allow for the possibilities of more extensive structural borrowing. He emphasized family-level research:

Since for many years I have taken the position that comparison between American languages should proceed from the study of fairly closely related dialects towards the study of more diverse forms, it seems desirable to state briefly the theoretical points of view upon which my own attitude has been and is still based. As early as 1893 I pointed out that the study of the grammar of American languages has demonstrated the occurrence of a number of striking morphological similarities between neighboring stocks which, however, are not accompanied by appreciable similarities in vocabulary. At that time I was inclined to consider these similarities as a proof of relationship of the same order as that of languages

belonging, for instance, to the Indo-European family. While further studies, particularly in California, have shown that we may generalize the observations which I made based on the languages of the North Pacific Coast, I doubt whether the interpretation given at that time is tenable.

Boas came to be so skeptical about the possibility of distinguishing borrowed material from genetic material, that he doubted the utility of attempting to establish genetic relationships:

Modern languages have developed by differentiation. In so far as this is true, the establishment of a genealogical series must be the aim of inquiry. On the other hand, languages may influence one another to such an extent that, beyond a certain point, the genealogical question has no meaning, because it would lead to several sources and to an arbitrary selection of one or another as the single ancestral type (Boas 1940 [1917]:202).

Boas clearly echoes Powell's reservations concerning diffusion and language mixing:

If these observations regarding the influence of acculturation upon language should be correct, then the whole history of American languages must not be treated on the assumption that all languages which show similarities must be considered as branches of the same linguistic family ... We should have to reckon with the tendency of languages to absorb so many foreign traits that we can no longer speak of a single origin, and that it would be arbitrary whether we associate a language with one or the other of the contributing stocks. In other words, the whole theory of "Ursprache" for every group of modern languages must be held in abeyance until we can prove that they have not originated, to a large extent, by the process of acculturation (Boas 1940 [1920]: 217).

Sapir, like Boas, allowed for areal diffusion throughout his career:

It is well known to students of language that striking phonetic and morphologic similarities are not infrequently found between neighboring languages that, so far as can be ascertained, are in no way genetically related. Such resemblances, insofar as they are not merely fortuitous, must be due to the assimilatory influence exerted by one language on another (Sapir 1949 [1916]:458).

Later, however, presumably in response to Boas' skepticism concerning the separability of diffused from inherited material, Sapir argued against structural influences of any depth:

So long as such direct historical testimony as we have gives us no really convincing examples of profound morphological influence by diffusion, we shall do well not to put too much reliance in diffusion theories (Sapir 1921a:206).

Thus, by 1920 Boas and Sapir were polarized, quarreling over the separability of the areal and genetic similarities in languages. Boas believed their separability to be dubious, making distant genetic research questionable. Sapir, in contrast, believed the effects of diffusion would not be profound, making prospects for remote relationships brighter.

Cases of linguistic features shared across established genetic boundaries continued to appear. The leading tendency, following Sapir, in attempted explanations of these cross-family similarities was to try to show that many were due ultimately to genetic relationship. Following Sapir's lead,

scholars have continued to attempt large-scale reductions in the number of ultimate genetic units by uniting previously established families into more inclusive groupings. Boas' cautions were largely forgotten in America until very recently (though more influential in Europe) (Jakobson 1944). The result was an unfortunate inattention to the process of structural diffusion and areal linguistics in explaining cross-family similarities. When areal phenomena are taken into account, many hypotheses of more remote affinities must be reevaluated. Happily, the study of areal linguistics (also spoken of in terms of convergence area, diffusion area, Sprachbund, adstratum, linguistic area, etc.) is once again being accorded its proper place in American Indian linguistic studies. Specifically areal linguistics is concerned with the diffusion of structural features of language across genetic boundaries. As areal phenomena are identified, many hypotheses of more remote affinities will require reevaluation.

American Indian linguistics has been haunted by Sapir's dual legacy of distrust for the diffusion of structural elements of language and of emphasis on genetic reduction. As the role of diffusion in the explanation of cross-family similarities is recognized, it becomes clear that the level of proof for remoter relationships must be much higher than thought by many of Sapir's followers. Below we consider

methods of distant genetic research. We return now to our discussion of historical events in the classification of American Indian languages.

4. Early Post-Powellian Classifications.

Americanists immediately set about reducing Powell's 58 stocks (families), a task which was to become the dominant concern throughout the post-Powellian history of American Indian linguistics.

Powell's 58 were soon reduced to 55, mentioned in Boas (1974 [1906]:186) and listed in Boas (1911:82-3). Shastan and Palaihnihan were grouped under Shastan, Adaizan under Cad-doan, and Natchez under Muskhogean. These attempts to reduce the Powell classification were led by Dixon and Kroeber. Kroeber, having received his Ph.D. degree at Columbia under Boas in 1901, founded the department of anthropology at the University of California at Berkeley. Since 22 of Powell's 58 families were found in California, reduction was one reasonable aim of Kroeber's survey of Californian Indians. He was aided in his survey at one time or another by the linguists Sapir, Watermann, Barrett, Radin, and especially Dixon.

Dixon (1905) proposed the first reductions, combining the Shastan languages and the Palaihnihan languages into his Shasta-Achomawi, mainly on the basis of word lists of about 20

lexical items each. Later, Chimariko was added to the group, thereafter called Shastan (Dixon 1910). Kroeber (1910) combined Miwok and Costanoan.

Together Dixon and Kroeber would propose wide-scale reductions, following a method of weak lexical comparisons:

About 225 English words were selected on which material was most likely to be accessible in reasonably accurate and comparable form, and the native equivalents in 67 dialects of the 21 stocks [Shasta-Achumawi having been reduced earlier by Dixon] were entered in columns. Comparisons were then instituted to determine all inter-stock similarities that seemed too close or too numerous to be ascribed to coincidence. The purpose of this study was three-fold: first, to ascertain the nature and degree of borrowing between unrelated languages; second, to trace through these borrowings any former contacts or movements of language groups not now in contact; third, in the event of any relationship existing between languages then considered unrelated, to determine this fact (Dixon and Kroeber 1919:49). (See also Dixon and Kroeber 1913a: 225, and especially Kroeber 1913.)

Such lexical comparison follows the tradition of Powell. The actual lexical similarities upon which reductions were finally based were few and crude.

In a one-page summary and a longer but sketchy article, Dixon and Kroeber (1913a, 1913b) announced the reduction by this method of the 21 remaining Californian stocks to 12, including the wider groupings:

Penutian: Wintun, Maida, Yokuts, Miwok, and Costanoan families. (The name is based on words for the number

"two", something like pen or uti in the various languages.)

Hokan: Karok, Shasta, Chimariko, Achumawi-Atsugewi, Pomo, Yana, Esselen, and Yuman. (The name is based again on words for the number "two", something like hok.)

Iskoman: Chumash and Salinan. (The name is Chumashan for "two". Later this was lumped with Hokan.)

Ritwan: Yurok and Wiyot. (The name is Wiyot for "two".

Later these proved to be related to Algonquian.)

The similarities unearthed by this crude scanning method were few. Hokan was formed on the basis of only five presumed cognate sets (eye, tongue, water, stone, sleep), and Iskoman on the basis of twelve. Langdon (1974:29) remarks that these "1913 statements stand more as a declaration of faith with the barest amount of demonstration."

It is a historical accident that Kroeber wound up in California, the home of 22 of Powell's 58 families. It is also an accident of history that Kroeber and Dixon's Hokan and Penutian reductions were the first proposed, thereby becoming widely known at an early period. Later studies tended to attempt to relate unaffiliated languages to these more familiar groups. In this way, reductionist efforts began to gain momentum.

5. Sapir

Kroeber and Dixon set in motion the reductionist trend which culminated in the work of Edward Sapir. Sapir spent the year 1907-8 in Berkeley as a research associate in anthropology at the University of California. Here he was caught up in the reductionist zeal of Kroeber and Dixon which prevailed at the time.

In 1913, Sapir related Ritwan (Wiyot and Yurok) to Algonquian, a relationship controversial at the time, but subsequently demonstrated. In 1917, he presented a body of evidence in support of the Hokan stock which so impressed Dixon and Kroeber (1919:103-4) that "they considered themselves exonerated from the obligation to present further justification for their Hokan stock" (Langdon 1974:37). Sapir had compared Karok, Shasta-Achumawi, Chimariko, Yana, Pomo, Esselen, Salinan, Chumash, Yuman, Seri, and Chontal. In 1920, Sapir grouped together Hokan and the so-called Coahuiltecan languages, including Tonkawa and Karankawa on the basis of 120 proposed lexical similarities of doubtful status spread unevenly through the languages. He justified his admittedly shaky findings: "A certain amount of groping in the dark cannot well be avoided

in the pioneer stage of such an attempt as this" (Sapir 1920: 289). His 1925 article is considered by many to be the major statement on the Hokan language classification.

In 1921 Sapir presented the first version of his 6 superstocks (Sapir 1921b). It is largely the same in substance as his more famous 1929 Encyclopaedia Britannica article. Hokan-Siouan is the same; to Penutian were added Lutuamian, Waiilatpuan, and Sahaptian. The 1929 version is as follows:

- I. Eskimo-Aleut
- II. Algonkin-Wakashan
 - A. Algonkin-Ritwan (Algonquian, Beothuk, Ritwan (Wiyot, Yurok)
 - B. Kutenay
 - C. Mosan (Wakashan-Salish) (Wakashan (Kwakiutl-Nootka), Chimakuan, Salish)
- III. Nadene
 - A. Haida
 - B. Continental Nadene (Tlingit, Athapaskan)
- IV. Penutian
 - A. California Penutian (Miwok-Costanoan, Yokuts, Maidu, Wintun)
 - B. Oregon Penutian (Takelma, Coast Oregon Penutian [Coos, Siuslaw, Yakonan], Kalapuya)
 - C. Chinook
 - D. Tsimshian
 - E. Plateau Penutian (Sahaptian, Waiilatpuan [Molala-Cayuse], Lutuami [Klamath-Modoc])
 - F. Mexican Penutian (Mixe-Zoque, Huave)
- V. Hokan-Siouan
 - A. Hokan-Coahuiltecan
 1. Hokan
 - a. Northern Hokan
 1. Karok, Chimariko, Shasta-Achomawi
 2. Yana
 3. Pomo

- b. Washo
- c. Esselen-Yuman
 - 1. Esselen
 - 2. Yuman
- d. Salinan-Seri
 - 1. Salinan
 - 2. Chumash
 - 3. Seri
- e. Tequistlatecan (Chontal)
- 2. Subtiaba-Tlappanec
- 3. Coahuiltecan
 - a. Tonkawa
 - b. Coahuilteco
 - 1. Coahuilteco proper
 - 2. Cotoname
 - 3. Comecrudo
 - 4. Karankawa
- B. Yuki
- C. Keres
- D. Tunican
- E. Iroquois-Caddoan
 - 1. Iroquoian
 - 2. Caddoan
- F. Eastern Group
 - 1. Siouan-Yuchi
 - a. Siouan
 - b. Yuchi
 - 2. Natchez-Muskogian
 - a. Natchez
 - b. Muskogian, C. Timucua

VI. Aztec-Tanoan

- A. Uto-Aztecan
 - 1. Nahuatl
 - 2. Piman (Sonoran)
 - 3. Shoshonean
- B. Tanoan-Kiowa
 - 1. Tanoan
 - 2. Kiowa
- C. Zuni

The impact of this classification was tremendous, though it was presented as "suggestive but far from demonstrable in all its features at the present time" (Sapir 1929:137). Of

the Hokan-Siouan portion of this classification, a group Sapir himself referred to as his "wastepaper basket stock" (Haas 1973: 679), Sapir wrote:

Such a scheme must not be taken too literally. It is offered merely as a first step toward defining the issue, and it goes without saying that the status of several of these languages may have to be entirely related (Sapir 1925: 526).

Unfortunately, the intended role of the schema as a hypothesis to be tested by subsequent research was soon forgotten. Sapir was a recognized genius; it was said that Sapir's hunches were better than others' proofs. Consequently, the schema was accepted literally. It was assumed to have been established by valid linguistic methods and froze into accepted doctrine. It is still widely followed today, without question, even by some specialists in the field.

If much of the widely accepted classification of American Indian languages is the result of historical accident, we may ask a telling question. What would the classification of American Indian languages look like today if a Sapir or Kroeber had first arrived upon the lumping scene not in California, but in some other area? Suppose, for example, that the work of remote classification had been initiated with the Mayan family. Sapir (1949 [1929]:1778, 1925:527) suspected Hokan affinities for Mayan, as did Radin (1919:492) and Swadesh

(1967) while Whorf (1935, 1943) and many others saw Penutian affinities (Voegelin and Voegelin 1965:146). Vague lexical similarities can be found between Mayan and supposed Hokan and Penutian languages, but there is no reasonable evidence for relating Mayan to anything outside of itself. These proposals merely illustrate the tendency for well-known entities to attract more and more entities. Had early classificatory work in American Indian languages begun with Mayan and been fueled by romantic associations of the family with advanced cultures, we might today be reevaluating some large and lumpy Macro-Mayan phylum which had snowballed outward to include not only neighboring linguistic groups in Mesoamerica, for which proposals abound, but also much of the traditional Hokan and Penutian linguistic terrain.

6. Post-Sapir Classification

Sapir's six superstocks had profound and lasting impact on the field. The lumping tradition prevailed, though more recent reductionist proposals have had much less influence. We mention here but a few of the more encompassing proposals. Whorf proposed his Macro-Penutian which included Penutian, Sahaptian, Azteco-Tanoan, Zuni, Kiowa, Mayan, Totonac, and possibly Tunican (see Trager 1945, Mason 1940, etc.). Haas (1951) proposed "Gulf" which included Muskogean, Natchez,

Chitimacha, Atakapa, and Tunica. Later, Haas (1958) proposed that her Gulf languages might be related to Algonquian, thus challenging aspects of Sapir's Hokan-Siouan and Algonkin-Wakashan groups. Swadesh attempted various grander and mostly dubious connections (see for example Swadesh 1954, 1967, etc.). Many other such classifications were proposed, though usually more limited in scale. Voegelin and Voegelin (1965) represents a summary and evaluation of these studies; therefore, we do not attempt a comprehensive survey here. Most proposals concerning specific families are discussed in the other papers of this volume.

7. The 1964 Conference.

The last major turning point before the present was the Indiana University conference (1964) on the Classification of American Indian languages, reported in Voegelin and Voegelin (1965). It represents the consensus of some 30 Americanists at that meeting. Their classification was as follows:

- I. AMERICAN ARCTIC-PALEOSIBERIAN PHYLUM (=Sapir's Eskimo-Aleut family to which at least one Paleo-siberian family seems to be related)
 - Ia Eskimo-Aleut language family (as in Sapir's usage)
 - Ib Chukchi-Kamchatkan language family
- II. NA-DENE PHYLUM (=Sapir's Na-Dene)
 - IIa Athapascan language family (=Sapir's Athabascan

- family plus Eyak as a divergent language in the family)
- IIb Tlingit language isolate (greater cognacy from Haida with the Athapascan family)
- IIc Haida language isolate
- III. MACRO-ALGONQUIAN PHYLUM (=part of Sapir's Algonquian-Wakashan phylum plus a language family and several isolates previously assigned to the Hokan-Siouan phylum)
- IIIa Algonquian language family, the only family in the Algic affiliation, which includes Yurok and Wiyot
- IIIb Yurok language isolate (Yurok and Wiyot are related to Algonquian as Tlingit and Haida are to Athapascan)
- IIIc Wiyot language isolate (the neighboring Wiyot and Yurok languages do not constitute a language family)
- IIId Muskogean language family (=family in Sapir's Hokan-Siouan)
- IIIe Natchez language isolate (=language in Sapir's Hokan-Siouan)
- IIIf *Atakapa (now extinct; classified formerly in Sapir's Hokan-Siouan)
- IIIg Chitimacha language isolate (=language in Sapir's Hokan-Siouan)
- IIIh Tunica language isolate (possibly extinct, classified formerly in Hokan-Siouan)
- IIIi *Tonkawa (now extinct; classified formerly in Sapir's Hokan-Siouan; now reclassified but dubiously so)
- IV. MACRO-SIOUAN PHYLUM (=part of Sapir's Hokan-Siouan)
- IVa Siouan language family (interfamily connections with Iroquoian)
- IVb Catawba language isolate (closer to the Siouan family than to other families or language isolates in Macro-

Siouan; specialists have wavered in classifying Catawba first as an isolate, then as a divergent member of the Siouan family, and then again as a language isolate)

- IVd Caddoan language family (interfamily connections with other families in Macro-Siouan phylum await closer examination)
- IVe Yuchi language isolate (analogous to the remote relationship of the Haida isolate to the Athapascan family; Yuchi shows traces of cognacy with the Siouan family and with the Catawba language isolate)
- V. HOKAN PHYLUM (=part of Sapir's Hokan-Siouan)
 - Va Yuman language family (interfamily connections with Pomo postulated)
 - Vb Seri language isolate (affiliations with the Yuman family perhaps analogous to the relatively close affiliations of the Catawba isolate to the Siouan family)
 - Vc Pomo language family (interfamily connections with Yuman in the Hokan phylum)
 - Vd Palaihnihan language family (=the Achumawi-Atsugewi part of Sapir's Shasta-Achumawi)
 - Ve Shastan language family (interfamily connection with Palaihnihan--minimized by Olmsted)
 - Vf *Yanan language family
 - Vg Chimariko language isolate
 - Vh Washo language isolate
 - Vi *Salinan language family
 - Vj Karok language isolate
 - Vk *Chumashan language family (with reservations on phylum affiliations in Hokan)
 - Vl *Comecrudan language family (with reservations on

- phylum affiliations in Hokan)
- Vm Coahuiltecan language isolate (with reservations on phylum affiliations in Hokan)
- Vn *Esselen language isolate (strong reservations on evidence for phylum affiliations of Esselen in Hokan)
- Vo Jicaque language isolate
- Vp Tlapanecan (Subtiaba-Tlapanec) language family (interfamily connections with Tequistlatecan postulated)
- Vq Tequistlatecan language family (interfamily connections with Yuman postulated)
- VI. PENUTIAN PHYLUM (=Sapir's Penutian for the most part; Sapir's Zuni, reclassified from Aztec-Tanoan to Penutian)
- VIa Yokuts language family
- VIIb Maidu language family
- VIc Wintun language family (there is a special relationship between Northern Wintun and Southern Miwok which may be as close as between Northern and Southern Wintun)
- VId Miwok-Costanoan language family (the special relationship linking branches of Wintun and Miwok is such as to suggest that the language family lines between Wintun and Miwok-Costanoan have been incorrectly drawn)
- VIe Klamath-Modoc language isolate
- VI f Sahaptin-Nez Perce language family
- VIg *Cayuse language isolate
- VIh *Molale language isolate (rather than a sister language, with *Cayuse, in the non-existent Wailatpuan family.
- VIIi Coos language family

- Vij Yakonan language family (the members of this family, Alsea and Siuslaw-Lower Umpqua, have sometimes been considered as two language isolates)
- VIk Takelma language isolate (perhaps with closer affiliations to the Kalapuya family than to other families in the Penutian phylum)
- VIl Kalapuya language family
- VI_m Chinookan language family
- VI_n Tsimshian language isolate (with reservations on phylum affiliations in Penutian)
- VI_o Zuni language isolate (with reservation on phylum affiliation in Penutian)
- VII. AZTEC-TANOAN PHYLUM (=Sapir's Aztec-Tanoan for the most part, but not including Zuni)
- VIIa Kiowa-Tanoan language family (with Kiowa taken as a divergent member of the family, rather than as a language isolate in the phylum)
- VIIb Uto-Aztecan language family
- VIII. LANGUAGE ISOLATES AND FAMILIES WITH UNDETERMINED PHYLUM AFFILIATIONS (=members of Sapir's Hokan-Siouan or Algonquian-Wakashan phyla) NORTH OF MEXICO
- VIIIa Keres language isolate (=language in Sapir's Hokan-Siouan phylum)
- VIIIb Yuki language family (=family in Sapir's Hokan-Siouan phylum)
- VIIIc *Beothuk language isolate (=language in Sapir's extended Algonquian family which included Yurok and Wiyot in one family rather than one phylum)
- VIII_d Kutenai language isolate (=language in Sapir's Algonquian-Wakashan phylum; remote connections with Algonquian family, with Salish family and with Wakashan family discussed)
- VIII_e Karankawa language isolate (=language in Sapir's

Hokan-Siouan phylum)

- VIII f Chimakuan language family (= family in Sapir's Algonquian-Wakashan phylum under the Mosan division)
- VIII g Salish language family (=family in Sapir's Algonquian-Wakashan phylum, under the Mosan division; recent discussion on possibility of Algonquian-Salish affiliations)
- VIII h Wakashan language family (=family in Sapir's Algonquian-Wakashan phylum, under Mosan division)
- VIII i *Timucua language isolate (=language questioningly included in Sapir's Hokan-Siouan phylum)

EXTENTION OF PENUTIAN PHYLUM VI
(in Mexico-Mesoamerica and Bolivia)

Mixe-Zoque (Zoquean) family

Mayan family, with two dozen languages subrelated in ten groups:

Huastecan group
Cholan group
Tzeltalan group
Chuh group
Kanjobalan group
Motozintlec group
Mamean group
Quichean group
Kekchian group
Maya proper group

Chipaya-Uru family

Totonacan family

Huave language isolate

EXTENTION OF HOKAN PHYLUM V
(in Mexico-Mesoamerica)

Seri language isolate

Tequistlatecan family

Tlapanec (Subtiaba-Tlapanec, Supanecan) family

Jicaque language isolate

This classification follows Sapir (1929) in outline, separating some and recombining others of Sapir's groupings, but still admitting rather far-flung relationships for which little supporting evidence has yet been provided. In this way it is a true offspring of the lumping tradition.

8. The Present

The general attitude reflected in this volume is more conservative than any since Powell. Current important work at the family level is treated in the individual papers here. At the level of distant relationships, there is consensus that higher standards for supporting evidence are mandatory. A healthy recognition of the potential influence of borrowing and chance now enters all considerations of remoter classification. Where proposed evidence for such classifications is insufficiently strong, there is now little reluctance to "split" previously "lumped" groupings. Although the past is characterized by much "lumping" and the present by ready "splitting", the crucial difference lies in the demands for supporting evidence. Scholars contributing to this volume are clearly "splitters", yet they do not hesitate to "lump" when the evidence is sufficient. The potential distant genetic

relationships held to be promising by authors in this volume include the following:

Eskimo-Aleut-Chukotan (Krauss)
Kootenai-Salishan (Thompson)
Algonquian-Ritwan (now established beyond doubt) (Goddard)
Pomoan-Yuman (Hokan?) (Langdon)
Jicaque-Tequistlatecan (Hokan?) (Campbell, Jacobsen,
Langdon)
Keresan-Uto-Aztecan (?) (Davis)
Yuchi-Atakapa-Tunica (?) (Crawford)
Iroquoian, Caddoan, Siouan (Chafe, Rood, Mithun)

Some of these are more solidly supported than others; some are extremely preliminary, but each is worthy of further research.

Some of the more notable cases of splitting are:

Hokan-Siouan (universally abandoned)
Siouan-Yuchi (Crawford)
Hokan-Coahuiltecan (Goddard, Campbell, Jacobsen, Langdon)
Macro-Algonquian or Algonquian-Gulf (Goddard, Haas)
Muskogean-Natchez (Haas)
Aztec-Tanoan (Davis, Campbell)
Haida-Nadene (Krauss, Thompson)
Algonquian-Wakashan (generally abandoned)
Mosan (Thompson, Jacobsen)
Macro-Penutian (Silverstein, Campbell)
Mexican Penutian (Campbell, Silverstein)
Macro-Mayan (Campbell)
Xinca-Lencan (Campbell)

Other classifications are considered suspect or doubtful because of the limited or total lack of data or documentation:

Beothuk (sometimes placed with Algonquian)
Adai (placed with Caddoan)
Esselen (grouped under Hokan)
Pericú and Waikurian (sometimes included in Hokan)

Many names of other extinct and poorly known languages (e.g.

Aranama, Solano, Yamasee, etc.), Goddard, this volume, Haas 1973b:1227-8, Wanton 1917, etc.).

The following is a summary of the current classification. It is conservative and not very controversial, but rather represents something of an encapsulation of current received opinion. We fully expect modifications in future work. We encourage such work. The goal of this statement is to provide a foundation for future study, not to deter it. For comparative purposes, the languages are discussed in the order followed in Voegelin and Voegelin 1965. Mere juxtaposition should not be considered motivation for perpetuating older, unsupported lumpings, however.

1. Eskimo-Aleut. (This agrees with Sapir and others; see Krauss, this volume). The proposal of a genetic relationship between Eskimo-Aleut and Chukotan in Asia (Chukchi-Koryak-Kamchadal) is worthy of more research. It appears promising, but not yet sufficiently documented to embrace uncritically. It is the only proposal of connections between New World and Old World languages which at present appears to be worthy of attention. (See Krauss 1973a).

2. Nadene. (This corresponds to that of Sapir minus Haida). Nadene includes the Athapaskan-Eyak family, to which Tlingit is perhaps distantly related. Haida, an isolate, is not demonstrably related (Krauss, this volume).

3. Algonquian-Ritwan. This includes the Algonquian family to which Yurok and Wiyot are distantly but definitely related (Goddard, this volume).

4. Muskogean family.

5. Natchez isolate. It is frequently assumed that Natchez and Muskogean are related, but they are certainly no more closely related than other proposed "Gulf" languages, if at all (Haas 1973b:1217). Their potential relationship is too distant, if it exists, to be accepted in our current state of knowledge.

6. Atakapa isolate. (Crawford (this volume) presents preliminary evidence for possible connections with Yuchi and Tunica; this bears investigating.)

7. Chitimacha isolate.

8. Tunica isolate. (See Crawford on possible Atakapa and Yuchi affinities.)

Muskogean, Natchez, Atakapa, Chitimacha, and Tunica have been proposed to be related, a grouping called "Gulf". These so-called Gulf language may bear suggestive similarities, but the nature of any potential relationship is unclear; it is doubtful that these are any more closely related to one another than any may be to languages outside the "Gulf" group. For this reason, "Gulf" should be set aside for the present.

9. Tonkawa isolate.

10. Siouan family. Catawba is considered here to be included in the Siouan family, though the nature of the relationship is still an open question.

11. Iroquoian family.

12. Caddoan family.

The Siouan, Iroquoian, and Caddoan families may be distantly related. Evidence presented to date (Chafe 1973:1189-98) is suggestive, though not yet compelling. These hypotheses deserve more research.

13. Yuchi isolate. Yuchi is not to be placed with Siouan. Crawford cautiously presents evidence for a possible connection between Yuchi and Atakapa and Tunica. This will need to be evaluated in subsequent research. (Crawford, this volume.)

14. Yuman family. A promising relationship with Pomoan is presented by Landgon, this volume.

15. Seri isolate.

16. Pomoan family. (See Langdon's evidence for potential connections with Yuman.)

17. Palaihnihan family.

18. Shastan family. The possible closer relationship between Palaihnihan and Shastan is controversial.

19. Yanan family.

20. Chimariko isolate.

21. Washo isolate.

22. Salinan family.

23. Karok isolate.

Yuman, Seri, Pomoan, Palaihnihan, Shastan, Yanan, Washo, Chimariko, Salinan, and Karok may be considered "Core Hokan" languages. It is an open question whether any or all of these are genetically related.

24. Chumashan family.

25. Cotoname isolate.

26. Comecrudo isolate

27. Coahuilteco isolate.

28. Aranama-Tamique isolate.

29. Solano isolate.

Languages traditionally lumped as Coahuiltecan (or Comecrudan) must be split, since there is no evidence to support any relationship. For full details, see Goddard, this volume.

30. Esselen isolate. The insufficiency of data makes it difficult to classify this language.

31. Jicaque family. The Jicaque family is quite probably related to Tequistlatecan (Campbell, this volume).

32. Subtiaba-Tlapanec family. It is doubtful that Subtiaba-Tlapanec can ever be demonstrated to be related to other so-called Hokan languages, Sapir (1925) notwithstanding. The proposed Otomanguean connection for Subtiaba-Tlapanec seems

much more promising and deserves serious attention (Campbell, this volume).

33. Tequistlatecan family (Chontal of Oaxaca). These languages and the Jicaque family are probably related.

The entire "Hokan" complex (14-33) needs extensive re-examination and evaluation. As yet there has been no sufficient demonstration that any two of the variously proposed branches are actually related genetically. One definition holds that a Hokan language is one in which the word for "tongue" has a labial preceding a liquid (William Bright, personal communication). This facetiously highlights the fact that the so-called Hokan languages are connected by few lexical threads: "much of one's feeling that there may be a genuine relationship here is based on certain sets of basic words that run through many of the branches" (Jacobsen, this volume). Mary Haas (1964) has shown lexical intersections involving some of these basic Hokan words in Penutian, Yukian, Ritwan, and Hokan languages. This should serve as a warning against too much Hokan faith based on the "laundry-list" approach.

34. Yokuts family.

35. Maiduan family.

36. Wintuan family.

37. Miwok family.

38. Costanoan family. There is some controversy over a

potential closer relationship shared by Miwok and Costanoan within the "Core Penutian" group (see below).

39. Klamath-Modoc isolate.

40. Sahaptian family.

41. Cayuse isolate.

42. Molala isolate. The evidence is no longer considered sufficient to group Cayuse and Molala more closely.

43. Coos family.

44. Alsea isolate.

45. Siuslaw-Lower Umpqua isolate. The nature of "Yakonan" with Alsea and Siuslaw needs reexamination.

46. Takelma isolate.

47. Kalapuya family.

48. Chinookan family.

49. Tsimshian isolate.

50. Zuni isolate.

These groups, 34 - 50, have variously been called Penutian. "Core Penutian" includes Wintuan, Maiduan, Yokuts, Miwok, and Costanoan. The nature of relationships of these to any of the other languages outside the California groups is not clear and the subject of current investigation. (See Silverstein, this volume.) The Zuni connection is at best highly dubious. Mexican Penutian should be abandoned; Mayan, Mixe-Zoquean, and Totonacan cannot be related successfully to one another,

much less to more far-flung "Penutian" languages as Voegelin and Voegelin (1965) do. Huave is an isolate, but with promising possible Otomanguean affinities. The Maya-Chipaya proposal should be abandoned (Campbell 1973). The rest of the "Penutian" tree (or orchard) deserves pruning in ways to be determined in future research.

51. Kiowa-Tanoan family. Kiowa is certainly related to the Tanoan family.

52. Uto-Aztecan family. The evidence so far presented in favor of Aztec-Tanoan is disappointingly inconclusive, and the entire question of a potential relationship between Uto-Aztecan and Kiowa-Tanoan should be reopened and extensively investigated (Campbell, Davis, this volume).

53. Keresan family. Davis (this volume) presents evidence which suggests it might be fruitful to examine Uto-Aztecan for possible connections with Keresan.

54. Yukian family. (there is some question about the genetic affinity of Wappo; for that reason we leave the question open for further research to resolve.)

55. Beothuk isolate. The extant Beothuk data are too scant to permit reliable classification.

56. Kutenai isolate. (Thompson (this volume) mentions possible Salish connections which should be investigated.)

57. Karankawa isolate.

58. Chimakuan family.

59. Salish family.

60. Wakashan family.

61. Timucua isolate.

62. Adai. Adai, usually put with Caddoan, is so poorly known that extant data do not support sufficiently any particular classification.

We hasten to add that there is nothing significant about the numbers, used here only for ease of reference. We intend by them no claims about the ultimate minimum number of genetic units, nor about anything else, for that matter.

9. Distant Genetic Relationships and Methods.

To recapitulate, the history of North American Indian linguistic classification is the result of accidents of history and the influence of powerful personalities. The first proposed larger groupings became entrenched in the literature, starting a snowball effect whereby more and more languages came to be proposed as relatives of these already familiar larger groupings. Attention to methods for investigating remote relationships has recurred throughout this history, with controversy over the separability of genetic versus diffused elements. Methods for researching remote relationships are

considered here in keeping with our goal of providing directions for future research. Since research on distant genetic relationships will not and should not cease, we hope that the considerations presented here will help to avoid many weaknesses of past research.

To begin with, it is important to set the record straight. In practice the methods for establishing distant genetic relationships have not been different from the method used at the family level, namely, the comparative method. Voegelin (1942) and Voegelin and Vogelin (1965) have suggested radically different methods for family linguistics as opposed to phylum linguistics:

I have observed informally that many anthropologists are under the same impression: namely, that ... Sapir ... must have applied the comparative method in his work with American Indian languages distantly related. This is impossible ...

It misses the distinction between the comparative method, and what we may call for want of a better term "other comparisons", which would include comparisons of similar structural features and categories ... ; and comparisons of relatively infrequent lexical similarities between scattered languages....

All Sapir's work bringing together distantly related languages falls under the general category of "other comparisons," and not of the comparative method. (Voegelin 1942:322)

Furthermore:

It is a matter of published record that Sapir did not rely exclusively on the comparative method. Indeed, he did not use the comparative method at all when he designated the

similarities between Yuman and Pomo and other families and isolated languages as Hokan, the similarities of Athabascan and Haida-Tlingit as Na-dene, and so on -- for these designations and these similarities Sapir employed all the flair and ingenuity and insight of the "other comparisons" mentioned above (Voegelin 1942: 323).

This emphasis on distinct methods is misleading. The individuals contributing at the family level were very often the same ones working at the phylum level; they used the comparative method and regular sound correspondences in both to the extent permitted by the data. Whorf, for example, the first to use the term "phylum", used presumed lexical cognates and sound correspondences (better called "matchings") in his distant research (See, for example Whorf and Trager 1937, Whorf 1943:7-8). Similarly, Sapir used this method in his Hokan (Sapir 1920), Subtiaba-Hokan (Sapir 1925), and other works. In fact, the Subtiaba-Hokan paper is considered by many to be a major statement of methods for investigating remote relationships.

The question of distinct methods arises only in the case of preliminary, pioneering proposals, offered as hypotheses for further testing, but not considered "established". Sapir's six superstocks were based on gross morphological and typological similarities. Sapir believed, however, that rigorous comparison and lexical evidence would increasingly support his preliminary proposals. He himself considered the

classification to be based on both morphological comparisons and lexical resemblances:

The evidence for this "Hokan-Siouan" construction is naturally morphological rather than lexical, though the lexical bonds that unite Natchez-Muskogian and Hokan, for instance, are by no means negligible. This evidence will be given in due time. It is of a general rather than specific nature, though specific elements constantly enter into argument, and can hardly receive its due weight unless one contrasts the underlying "Hokan-Siouan" features with the markedly different structures that we encounter in Eskimo-Aleut, in Nadene, in Algonkin-Wakashan, and in Penutian. (Sapir 1925:526)

In actual practice, the comparative method with presumed lexical cognates and recurrent sound correspondences was the basic tool for establishing distant relationships. We return below to the rank value of lexical versus grammatical evidence in these proposals.

The fact that the methods have not in practice been different may be a principal factor making the ultimate classification in the Americas so perplexing. Because the methods have not been different, there is a continuum from well-established and non-controversial relationships (e.g. Uto-Aztecan, Algonquian), through more distant but still solidly supported relationships (e.g. Algonquian-Ritwan, Athapaskan-Eyak, Siouan-Catawba), plausible but inconclusive proposals (e.g. Siouan-Iroquian-Caddoan, Pomoan-Yuman, Otomanguean-Huave), doubtful but not implausible proposals (e.g. Yuchi-

Siouan, Zuni-Penutian, Algonquian-Beothuk), to impossible proposals (e.g. Algonquian-Old Norse, Altaic-Mayan, Uto-Aztecian-Austronesian, etc.).

It is difficult to segment this continuum so that plausible proposals based on legitimate procedures are distinguished from extreme misinterpretations. The evidence is usually not significantly better for relating American Indian languages for which geography and other such factors make it plausible to check for some potential relationship than for the Quechua-Turkish, Miwok-Uralic, and other kinds of marginal proposals. It is often accidental that attention is turned toward certain languages as potential relatives and not to others. Rarely does the evidence reach convincing levels, however, and it often fails to attain even a level of plausibility that would encourage further research.

Methodology is indeed worthy of our concern if we cannot distinguish the fringe proposals from the plausible ones. However, since phylum level methods are not radically different and are rarely stated explicitly, we can expect little more, and we do well to remain skeptical. It is no wonder that many now express strong doubts about the "laundry-list" approach (the investigation of lexical lists, with or without sound correspondences) to remote relationships.

Given this unhappy state of affairs, we consider here

methods and cautions for the investigation of distant genetic relationships. These considerations, it is hoped, will serve in the future evaluation of proposals.

9.1. Only purely linguistic considerations count. (Non-linguistic information, such as shared cultural traits, is irrelevant.)

9.2. Only resemblances involving both sound and meaning are relevant (Greenberg 1963). Resemblances in sound alone (e.g. the presence of tonal systems) or meaning alone (e.g. morphemes of sex gender) can be and often are independent of genetic relations and can easily be diffused within linguistic areas. To the extent that Sapir's superstocks are based only on morphological evidence, they are to be regarded with skepticism.

9.3. Another recurrent controversy has been the value of lexical as opposed to grammatical evidence for establishing relationships (see Haas 1969b). We consider both to be important, when the cautions recommended here in their use are observed.

Lexical information has been the basis of most proposals of distant genetic relationship, partly because other kinds of information have often been unavailable, and partly because of

tradition (following Duponceau's assumption of shared structure or Powell's belief that grammar development was determined by social evolution). Ives Goddard's (1973) assessment of the value of lexical considerations is enlightening:

We have purposely omitted any reference to the type of resemblance most often cited in support of newly postulated genetic relationships in North America, namely, sets of similar lexical stems. It is widely believed that, when accompanied by lists of the corresponding sounds, a moderate number of lexical similarities is sufficient to demonstrate a linguistic relationship. These lists of correspondences are presented to show that the resemblances are not random or accidental, but systematic and regular. However, there are several reasons why this approach is unsatisfactory. In general, the establishing of phonological correspondences is something that goes on within the framework of a family of languages known to be related ... This statement [of sound correspondences as reflexes of a given proto sound] is part of a complex hypothesis about the phonological system of the protolanguage and the various changes which it underwent while developing into the systems of the descendant languages. When, on the other hand, there is no systematic hypothesis about the phonological histories of the languages in question, there can be no sound correspondences, properly speaking.

In the initial framing of such an hypothesis it is always a set of good etymologies which forms the basis for the eventual postulation of true sound correspondences. The criteria which have usually been considered necessary for a good etymology are very strict, even though there may seem to be a high priori probability of relationship when similar words in languages known to be related are compared. In the case of lexical comparisons it is necessary to account for the whole word in the descendant languages, not just an arbitrarily segmented 'root', and the reconstructed ancestral form must be a complete word. Where grammatical elements are etymologized it is necessary to present an hypothesis about the system of which they are a part in its entirety. It is obvious also that the

greater the number of descendant languages attesting a form, and the greater the number of comparable phonemes in it, the more likely it is that the etymology is a sound one and the resemblances not merely the result of chance. A lexical similarity between only two languages is generally considered insufficiently supported, unless the match is very exact both phonologically and semantically, and it is rare that a match of only one or two phonemes is persuasive. If the meanings of the forms compared differ, then there must be an explicit hypothesis about how the meaning has changed in the various cases. Now, if these strict criteria have been found necessary for etymologies within known linguistic families, it is obvious that much stricter criteria must be applied to word-comparisons between languages whose relationship is in question. In fact it is virtually impossible to prove a distant genetic relationship on the basis of lexical comparisons alone. (Goddard 1975:254-5).

The discovery of a number of similar words exhibiting regular phonological correspondences does not suffice, since such a situation is also characteristic of loan words when compared with their prototypes in the language of origin--for example the French loan words in English (Goddard 1975:261).

In proposing new relationships, it is necessary to do more than merely present a body of similarities. It must be demonstrated that the similarities support a case for genetic affinity, and moreover all other possible explanations for the similarities, including chance, diffusion, universals, onomatopoeia, and sound-symbolism must be eliminated.

Since simple lexical scanning does nothing to eliminate other possible explanations of similarity, it can be dismissed as a method. Similarly, glottochronology does not find or test distant relationships; it simply assumes them, assigning a date to them. It is to be discounted.

Though glottochronology is to be eliminated, there is something to the notion that basic vocabulary (not limited to the Swadesh lists) is less subject to change than that of other culturally charged Semantic domains. Basic vocabulary is not assumed here to change at a constant rate; it may perhaps suffer radical replacement under varying socio-cultural conditions. Nevertheless, proposals of remote relationship which lack basic vocabulary in their sets of proposed cognates are suspect.

Proposed cognates should be semantically equivalent. Though semantic shifts are a fact of linguistic life, any necessary assumption of shift increases the potential explanation by chance for any phonological similarities.

Length of proposed cognates and number of matched (corresponding) segments is important. While very short forms may be true cognates, their shortness may not eliminate the possibility of chance explanation for their similarity. Moreover, if only one or two segments of longer forms are matched, then chance may be the reason for any perceived similarity.

Potentially onomatopoetic forms must be eliminated, since their similarity may emanate from the sound of the referent in nature. Similarly, widespread forms provide little direct support; similar forms in many American Indian language groups do little to support a suspected closer relationship between some small subset of these languages which

may come to be compared.

In short, for dealing with lexical information, we recommend a rigorous and cautious application of the comparative method with caveats intended to reduce chance, or universal explanations. These principles are considered in greater detail in, for example, Goddard 1975, Campbell 1973, etc.

Since it is difficult to demonstrate genetic affinity by lexical considerations alone, because regular correspondences may occur in some cases in borrowed material as well, it is hoped that grammatical correspondences can be discovered as well.

Sapir's "submerged features" seem intended to refer to grammatical similarities so strikingly arbitrary and well integrated into the grammatical system of the language as to deny chance and diffusion as potential explanations:

When one passes from a language to another that is only remotely related to it, say from English to Irish or from Haida to Hupa [now not thought to be related, see Krauss, this volume] or from Yana to Salinan, one is overwhelmed at first by the great and obvious differences of grammatical structure. As one probes more deeply, however, resemblances are discovered which weigh far more in a genetic sense than the discrepancies that lie on the surface and that so often prove to be merely secondary dialectic developments which yield no very remote historical perspective. In the upshot it may appear, and frequently does appear, that the bulk of what is conventionally called its grammar is of little value for remoter comparison, which may rest largely on submerged features that are of only minor interest to descriptive analysis (Sapir 1925:491-2).

These "submerged features" appear to be the same as Teeter's (1964) "depth hypothesis" and "contextualization", or as Goddard puts it:

It is necessary to show not only that the resemblances are so numerous and detailed as to exclude the possibility of chance as an explanation but also that they are so tightly woven into the basic fabric of the languages that they cannot be explained simply as borrowings (Goddard 1979:3).

Clearly, the most credible distant genetic proposals will be supported by both systematic sound correspondences and grammatical correspondences, anchored systematically in the grammars of the compared languages. For more detailed consideration of the role of grammatical considerations in distant genetic research, see Goddard 1975, Campbell 1973, Teeter 1964, etc.

These cautions are all the more important in view of the far-reaching effects of areal linguistics. The guiding principle for amassing evidence in support of distant relationships is to eliminate all other potential explanations but the genetic one for perceived similarities.

10. Conclusions.

Our intent in this introduction has been to set the record straight. Historical linguistic work in American Indian languages continues with ever greater volume and precision. The

history of this work, however, has not been one of the steady accumulation of knowledge over time. It has more often consisted of the perpetuation of the hypotheses of influential scholars without regard to the rigor of their methods or the weight of their evidence. It is hoped that a recognition of this history as a perpetuation will halt the momentum of the cumulative view so that oft-repeated but poorly founded proposals will be reconverted into empirical hypotheses worthy of subsequent research.

We hope to establish a posture of caution. If "lumping" was the way of the past, "demonstration" should be the watchword of the future. As long as the methods utilized to uncover distant genetic relationships are not different from those used to disentangle close ones, then close attention to rigor is obligatory. Since there is no agreement about the kinds and numbers of similarities explicable as accidental, borrowed, and universal, the proof of relationship can never be completely objective. Nevertheless, blatantly weak proposals need no longer be tolerated.

If in Sapir's time "the real problems of American Indian linguistics had hardly been stated, let alone studied" (Sapir 1925:527), most of the real problems have been stated explicitly in the contributions to this volume, and directions for their future study set down. The future promises to be exciting.

NOTES

1. The individual contributions were first presented at the conference, American Indian Linguistics: an Assessment, held in Oswego, New York, August 6-8, 1976, supported by the National Science Foundation. The present contributions to this volume incorporate the findings and results of interaction at that conference. The papers represent the individual fields well, but they also reflect, on occasion, the authors' individual judgments.

We wish to thank Ives Goddard for much information and advice helpful to us in the preparation of this introduction. Nevertheless, as much as we might wish to share the blame, Ives Goddard and all others are absolved of any guilt for what we write here; we alone must be the target of judgments concerning the matters we present here.

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Comparative Algonquian

Ives Goddard

Algonquian historical and comparative studies have advanced to the point where they furnish a quite complete structured framework for the study of the Algonquian languages. Detailed reconstruction of the protolanguage and highly specific accounts of the histories of the individual languages are now possible. Furthermore, comparative information often sheds light on the synchronic grammars of the individual languages, since where reflexes of structures in the protolanguage are shared by descendant languages, the grammar of one language may point the way to the best analysis of another. It is important, however, also to recognize the real differences among the languages and to avoid falling into the self-confirming generalization that all Algonquian languages are alike.

Comparative Phonology

The Protosystem

The chief factor responsible for the histories of the Algonquian languages being controlled so well is clearly the comparative phonology, which was basically worked out by Bloomfield (1925), on the basis of a comparison of four languages (Fox, Cree, Menomini, and Ojibwa), and has required

only a few emendations and improvements since (see Siebert 1941, Bloomfield 1946, and the remarks below). Proto-Algonquian had the following phonemes:

Consonants				Vowels	
<u>p</u>	<u>t</u>	<u>č</u>	<u>k</u>	<u>i</u>	<u>o</u>
	<u>s</u>	<u>š</u>	<u>h</u>	<u>e</u>	<u>a</u>
<u>m</u>	<u>n</u>			<u>i•</u>	<u>o•</u>
	<u>θ</u>	<u>l</u>		<u>e•</u>	<u>a•</u>
<u>w</u>		<u>y</u>			

The occurring clusters of true consonants (excluding *w and *y), as conventionally reconstructed, are indicated by the plus signs (+) on the following chart, first members being listed on the left and second members across the top:

	<u>p</u>	<u>k</u>	<u>t</u>	<u>č</u>	<u>s</u>	<u>š</u>	<u>θ</u>	<u>l</u>
<u>?</u>			+	+	+	+	+	+
<u>h</u>	+	+	+	+	+	+	+	+
<u>m/n</u>	+	+	+	+	+	+	+	+
<u>x</u>	+	+						
<u>š</u>	+	+	+					
<u>θ</u>	+	+						
<u>č</u>	+	+						
<u>ç</u>		+						

(For the segments written *?, *x, and *ç, see below.) Of these clusters, *hl is required only by the Cree-Montagnais

reflexes of *le·hle·wa 'he breathes', and *št only by Ojibwa oštikwa·n 'his head' (Bloomfield 1946:88, 90); Pentland (1977a) has argued that the latter is a loan from Cree.¹ There is evidence for a cluster which may be written *Hm (either *hm or *?m) in certain inflectional and derivational suffixes (Goddard 1969:121-122, 1974:108, 1974a:322). Any true consonant (not the first member of a cluster) could be followed by either semivowel (*w or *y), except that *čw and perhaps *hy did not occur. *ty and *θy were replaced by *čy and *šy, respectively, by a so-called mutation rule that also replaced *t by *č and *θ by *š before *i and *i. (Goddard 1977): *nesiči 'my foot' (stem *-sit-); *o·ši 'canoe' (stem *o·θ-). There were no vowel sequences, *i and *o were found only in non-initial syllables, and all words began with a vowel or single consonant (except *h) and ended in a short vowel. A few other sequence-constraint rules are known.

Remaining Problems

The phonology of the protolanguage is thus well understood and in general the descendant languages may be derived from it by exceptionless sound laws with the usual degree of dependable regularity. This is not to say that there are no loose ends or uncertain details, but mention of a few of them

may serve to make clear how peripheral, or circumscribed, they really are.

The greatest points of uncertainty in the reconstructed inventory are the phonetic nature of *θ, the status of *č̃ and short *o, and the nature of the segments *ʔ, *x, and *ç reconstructed in clusters. *θ gives Cree t (falling together with *t), and Arapaho θ (falling together with *č̃; in Atsina this θ splits into t and c - Goddard 1974:111); in the other languages *θ falls together with *l, which was probably a variety of [l] or [r]. Bloomfield (1925:144) did not explain his reasons for choosing the symbol *θ, and it is not clear if he knew at the time that the Arapaho reflex was phonetically [θ]; later he gave only the conjectural description "unvoiced dental or lateral?" (Bloomfield 1946:87). Siebert (1975:300, 451) has argued that *θ was a "voiceless lateral or lateral fricative" contrasting with *l only in the feature of voice. The opposition of voicing would be unique in Algonquian, but this might help to explain the widespread loss of the contrast between these two protophonemes. It is hard to see what testable consequences the assumption of one or the other phonetic value for *θ would have, however, and this small point of uncertainty may be allowed to remain.

Since most cases of *č̃ in the protolanguage can be interpreted as arising from *t by the operation of the

mutation rule, the question naturally arises of whether *č̃ had a separate phonemic status distinct from *t̃ (Bloomfield 1925:144; Hockett 1948:128 and 1956). *č̃ not derivable by mutation is reconstructible in *č̃apo·nk- 'splash' (Bloomfield 1925:144) and in the clusters *č̃ck and *č̃cp, which seem to be guaranteed by their Menomini reflexes, respectively ck and cp. Additionally, the assumption of antiquity for the replacement of t̃ by č̃ in diminutive consonant symbolism would entail a phonemic distinction between the two segments (Teeter 1959:42-43). Although such patterns of consonant symbolism can doubtless arise independently, the fact that this process exists not only in Cree (as pointed out by Teeter) but also in Munsee and, in traces, in Unami and Fox, at the least, argues for its assignment to the protolanguage (Goddard 1977:241, 244). The possibility of the existence of the sequence *tĩ in the bird name *tĩ·ntĩ·wa 'blue jay' (Siebert 1967:18) may also be cited to support the independent status of *t̃ and *č̃, but reconstructions of onomatopoeic words must in general be considered weak evidence for the phonology of any protolanguage. On balance it may be said that the evidence cited, as well as the fact that all the descendant languages have a phonemic distinction between the reflexes of *t̃ and *č̃, points to the convenience, even if not the demonstrable structural correctness, of continuing to

write both *t and *č in Proto-Algonquian (PA) reconstructions.

Somewhat similarly the independent status of PA *o is called into question by the fact that most of the segments reconstructed as *o in accordance with Bloomfield's correspondence sets are shown by evidence not considered by him, from several languages, to be really *we² (Haas 1958:242; Goddard 1965:207 and 214, footnotes 3 and 38; already in Bloomfield 1946 for initial *we-): compare for example, *nekotwi 'one', based on Fox nekoti, etc. (Bloomfield 1946: 116) with Munsee nkwétŷ and Unami kwét·i, which demand PA *nekwetwi. The residual occurrences of *o are either before *w or the result of the shortening of long *o·. Morphophonemic shortening is found, for example, in the medial *-oθ- 'canoe', beside the noun stem *o·θ- (compare, for the rule of shortening, *-min- beside *mi·n- 'berry'); straight phonological shortening of *o· to *o would have occurred automatically in word-final position, but there are no certain examples. Although it seems clear, then, that an independent phoneme *o is of no great antiquity in Proto-Algonquian, it is convenient to continue to use *o in reconstructions,³ and the uncertainty of the status of PA *o, once recognized, poses no great problem for the understanding of the historical phonology of Algonquian as a whole. In any case, the questions about the phonemic status of *č and *o are really

at bottom problems of relative chronology, which is notoriously the most difficult aspect of linguistic reconstruction.

A different and perhaps more substantive problem is that of the nature of the segments *ç, *x, and *ʔ, reconstructed as the first members of clusters (*çk, *xk, *xp, *ʔt, etc.) but not as independent phonemes. The problem here is two-fold, though the distinction is not always made: (1) What are the sources of these clusters? and (2) What are the correct synchronic phonemicizations in Proto-Algonquian? Evidence bearing on the first of these questions cannot automatically be taken as giving the answer to the second. For example, it may be that one of the sources of *xk is *t plus *k (Bloomfield 1925:150-152; Michelson 1933:40; Bloomfield 1941:296), but it is unlikely that *xk was phonetically */tk/, or even phonemically */tk/, at the time level of our reconstructions.⁴ The pattern of the other clusters would rather seem to indicate a phonemic continuant-plus-stop cluster, the obvious candidates being */sk/ and */lk/. Furthermore, there seems to be reason to believe that another source of PA *xk was *p plus *k, and although it is possible that pre-PA *pk and *tk were neutralized to */tk/, it would seem to be preferable to use a reconstruction that would more directly imply the fact of neutralization than would *tk. Bloomfield's *çk presents similar problems, except that there

seems to be no etymological evidence for its ultimate source. It has been the custom of many Algonquianists, since the suggestion was first made somewhat obliquely by Geary (1941:308) and Hockett (1948:129), to write *sk for *çk, basically since Ojibwa has sk as the reflex of this and no other cluster. However Common Cree, which must have had */l/ as the reflex of PA *l and */lk/ as the reflex of PA *çk, furnishes equally good evidence that *çk was PA */lk/. The phonetics of the Common Cree segment */l/ are not certain, but phonemically the reflex of PA *çk must have had the reflex of *l as first member. This phonemic situation is preserved in the numerous eighteenth- and early nineteenth-century recordings of Wood Cree showing [ð] from *l and [θk] from *çk, e.g. Mithco-Athinuwuck 'Blood Indians' (= [miθko-iðiniwak] < PA *meçkwi and *eleniywaki; Matthew Cocking, 1772, in Burpee 1908:110). It seems likely, then, that either *çk or *xk was */sk/ and that the other was */lk/, but there seems to be no way to decide which was which in the absence of testable, falsifiable predictions that one or the other choice would make. Since knowing the correct phonemicizations would have no consequences (or at most consequences of minor impact) for the understanding of the rest of the phonology and its developments, the uncertainty on this point seems quite tolerable.

The glottal stop reconstructed as the first member of

clusters (*ʔt, *ʔč, *ʔθ, *ʔl, *ʔs, *ʔš) appears likely to represent the neutralization of *p and *k in this position (Meeussen 1959). The choice of symbol seems appropriate and has a good chance of being phonetically accurate (*[ʔ]* is its reflex in Menomini and Cheyenne); the fact that it would present a classic problem in phonemic analysis seems beside the point, and it may conveniently be retained in our reconstructions.

Reconstructers of protolanguages have traditionally enjoyed the luxury of transcriptions that gloss over phonemic problems, and the available facts about the phonemically uncertain Algonquian clusters do not seem to warrant any break with that tradition. More substantive problems involve irregularities in the reflexes of the clusters in the descendant languages. There are a number of unique or extremely rare correspondence sets involving clusters. Most of these can be interpreted as involving an established cluster the reflex of which, in one or a few languages, has been affected by assimilation, dissimilation, contamination, analogy with related forms, or the like. Such explanations are necessarily ad hoc but not by that token unreasonable; Siebert (1967a) has made some suggestions along these lines. For example, the noun stem for '(finger) nail, claw, hoof' can be reconstructed as *-xkansı̃- for the Eastern Algonquian

languages and Arapaho, but other languages point to *-škanšy-:⁵ Fox neškaše•ki, Menomini neska•syak, Ojibwa niškanšič•k, Shawnee nʔškaše•ki 'my nails, claws'; Cree and Miami could reflect either protoform. Siebert (1967a:55-57) and Hamp (1976) take *šk to be original, but we could alternatively assume that the languages pointing to *šk have assimilated the first member of an original *xk cluster to the following *š. Similarly, Ojibwa oškinš 'his snout, muz-zle' could show the same assimilation in a reflex of *wexkenšič 'his forehead', the form required by the other languages (Goddard 1973:4). The fact that the assimilation is found in fewer languages in the case of *wexkenšič could be reasonably accounted for by the fact that this stem would show surface *š less frequently than *-xkanšy-, since it is basically *-xkenθ- and would have *š only by mutation before the singular ending *-ič. A case where the explanation of a discrepant cluster seems certain is Fox iškwese•ha 'girl' (also Shawnee škwēʔθe•θa 'girl'), a diminutive of ihkwe•wa 'woman' (< PA *eθkwe•wa). Here the šk can only be by diminutive symbolism from an earlier (pre-Fox) *sk reflex of PA *θk, since diminutive š corresponds only to normal s; a pre-Fox change of intermediate *sk to hk would be exceptionless, Fox having no sk cluster.

A set of discrepant cluster reflexes that cannot be

dealt with one by one on an ad hoc basis is exemplified by the treatment of PA *xk in Cree: sk in some words, which Bloomfield took to be regular, but hk in quite a few others, and both in several cases.⁶ Examples of Cree hk from PA *xk are: mahkate·w- 'black' (< *maxkate·w- 'charcoal; black'), tahkw- 'short' (< *taxkw-), -ihk(aw) 'act on by foot or body' (< *-exk(aw)-), maskihkiy 'medicine' (< *mašikixkiwi 'grass, herb'), and mahkakh 'barrel, etc.' (< *maxkaxkwi 'container'). Examples with double reflexes are: pisiskiw 'animal' and (Swampy dialect) pisihkiw 'buffalo' (< *pešexkiwa)⁷; (Plains Cree) miskina·hk and (Swampy) mihkina·hk 'turtle' (< *mexkena·hkwa). The words with double reflexes especially suggest that a dialect split and mixing may be at the root of this problem, though this cannot be considered an elegant solution. What is important, however, is to recognize that this is a problem of the history of *xk in Cree and not a problem of the status of *xk in Proto-Algonquian. It would not be correct to reconstruct a new cluster for this series of words, or doublets (e.g. PA *mahkate·w- ~ *maxkate·w-), projecting the problem all the way back to the protolanguage. It may sometimes be helpful (though it seems not to be here) to state such a problem in terms of its consequences for the protolanguage, but such a restatement is certainly not a solution and may indeed give a misleading implication of

where the solution lies. The problem is rather to be stated thus: the Cree reflexes of PA *maxkate·w- and a number of other morphemes show unexplained hk, instead of expected sk, as the reflex of *xk. Such a statement is, of course, in the nature of an hypothesis, but only by pinning down the locus of a problem, in some such reasonable way, can there be any hope of solution. Such a procedure also serves to remove the cloud of uncertainty from areas of the protolanguage and its descendant forms other than the assigned locus of the problem. This is one of the most important principles in the practice of historical linguistics, one which is incompatible with the stricter forms of the neogrammarian method.

Another unresolved problem in Algonquian which can be understood, even if not completely solved, only when assigned its correct locus is the appearance in a number of Fox words of initial a- as the apparent reflex of PA *we-, instead of expected o-, the regular reflex (Michelson 1933:43-44, 1935:157, 1939:82):⁸ Fox ana·kani 'dish' < *wela·kani; ahpwa·kana 'pipe' < *wexpwa·kana; asa·mi 'too much' < *wesa·mi; atama·- 'to smoke tobacco' < *wetama·-; etc. Haas (1966:486) has proposed to assign this problem to the protolanguage and to explain the irregular correspondence as the remnant of an old pattern of alternation whereby original *wa- gave rise to

*a-, *o-, and *we-, as the result of either a loss of initial semivowels before short vowels, reduction of *wa- to *o-, or "back formation" of *we- from intermediate *o-. It should be said, however, even without discussing the details of all the examples cited, that such a proposal is not really a solution. In order to explain an irregularity of one language a set of innovations is postulated that would affect all the languages, and (since, for one thing, there are also cases of nonalternating *wa-) these postulated innovations would be no better understood in terms of regular conditioning factors than the original irregularity was to start with. That this problem has a much more recent locus becomes clear from an examination of the status of these cases of a- within Fox, which is after all the language that appears to be out of line. For one thing some Fox words with unexpected a- have attested older variants with the expected o-. For example, beside ahpwa·kana 'pipe' Jones has ohpwa·kani (Jones 1911: 746; -i is an error of gender for -a) and the derivative ohpwa·kanimote·hi 'pipe pouch' (Jones 1907:318, line 18);⁹ beside the "modern form" āsehki·h- 'to adopt (in place of deceased relative)' Michelson (1925:320, 384, 482, 625, 629) attests an "old form" ōsehki·h-. For another thing in all nouns that have the unexpected a- this initial segment is treated like o- when the possessive prefixes are added, being

replaced by -o-: ana·kani 'bowl, dish', keto·na·kani 'your bowl, dish', just like okima·wa 'chief', neto·kima·ma 'my chief'.¹⁰ This pattern has been extended to some nouns with original a- and there has been some perturbation of its original distribution (Bloomfield 1925-27, 3:231, 4:184; Voorhis 1971:65), but its origin is clear. And finally, these indications that Fox a- for expected o- is in fact a recent replacement of o- within Fox are confirmed by the Kickapoo dialect (or closely related language), in which the expected o- regularly appears: onaakani 'dish', ohpwaakana 'pipe', oθaami 'too much', otamaa- 'to smoke', etc. Thus the aberrant Fox a-, which can be seen replacing o- within the available Fox materials, cannot even be projected back to the (very recent) intermediate protolanguage of Fox and Kickapoo. Even though the explanation for the cases of a- from PA *we-, beside o- from *we- in other words, remains unknown (dialect mixture is, as always, a possibility), it is obvious that this is a problem of the history of Fox specifically, after its separation from Kickapoo, and has nothing to tell us about Proto-Algonquian or the histories of the other languages. This is a good example of how, when the comparative phonology of a family is well understood, certain problems can be isolated and assigned to the histories of individual languages, hence minimizing the number of loose ends that are

projected back into the protolanguage. A protolanguage should not be merely a receptacle for formulas summarizing discrepancies among the descendant languages; it should rather be a systematization of only those features that cannot be explained by or assigned to the histories of the individual languages and which must, as a consequence, have been present from the earliest period.

Another set of unsolved problems is found in Arapaho. No one has yet explained the origin of the accentual system of Arapaho, and no one has formulated the rules for when and how vowel assimilation takes place (and when it does not) or the rules for vowel contraction.¹¹ It is clear, though, that these are changes within the history of Arapaho; they are shown to be so by their clear relations with certain Arapaho-Atsina innovations such as the loss of certain final syllables and the loss of PA *k. For example, the triple reflex of PA *a(h)ke must have arisen from changes that took place after *(h)k was lost, since the patterns do not fit those attested for vowel assimilation across an intervening stop; e.g. oo in hiθóóx 'intestine' (< *weθakešyi), ee in -éet 'we (exclusive)—him' (< *-akenta), and oe in tonóehit 'he is cold' (stem toehi- < *tahkesi-). Further evidence that these are recent changes comes from the fact that, in some cases, they differ in detail from the corresponding

innovations in the closely related Atsina language. Since, as in the preceding examples, both the protoforms and their reflexes are generally well established, it ought to be possible to deduce the sequence of changes that occurred in between. That this has not yet been accomplished is due in part to the absence of an account of the synchronic morphophonemic rules of Arapaho that, for example, govern the assignment of the pitch accent contours. Here, as elsewhere, an explanation of the history will have to await more complete synchronic studies, including more fieldwork. In fact, there is no Algonquian language still spoken for which further fieldwork would be superfluous, and the solid framework of comparative knowledge that exists for the family should serve to ensure high productivity for such fieldwork, however brief.

The detailed histories of the phonologies of a number of Algonquian languages remain to be worked out, but the groundwork has been laid. There are especially good opportunities for such work on Cheyenne, for which there is now a highly reliable dictionary (Alford and Leman 1976), Miami-Illinois, which awaits philological study of the extensive manuscript materials, and the Cree-Montagnais dialect continuum.¹²

Full-scale studies of most of the Eastern languages also remain to be done. It will also be possible to say a great

deal about the recent history and dialectology of a number of languages, especially the Ojibwa-Algonquin continuum, Montagnais, and Eastern Abenaki, when the abundant linguistic materials from the seventeenth and eighteenth centuries have been systematically studied (Hanzeli 1969).

Comparative Morphology

Noun

Present understanding of the morphology and grammatical categories of Proto-Algonquian is not as thorough as present understanding of the phonology. Nevertheless, the basic outlines are clear, as well as much of the detail, the foundation having been laid by Bloomfield (1946). Some remarks on a few specifics, including a few perhaps minor points, will serve to give an idea of the extent to which fine-detailed reconstruction of Proto-Algonquian morphology is possible.

Bloomfield's account of noun morphology requires little modification. The first-plural possessed themes (Bloomfield 1946:95-96) differentiated exclusive (*ne--ena·n-) from inclusive (*ke--enaw-), as in Cree, Arapaho, and Micmac; of the other languages, some generalize *-enaw- (Menomini, Maliseet-Passamaquoddy, Eastern Abenaki, Western Abenaki) and the others *-ena·n- (cf. Goddard 1967:68). The suffix for obviative possessor was probably not *-eliw (Bloomfield 1946:96) but *-iliw, as shown by Arapaho (hinífinin 'his (obv.)

wife', with -in regularly from *-iliw-; hiʔóóθin 'his (obv.) leg'; hiničičíθin 'his (obv.) teeth'¹³ and Unami (o·x·í·li·t 'his (obv.) father', with the ending contaminated by that of an obviative participle).

Verb

The verbal morphology of Proto-Algonquian was extensive and complex, and a fair amount can be added to Bloomfield's somewhat cursory account (1946:97-103), both in the way of clarifying the categories and the overall structure of the forms that express them and in the reconstruction of specific morphemes and their relations. Of the three basic orders, the independent presented the most problems to Bloomfield because of the dissimilarities among the four languages he relied on. It is now possible to explain these dissimilarities and to reconstruct the protosystem with some confidence (Goddard 1967, 1974a). For example Fox nese·wa 'he kills him' and Ojibwa onissa·n 'id.' reflect the generalization of forms originally in contrast, PA *neʔle·wa (called the absolute) and *weneʔla·wali (the objective), which are continued as Munsee níhle·w and wə̀nìhlá·wal. In Delaware (Munsee and Unami), Mahican, and Western Abenaki, in the inflection of TI verbs and TA direct themes,¹⁴ the absolute forms are used with indefinite noun objects, and the objective forms are

used with definite objects or in the absence of a noun object; this may have been the original distribution. For example, Munsee has máxkwál níhle·w 'he killed a bear', wə̀níhlá·wál máxkwál 'he killed the bear', wə̀níhlá·wál 'he killed him'.

To the conjunct-order paradigms given by Bloomfield (1946:100-102) can be added those of the TA passive (indefinite-subject) and TA inanimate-subject forms, which have the same pattern of theme-sign use as forms with third-person animate subject (Goddard 1969:133):¹⁵

	subject: 3 animate	inanimate	indefinite
	1 <u>-it-</u>	<u>-ik-</u>	<u>-ink-</u>
	2 <u>-eθk-</u>	<u>-eθk-</u>	<u>-eθenk-</u>
object	1p <u>-iyament-</u>	<u>-iyamenk-</u>	<u>-inamenk-</u>
	12 <u>-eθankw-</u>	<u>-eθankw-</u>	<u>-eθenankw-</u> ¹⁶
	2p <u>-eθa·kw-</u>	<u>-eθa·kw-</u>	<u>-eθena·kw-</u>
	3 <u>-ekwet-</u> (3'(p)-3)	<u>-ekwet-</u>	<u>-ent-</u>
	3'(p) <u>-a·t-</u> (3-3'(p))	<u>-ekwelit-(?)</u>	<u>-ement-</u>

The best evidence for these endings comes from Kickapoo and, with a few innovations, Maliseet-Passamaquoddy, with a number of other languages providing confirmation, especially of the passive forms. These endings tend to be replaced by formations built on theme-signs—often analogical new creations—extended from the independent order. For example Cree has

-iko- for inanimate subject and -ikawi- for indefinite on non-third, both ultimately developments from the inverse theme-sign -ikw- (< *-ekw-) (Goddard 1967:97; 1974:323).

The reconstruction of the various modes and other similar categories in the two major orders¹⁷ presents certain difficulties. For example there is evidence in both orders for *-(e)pan-, marking a perfective or preterite mode or aspect, and a contrasting but less widely reflected *-(e)san-, marking a sort of imperfective or present. The functions of these categories are specialized in somewhat different ways in the languages, however. For example *-(e)san- shows up in the independent order as follows (Goddard 1969:150-152):

Menomini piasah 'so he has come' (event placed in the present, "in contrast with the past or with expectation"; Bloomfield 1962:52); Algonquin ta iši·san 'it appears that he will go' (indicates likelihood, great probability—Cuoq 1886:445; ta is the future preverb); Narragansett kekuthomwushánnick 'they have already gone (by boat)' (Williams 1936:110), Massachusetts koowadchanumunás 'do you (sg.) keep it?' (Eliot 1666:27), and Northern Unami tschinge kpamsa 'when did you come' (Zeisberger 1821:80, cited in Goddard 1969:56), all showing a perfective present function; Maliseet pemóhses 'he must have walked by' (dubitative past);¹⁸ Western Abenaki n'wajônônaza 'that I might have (one, some, him, them)'

(subordinative preterite, now complementary to -b(an-), which marks the indicative preterite; Laurent 1884:139). The problem then is that although the existence of a category marked by *-(e)san- is certain its exact function or range of use is not.

In other cases the existence of a category in the proto-language seems likely but the diversity of its formal expression in the attested languages makes reconstruction uncertain. For example, several languages have a future imperative. In some cases it is made with the *hk element that characterizes the prohibitive of a somewhat larger number of languages (Bloomfield 1946:100): Ojibwa ma·č̃i·kkan 'go away (later; sg.)'. But premodern Unami (Goddard 1969:58) and Montagnais (Lemoine 1901:15ff.) have a unique formation with -me (sg.): Unami á·me 'go (later; sg.)', Montagnais shatshitame "aime (plus tard)"; the plurals diverge, Unami having -mó·e (with pluralizer //wa·w//) and Montagnais -mek ([-mek^ω]?), with the ending of the conjunct second plural. This formation has an archaic look to it: it is not formed according to productive patterns and contains an element -m- that is not obviously the secondary development of anything known elsewhere. It could be argued that the formation with *-m- is older than that with *-hk-, since the latter might be easier to explain as a secondary development, but the safe conclusion must be

that although there is evidence for the future imperative category in Proto-Algonquian, the morphological expression of this category is uncertain.¹⁹

Where unique formations show unique categories a case can generally be made for innovation, even though the source of the constituent material may be unknown. An example would be the Micmac future: alasutma•s or alasutmates 'I will pray' (stem alasutma-), -tesg (2 sg.), -tew (3 sg.), -tesnen (1 dual excl.), -tesnu (1 dual incl.), -toysəp (2 pl.), -tay (3 pl.) (Pacifique 1939:81, phonemicized).²⁰ The Micmac endings in part resemble those of various other paradigms but are unique as a set and there seems to be no obvious source for the -t- element, but since no other language has an inflectional future the case is weak for taking the Micmac formation as old. Other isolated formations are the Cree independent preterites in -htay and -h (Lacombe 1874:56; Wolfart 1973:43, 45, 47, 56) and the Massachusett first-person singular imperative in -tti (~ -ttei, -dti) (Eliot 1666:32, 33, 61), among others.

Other Categories

Categories that seem to be universally vulnerable to formal renewal, but which can nevertheless be studied in a comparative framework, include diminutives and the like and

the catetories marked by reduplication in verb stems. These still await full treatment. The diminutive ending appears to have been originally *-hs, or perhaps *-s. This was added directly to consonants, producing the clusters *-ʔs (*name.ʔsa 'fish' < *name.kw-(h)s-; the old nondiminutive *name.kwa became specialized as 'lake trout', the fish par excellence - cf. Siebert 1967:31-34), *-ns (*wela.ke.nsi 'little dish' < *wela.ke.--(h)s-; Goddard 1974a:326, fn. 66), and *-hs (*nešihsa 'my mother's brother' < *-šič-(h)s-, diminutive of the stem for 'father-in-law' appearing in *wešičem- 'have (him) as father-in-law' and other formations and renewed as *nešičehsa 'my father-in-law'; Goddard 1973a: 49). The later productive form of the diminutive ending was *-ehs, with connective *-e- and an *h perhaps generalized from forms like *nešihsa; if the *h is secondary, the original form of the ending could have been simply *-s. An ending *-ens, with *n generalized from forms like *wela.ke.nsi, is also widely reflected (e.g. Unami aló.ns 'arrow' < *aθw-ens-, beside *aθwi 'arrow'). Some languages renew the diminutive by replacing s by another consonant: Unami t (namé.t.ət 'little fish'), Fox h (anemo.ha 'dog', originally a diminutive; cf. Kickapoo anemwa 'idem'), Munsee š (àxkó.kəš 'little snake'). There are other patterns.

The comparative study of the complex patterns of

reduplication exhibited by many languages is hampered by the dearth of descriptive materials. It is clear that some patterns are old, while others become productive only in one or another language. Some are phonologically predictable from the shape of the stem and some have different shapes marking different categories.

Reconstructing Forward

In a number of cases the existence of a well understood protolanguage makes it possible to account for rather divergent formations by employing the technique of reconstructing forward (Watkins 1962:1-8): essentially, applying the sound laws to the protoforms and trying various analogies at different stages until a combination is found that could have given rise to the attested forms. This technique has made possible the explanation of the Eastern Algonquian Independent Indicative (Goddard 1967) and will clearly be instrumental in solving many other problems as well. Take, for example the special Arapaho theme signs for action between first person plural exclusive and second person: -ee- (1p—2(p)) and -ei?ee- (2(p)—1p). The other languages lack anything resembling these, using the same theme signs for both singular and plural first-person participants that Arapaho uses for first singulars alone: PA *-i- (2(p)—1(p)) and *-eθ-

(1(p)—2(p)). The key here is the inherited Arapaho ending -eet (1p—3) (< *-akenta), which was reanalyzed as containing the usual third-person singular -t (< PA *-ta). Analogy produced -een (1p—2), with the inherited second singular -n (< PA *-yani), -eenee (1p—2p) with second plural -nee (< PA *-ye·kwe), and other new forms in other paradigms wherever a second person was the object of a first plural. Analogy with forms containing the inverse theme-sign -ei- (< *-eko-) then gave rise to the new theme sign -ei?ee- for forms with first plural exclusive object: -ei?een (2—1p), etc.

In summary, it may be said that the comparative morphology of the Algonquian languages is well enough understood to permit the reconstruction of many details and the explicit formulation of remaining problems, and to form the basis for the detailed histories of the morphologies of the individual languages, which largely remain to be written.

Classification and Subgrouping

Present understanding of comparative Algonquian has provided a firm basis for the classification and subgrouping of the languages that was not available to Michelson when he put forth his now completely outdated "Preliminary Report on the Linguistic Classification of Algonquian Tribes"

(Michelson 1912). In general it can now be seen that the Algonquian languages are largely independent offshoots of Proto-Algonquian, and except for a few sets of very similar languages or dialects there are only one or two major subgroups that descend from intermediate common languages. The evidence suggests that the first break-up of Proto-Algonquian was into the precursors of the following languages: Blackfoot, Cheyenne, Arapaho (whence Arapaho, Atsina, Besawunena, and Nawathinehena), Cree (whence the numerous varieties of Cree and Montagnais), Menomini, Ojibwa-Potawatomi, Fox (whence Fox, Sauk, Kickapoo, and the extinct Mascouten), Shawnee, Miami-Illinois, and Eastern Algonquian. The only clear-cut major subgroup is Eastern Algonquian, which includes all the languages of the Atlantic coast from Micmac to Carolina Algonquian. Ojibwa-Potawatomi is another possibility that awaits investigation. Extensive lexical, phonological,²¹ and perhaps grammatical borrowing—the diffusion of elements and features across language boundaries—appears to have been the major factor in giving the languages in the area of the Upper Great Lakes their generally similar cast, and it has not been possible to find any shared innovations substantial enough to require the postulation of a genetically distinct Central Algonquian subgroup. The putative Ojibwa-Potawatomi subgroup is similarly open to

question, but cannot be evaluated without more information on Potawatomi dialects.

Eastern Algonquian

The evidence for the Eastern Algonquian subgroup is extensive. Shared phonological innovations include the recasting of the vowel system, a major restructuring of the Auslaut, and others. The Proto-Eastern Algonquian (PEA) vowel system had the short vowels *a (< PA *a) and *ə (< PA *e) and the long vowels *ī (< PA *i and i·), *ē (< PA *e·), *ā (< PA *a·), and *ō (< PA *o and *o·, and *wē in some environments).²² The treatment of the high vowels is complex; in some cases they are replaced by *ə before semi-vowels, but analogy and contamination have obscured the original distribution of reflexes.²³ The PEA vowel system outlined will account for the vowel system of all the extant Eastern Algonquian languages; for example, Eastern Abenaki has the system essentially unchanged, except for ɑ (Râle's añ) from *ā. Claims that data from certain extinct languages reflect the maintenance of the opposition between long and short high vowels appear not to be well founded. Aubin's discussion (1972) of the spellings of the reflexes of PA *i and *i· in Narragansett fails to take account of the fact that most reconstructed occurrences of *i· are in stem-initial

syllables, an environment from which *i was entirely absent; the apparent tendency for the reflexes of these two vowels to be spelled differently merely reflects this original partial complementarity of distribution. Siebert's interpretation of Powhatan as having a distinction between long and short high vowels is belied by his table of orthographic representations, which shows that the spellings of the putative inherited short vowels are the same as those most commonly used for the long vowels (Siebert 1975:294-295). The table also does not appear to support his interpretation of the Powhatan reflex of PA *e as [e] rather than [ə].²⁴

The Eastern Algonquian loss of word-final PA vowels (in noun and verb forms)²⁵ is a change shared with most other Algonquian languages, but several subsequent adjustments to this innovation are unique. The retention of word-final w after k is shared with Montagnais, making this the only identified phonological isogloss that is likely to reflect an areally diffused innovation uniting contiguous Eastern Algonquian and Central Algonquian languages: PA *ameθkwa 'beaver' > Munsee amóxkw, Montagnais amiškw.²⁶ Perhaps word-final w was retained after other consonants, if, for example, Powhatan (Mammaum) Arrahqwtuw "the cloudes" represents /a·rahkwatw/ (< PA *a·laxkwatwi ' (it is a) cloud, cloudy'), but no other language shows such a treatment. Word-final postconsonantal

*y, which would have resulted from the loss of final vowels in nouns with PA stems in *Cy, is generally replaced by PEA *-əy, though postconsonantal *y was otherwise lost in PEA: PA *nepyi 'water' > PEA *nəpəy > Munsee mpéy, Unami mpí.

This new *-əy was extended to the plurals of these nouns and in some cases to the related medials: PEA *ahtəpəyak 'bows' (analogical to *ahtəpəy 'bow' < PA *ahta.pya) > Unami hatá.p.iak; PA *-epy-e- (medial to *nepyi 'water') > PEA *-əpəyə- (reshaped from **-əpē), in Munsee nə.tpáye.w 'he goes after water'.²⁷ Some nouns in PA *Cy appear to have made new singulars on the basis of the plurals, in which the *y was lost regularly: PA *nexka(n)šyaki 'my nails' > PEA *nəxka(n)šak, whence *nəxka(n)š (sg.) > Munsee níhkaš;²⁸ similarly PEA *ahsən 'stone' beside PA *aʔsenyi.

Some PEA endings for which a word final sequence *ān or *āw would have been expected were reshaped to have instead just *a. This innovation is found in the entire paradigm of central endings used to pluralize the central participant of independent-order verbs and the possessor of nouns:

	PA		PEA
1p	* <u>-ena.n-ǁ</u>	} ⇒	* <u>-əna</u>
12	* <u>-enaw-ǁ</u>		* <u>-əna</u>
2p	* <u>-wa.w-ǁ</u>		* <u>-wa</u>
3p	* <u>-wa.w-ǁ</u>		* <u>-wa</u>

It is also found in the conjunct-order first-singular ending **-a·n-*, which becomes PEA **-a*: Unami énta-máxkama 'where I found it' beside maxkamá·ne 'if I find it' (showing *-a ~ -a·n-*). The motivation for this innovation is not clear, but it can be argued that it is precisely its nonobvious character that gives it weight as a shared innovation diagnostic of Eastern Algonquian as a genetic subgroup.

There are a number of other innovations in Eastern Algonquian that, by processes that are not always clear, resulted in new word-final vowels becoming established. In common with a number of other languages the final vowel of animate intransitive (AI) stems is restored in the first and second persons singular: PA **netapi* 'I sit, am there' > (by sound laws) **nətap* ⇒ (by analogy) PEA **nətapī* > Eastern Abenaki nətapī (stem apī-; Râle 1833:388, phonemicized except for accent). Stems in PEA **ā* restore short **a*: PA **nepya* 'I come' (stem **pya·-*) ⇒ PEA **nəpa* (stem **pā-*) > Eastern Abenaki nəpa (stem pā-; Râle 1833:541, as above).³⁰ Less easily explained is the continuation of PA **-e* marking the subjunctive mode as PEA **-ē* (> Unami -e, Eastern Abenaki -e), or the source of the absentative singular endings PEA **-a* (anim.) and **-ē* (inan.): Unami lėnuwa 'man (absent or dead)', mpīye 'water (that is all gone)'.³⁰

The absentative inflection is one of the distinctive

morphological innovations of Eastern Algonquian. It is characterized by a set of peripheral endings which may be reconstructed for PEA as follows:

	animate		inanimate
	proximate	obviative	
sg.	*- <u>a</u>	*- <u>ənkālē</u>	*- <u>ē</u>
pl.	*- <u>ənkakē</u>	*- <u>ənkahē</u>	*- <u>ənkālē</u>

The absentative indicates absence, death, former existence, and (in some languages) former possession; the languages differ somewhat on the details of use and show various innovations in the forms. Unami has -inkáhke and shortened -ínka for all plural and obviative categories; Western Abenaki has animate singular /-əka/;³¹ both Abenaki languages lack the final *-ē of the longer endings; Munsee and the southeastern New England languages reflect *-aya (anim. sg.) and *-ayē (inan. sg.); Micmac has reworked the whole paradigm. Examples are: Unami nuhə́minkáhke (and nuhə́mínka) 'my deceased grandmothers'; Munsee nó·xwaya 'my late father', šì·fšáya 'the late Cephas'; Unami kawí·yɔ (< //kawiwa//), Narragansett cowwēwi (Williams 1936:18), and Massachusetts couéi (Trumbull 1903:40) 'he is asleep'; Massachusetts n8shi 'my late father', noh mogquesūwi 'he swelleth' (of a dead animal, presumably) (Cotton 1829:97, 67); Western Abenaki n'damisga 'the dog I had', n'damisnogak 'the dogs we had'

(Laurent 1884:125); Eastern Abenaki metsinégak 'they are dead' (Râle 1833:553); Maliseet ntòl 'my former canoe' (< PEA *nətōlē; cf. ntól 'my canoe' < PEA *nətōl);³² Micmac lnoay 'man (dead or absent)', pl. lnogig (Pacifique 1939:42, 215-217). The absentative inflection of the demonstrative pronouns shows the following endings:

	animate		inanimate
	proximate	obviative	
sg.	*-ka	*-kalē	*-kē
pl.	*-kake	*-kahē	*-kalē

For example: Unami wáka, Eastern Abenaki saŋga 'this (anim. abs.)'. Outside of Eastern Algonquian a comparable category to the Eastern Algonquian absentative is found only in the demonstrative pronoun systems of Fox and Blackfoot: Fox i·niya (anim. sg.), i·niye (inan. sg.), i·niye·ka, i·niye·ke (anim. pl.) 'that, those (absent or dead)' (Jones 1911:855); Blackfoot annáhka, annaáhka 'that (anim. sg. absent or not visible)' (Frantz 1971:27, 31, 52).³³

There are a number of other morphological innovations which set apart the Eastern Algonquian languages. The most extensive is the rebuilding of the endings of the independent-order TI and the associated³⁴ retention of the opposition between objective and absolute TA and TI paradigms in a number of Eastern Algonquian languages. Also associated with

this rebuilding is the formation of the subordinative mode of the independent order, used basically for certain types of complementation and topicalization; this is inflected in all paradigms with central endings equivalent to the new TI endings of the independent indicative and no peripheral endings.³⁵ Other innovations are distinctive of Eastern Algonquian, though of smaller scope. The conjunct 1p an-ending³⁶ is PEA *-ēnk (replacing PA *-a.nk) showing contamination with the vowel of the 2p *-ēkw (< PA *-e.kw). The third person *-t of the PEA conjunct is pluralized with *-hətī-, making 3p *-hətīt in contrast to the PA *-twa.w or *-wa.t reflected by other languages. This represents the paradigmaticization of a derivational complex of endings, PA *-h-etwi-, that made reciprocals on the causatives of AI verbs. Other formations reflecting *-h-etwi- (and the equivalent *-θ-etwi-) added to AI stems are used to make collective plurals in Delaware and, less productively, outside of Eastern Algonquian and are paradigmaticized as inflectional plurals in the northern set of Eastern languages (contrasting with an inflectional dual, or paucal, that reflects the old PEA and PA plural).³⁷ The TI Class 1 theme sign PA *-am splits into PEA *-am and *əm, the latter apparently arising by sound law after stems with finals of the shape *-əC (Goddard 1969:71).

Powhatan

Though the separate grouping of the Eastern Algonquian languages, descending from the intermediate common language PEA, is indicated by the extensive evidence reviewed above, one controversial point in the internal classification of Eastern Algonquian is the status of Powhatan.³⁸ Siebert (1975) has argued that Powhatan retains some phonological archaisms not found in the other Eastern languages and shares some innovations, and hence forms a genetic subgroup, with Carolina Algonquian, Nanticoke-Conoy, and the languages of southern New England. The assumed archaisms in Powhatan include those in the vowel system discussed above and the alleged retention of distinct reflexes of PA *θ and *ɬ, the former as t (falling together with PA *t) and the latter as r. But if the transcriptions of the two manuscripts of Strachey's vocabulary that are printed in the edition of Wright and Freund (1953:174-207) are taken as correct,³⁹ an examination of those with clear etymologies shows both t and r written as the reflex of both PA *θ and PA *ɬ. Specifically (with some adjustments made where more than one entry contains the same element) where the reflexes are written intervocalically that of *θ is written r 16 times, x (presumably a miscopying of r) twice, t or tt 15 times, and ht 3 times; that of *ɬ (which is less frequent in PA reconstructions) is written r or rr

5 times and t twice.⁴⁰ Examples are wawirak "the horns of a deare" < PA *wi·wi·θaki 'horns'; weracke "the yard of a Rackone" < PA *wi·θakayi 'his penis'; outacan "a dish" < PA *wela·kani.⁴¹

In initial position *l is reflected as r and there are no examples of *θ;⁴² word-finally both *θ and *l are reflected by both r and s. PA *ʔl shows up as ss (Siebert 1975:362, 389) and ghr (oughrath "far off" < PA *wa·ʔl(aw)-).^{42a} On its face the most reasonable explanation of these data is that PEA *r (< PA *θ and *l) was reflected in Powhatan by a phoneme that was basically a type of flap r but with optional devoicing that led to its sometimes being heard by English speakers as t intervocally and as s when after h or before pause.

The innovations allegedly shared by Powhatan and the southern New England languages (Siebert 1975:440-441) do not seem to be sufficiently well established and conclusive to demonstrate that these languages constitute a subgroup. The generalization of the obviative plural ending (PEA *-ah < PA *-ahi) to mark both singular and plural is found not only in these languages but also in Western Abenaki and Cheyenne.⁴³

The treatment hypothesized for final *θ and *l (Siebert 1975: 300-301) seems unnecessarily complex. Since PA *θ and *l in final syllables would have shown up as word-final PEA *-r, it is easiest to assume that in the southern New England languages this *-r became /ṣ/ by simple sound law: Massachusetts

-ash (inan. pl.) < PEA *-ar < PA *-ali; Massachusett -ush ('I-thou' suffix) < PEA *-er < PA *-eθe. In Powhatan the r is probably still present phonemically, though sometimes heard as -s: peintiker 'come in [imperative singular]' < PA *pi·ntwike·lo; kennehautows (miscopied for kennowntows) "I understand well" < PA *keno·nto·θe 'I hear you (sg.)'.⁴⁴ The consistent writing of the inanimate plural ending as -s probably reflects contamination from English on the part of Strachey or other English speakers rather than the regular reflex of PEA *-ar; there is no other likely explanation for the lack of a vowel: e.g. mawhcasuns 'shoes' < PA *maxkesenali.⁴⁵

Blackfoot

The history of Blackfoot remains the major uncertainty bearing on the classification of the Algonquian languages. Although it is the most divergent language of the family, where the history of elements can be perceived innovation away from established Proto-Algonquian forms and structures seems to be involved. It is not yet possible, however, to discuss the history of Blackfoot with any confidence.

Proposed Distant Relationships

Of the more distant relationships that have been

suggested for Algonquian, only the grouping with the Wiyot and Yurok languages of northern California appears well supported at present (Goddard 1975). The lexical similarities that have been noted between Algonquian and various other languages (Haas 1958a, 1959, 1960, 1963, 1965; Gursky 1963, 1965, 1965a; Noble 1965; Matteson 1972) do not appear to be sufficient to form the basis for compelling hypotheses of relationship. The long-conjectured relationship with the extinct and poorly documented Beothuk language of Newfoundland (Hewson 1968, 1971) must continue to be regarded with serious reservations as long as the phonology and morphology of the language remain so completely unknown as to make impossible an objective evaluation of the forms recorded. Ad hoc interpretations of Beothuk words based on proposed comparisons with Algonquian forms cannot in principle form a convincing basis for an understanding of the language, and without some systematic knowledge of its structure there is simply no Beothuk language to compare. One example of the pitfalls involved will suffice. Beothuk gathet 'one' (Leigh vocabulary) has been compared to PA *kot- (correctly *nekwetw-), and Beothuk yazeek 'one' (Cormack vocabulary) has been compared to PA *pe.šikwi (correctly *pe.šekw-) (Hewson 1968:90). But other words show th ~ z and -k ~ -t: nunyetheek (King vocabulary) ~ ninezeek (Cormack) 'five'; godawik (Leigh)

~ hadowadet (King) 'shovel' (Hewson 1968:89-90, 1971:247).

Hence it is very likely that gathet and yazeek are attempts to render the same Beothuk word, presumably something like {yazi?}. If so, the cumulative error of the poor recordings, lack of systematic interpretation of the Beothuk sound system, and generous criteria of similarity have resulted in one and the same Beothuk word being compared to both PA *nekwetw- and PA *pe.šekw-. The only conclusion possible is that the comparisons between Beothuk and Algonquian are not yet on firm ground.

Notes

1. Still unresolved is the relationship to Munsee wi.ləšćí.kan 'head', recorded by Heckewelder (1887:2) as wilustícan; this is the only Delaware word with a primary št cluster.
2. There appear to be no cases in which Bloomfield's *o is to be analyzed as *wa, as has sometimes been claimed (e.g. Haas 1958:242, 1966).
3. It is convenient for example to be able to talk about the middle reflexives in *-o (Bloomfield 1946:108-9), even though these were apparently originally formed by suffixing *w to T(ransitive)A(nimate) stems, giving *-Co before the third-person suffix *w and *-Cwi (or *-Cwe?) elsewhere.
4. Actually the available evidence appears to show *t + *k

> *xk and *hk; *t + *p > *xp and *hp; *θ + *k > *θk; *θ + *p > *θp; *š + *p > *šp.

5. Hamp (1976) suggests *-škanšy- in the dependent noun beside a medial *-kašy-, the *nš ~ š alternation being leveled out in most languages. Compare the slightly different pattern in *-temp- 'brain' beside *-(a·-)-ntep- (medial) 'head' and *-xkenθ- 'forehead' beside *-(i·-)-nkeθ- (medial). Certain other apparent doublets (e.g. *kenliwa ~ *keliwa 'golden eagle') may also have the same ultimate explanation.

6. Delaware has h from *hk and basic hk from *xk; Arapaho has ∅ from *hk and ʔ from *xk. The consistent agreement between these two languages points to Cree being out line when it disagrees with them both. (Michelson [1939a:77] suspected a loan from Ojibwa in the case of one doublet.) There is also evidence that Cree has hp for expected sp from *xp in some cases; for example the long vowels in Arapaho hííkon 'lung' and Atsina ʔíik 'idem' point to Common Arapaho-Atsina *iʔkon and hence PA *wexpani, beside Cree ohpan.

7. Perhaps formed from the root in Unami ší·ki 'good' (Zeisberger: pschiki). That the original meaning of this word was 'buffalo' (Siebert 1967:23) does not seem to be firmly established; note the Cree forms and Arapaho česeʔéhi 'animal, esp. quadruped', Atsina číʔíhi 'creature'. Other candidates to be taken as the PA word for

'buffalo' are *meʔθo(·)swa (> Plains Cree, Shawnee) and *elenoswa (> Fox, Illinois; > Arapaho 'moose').

8. Bloomfield (1925:131) says only that "short vowels in the first syllables of words show some deviation in Fox," and, in apparent reference to a suggestion of Michelson's, "F[ox] has a few assimilative(?) changes of short vowels" (Bloomfield 1946:86).

9. Bloomfield's ohpwa·kana (Bloomfield 1925-27, 2:181) is a misanalysis of meškohpwa·kana 'red-stone pipe' (Michelson 1921:18, line 28), influenced by Jones's forms; the correct form is given by Michelson (1921:44, line 27, and see Plate 2; 1935:150) and Siebert (1941:301).

10. The earliest texts have both ana·kani and ona·kani (Jones 1907:178, line 7, and 196, line 18; other examples with o-: 266, line 18, and 292, lines 18-19); the later materials show only ana·kani, but consistently have -o- in prefixed forms.

11. See the suggestions in Goddard (1974:108-9, 115).

12. Several papers on Cree-Montagnais dialectology were presented at the Ninth Algonquian Conference, held in Worcester, October 28-30, 1977: Ford (1977), MacKenzie (1977), Pentland and Garson (1977).

13. This is not a "secondary obviative" ending confined to use with animate nouns (Salzmann 1963:32, 48, 1965:44, 49);

the examples with inanimate nouns are cited from the texts (Salzmann 1956:151 and 1956a:268, sentences 2.1.3 and 3.2.94). For the lack of mutation before the Cree and Ojibwa reflexes of **-iliw*, note that alternations in noun stems are generally eliminated in these languages (Goddard 1977).

14. TA (Transitive Animate) verbs are used with animate objects, TI (Transitive Inanimate) verbs with inanimate objects. TA direct themes are marked by a theme sign **-a-* (~ \emptyset before a vowel in the conjunct order) and indicate action by a first, second, or third person on a third-person or obviative (secondary third-person) object. The direct theme is also used in the third person passive forms (indefinite person on third-person), but these forms lack the absolute/objective contrast.

15. 1 = first singular (sg.); 2 = second sg.; 1p = first plural (pl.) exclusive (exc.); 12 = first pl. inclusive (inc.); 2p = second pl.; 3' = third sg.; animate (anim.); 3' = third sg. anim. obviative (obv.); 0 = inanimate (inan.); (p) = sg. or pl.; 3'(p)—3 = obv. subject on third sg. object. The third person is pluralized in different ways; see below. For **-ekwet-* (3'(p)—3 and 0(p)—3), **-ekwek-* is also a possible reconstruction (Goddard 1969:132).

16. The **-eθ-en-* of these indefinite-subject forms (with

*-(e)n-, the mark of this category) may be the source of the apparent **-egen- reflected as a variant of the theme sign *-eθ- of theme 4 in some languages (Goddard 1969:197, note 4).

17. In the imperative order about the only thing to be added to Bloomfield's treatment (1946:100) is an account of the hortative (inclusive-subject) forms, which generally have endings beginning with *t: Fox -ta·we, -ta·ke; Kickapoo -taane, -tae; Cree -ta·n; Ojibwa -ta·; Unami -t·am (dual); etc. Bloomfield's prohibitive and interrogative orders (1946:100, 102-103) are probably best treated as being basically parts of the conjunct order (see Ellis 1961).

18. In Maliseet -s(əpən-) is suffixed after the central endings and before the peripheral endings (see below and note 29 for the terms): npəməhséps 'I must have walked by' (the penultimate -p- is cognate with the -m- in Menomini 1 sg. and 2 sg. forms and the inserted -p- of the non-indicative modes of the independent order in Fox); npəməhsepənos 'we (exc. dual)...'; pəmapasosəpənik 'they (three or more)...'. The analysis in Teeter (1971:224) is wrong, and the form given with an enclitic -əps does not exist.

19. Similarly, the inclusive imperative forms (note 17) point to the existence of such a category in PA without clearly indicating what its exact formal expression was.

20. Pacifique's parenthesized alternate forms are here omitted. Fidelholtz (1968) has some different endings.
21. Note Michelson (1939a:75), and for some examples see Goddard (1973 and 1978).
22. This vowel system was described in Goddard (1971:139), with some remarks on reflexes in the languages. The claim that initial PA *e- gave PEA *a- (Siebert 1975:440) is incorrect. Such a change took place in Eastern Abenaki and in Western Abenaki alən- (< PA *elen- 'ordinary'; contrast l- < *eθ- 'thus'), but not in the other languages: e.g. Munsee əl 'say (so) to him' (< *eθ-), ə̀skwá·ntě 'at the door' (< *ěskwa·nte--).
23. It is probably relevant that the opposition of length in the PA high vowels had a rather low functional yield; see above on the restricted distribution of *i and *o.
24. A complete discussion of the complex philological problems involved in interpreting the Powhatan vowel system is not possible here, and the present remarks are intended merely to signal a difference of opinion; some other aspects of Powhatan are taken up in more detail below.
25. The different treatment of particles is no doubt ascribable to their not being followed by a full word boundary when in certain syntactic constructions (cf. Bloomfield 1946:93).
26. If the loss of final vowels is recent in Montagnais

(contra Michelson 1939:92) but old in Eastern Algonquian, it may be that the retention of final -kw in Montagnais diffused from (or was modeled after) Eastern Algonquian at the time of the Montagnais vowel loss.

27. A similar innovation is found in Cree: nipiy 'water', asiniy 'stone', naskasiy 'my fingernail', etc.

28. Eastern Abenaki nkàsi, pl. nkàsəyak (Siebert 1967a:50), may reflect a pattern of reshaping some monosyllabic nouns as stems in -əy (cf. səti 'conifer' < PEA *šənt, but ppən < PA *wəxpenya 'ground nut'); or it could be that the paradigmatic leveling in the stems in PA *-Cy was not yet completed when PEA broke up.

29. These central endings are used before the peripheral endings, which mark the gender, number, and obviation of nouns and index these categories on verbs (basically *-a anim. sg., *-aki anim. pl., *-ali obv. sg., *-ahi obv. pl., *-i inan. sg., *-ali inan. pl.; Bloomfield 1946:95, sect.

29). The central endings used when no peripheral ending is present (PA 1p, 12 *-Hmena, 2p *-Hmwa) became PEA *-hməna and *-hmwa by being reshaped to resemble the non-final set after PA final vowels were lost, or by contamination or analogy that blocked this loss. The Abenaki languages and Maliseet-Passamaquoddy show restoration of the long vowel to PEA 2p/3p *-wa, except in Western Abenaki 2p -ba and the -pa

of some dialects of Eastern Abenaki (< PEA *-hmwa); see Laurent (1884) and Râle (1833:542, 554). For the grammar of these different sets of endings, see Goddard (1974a).

30. Eastern Abenaki has unprefixes payα- by back-formation from the irregular changed form peyα- (< PA *pye.ya.-, whence Fox pye.ya.- [Bloomfield 1925-27, 2:194]): paye 'he comes' (Râle 1833:552, as above). Western Abenaki, which restores ô ([ʔ] < *ā) in the first and second singular, has generalized paiô-: n'paiôji 'I will be here' (with sentence enclitic -ji 'future'; Laurent 1884:107).

31. I do not find an inan. sg. in Laurent (1884).

32. The tonal contrast between these Maliseet forms is clear, but the analysis of the prosodic system has not yet been entirely worked out and the marking of accent should be considered preliminary. In this paper the stressed syllable (which generally has nondistinctive vowel lengthening) is marked with an accent, acute if higher in pitch than adjacent syllables and grave if lower. On monosyllables the pitch contours are linearly compressed, accute-accented syllables being long and falling and grave-accented syllables being short and rising.

33. The Blackfoot ending -hka (< *-nk-?) also appears on nouns, but it parallels certain other deictic suffixes which are "characteristic of demonstrative pronoun plus noun

constructions, and [which] nouns alone seldom have" (Taylor 1969:201). Note the striking agreement between Blackfoot annoóhka, annóhka 'now' (Frantz 1971:31, 32) - the 'not visible' form of 'that (near you)' - and Unami yúkwé 'now', formally the abs. inan. sg. of 'this' (< earlier *yúke, confirmed by the júcke 'now' of Zeisberger [1887:131]). Ojibwa has a similar category, for possessed nouns only, marked by -pan, which has been taken over from the preterite inflection of the verb (Baraga 1878:62-68).

34. It is surely no accident that only languages that have rebuilt and regularized the morphology have retained the original opposition of the categories.

35. For a full exposition and details, see Goddard (1967, 1974a).

36. The conjunct order has two sets of central endings, which may be called after the 2 sg. forms an-endings (PA 1 *a·n, 2 *an, lp *a·nk, indef. *-(e)nk, inan. *k) and at-endings (1 *ak, 2 *at, lp *akent, indef. *ent, inan. lacking). The endings for the other persons are the same in both sets (3 *t ~ *k, 12 *ankw, 2p *e·kw). The at-endings are used in TA direct forms after a consonant, the an-forms elsewhere (with certain variants after the theme signs *i- and *eθ-; see Bloomfield [1946:102] and the section "Comparative Morphology: Verb," above).

37. See Goddard (1967:99-101, 104-105; 1967a:9-10; 1969:44-45). Non-Eastern Algonquian examples are Fox ni·miheti·kini 'whenever there is a dance' (Michelson 1925:306, line 12); Menomini kate·w-ni·mihetin 'there will be a dance', as pu·sihetitua? 'when they [two] go in a canoe together' (Bloomfield 1962:498, 507), Ojibwa nisakasswe·?itimin 'we smoke together (in a council)' (Baraga 1878:235, 1880:361, phonemicized).

38. A general survey of other aspects of Eastern Algonquian dialectology is in Goddard (1978a).

39. Comparison of these published vocabularies with the original manuscript in the British Library (in September, 1977) and with the photographs of the Bodleian manuscript published by Harrington (1955) reveals that very few errors have been made in reading the originals (or in printing). Where Siebert differs, Wright and Freund are almost always to be preferred. Siebert's reading of t for some cases of manuscript "r" (only in words that are taken to have PA *θ) is not consistent with the known facts of the Italian hand (which had no such letter in this value) and is disproved by the consistent distinction between "t" and "r" in English words written in this script (see Sheet 1 and "Virginia" on Sheet 15 in Harrington 1955). No significant correlation between the letter having the shape of "r" with a serif at

the bottom and the putative value t has been shown, and it is noteworthy that this letter shape never appears for English t or for the reflex of PA *t. On the title page of the British Library manuscript, which is written in the Italian hand, every single "r" (27 out of 27) has the serif; in the word Britannia alone it is quite short and might be overlooked.

40. Counting mattoume 'wild grain sp.' (Wright and Freund 1953:120), in a passage copied from John Smith (1612:12). Siebert's assumption that Swampy Cree mano·minak 'rice, oats' is a loan from Ojibwa (1975:414) is ad hoc and overlooks the Wood Cree forms a'thomenuck 'oatmeal' and wap'pathomenuck 'rice' (Isham 1949:15, 25).

41. Detailed comments on these crucial forms are warranted. To *wi·wi·θa 'horn' (> Shawnee wi·wi·la) there is the medial *wiθ- (> Cree -wit-, Shawnee -wil-); some languages extend the short vowel to the dependent noun: Menomini we·wen; Arapaho hiníínis (for the reshaping, see Goddard 1974:106 and 113, notes 13 and 42); Atsina níínis (Taylor 1967:122), nínit pl. (Kroeber 1916:135). The Arapaho medial is -iiniθ-, with ii from the noun: séé?iiniθeet 'moose' (= "flat-horned one") < PA *šenk- + *-i-wiθe-. The Fox form owi·wi·ni 'his horn' (Jones 1911:755) is an error of gender for owi·wi·na 'horn' (form from Paul Voorhis, personal communication); Fox

*ni.wi.na 'my horn' and owi.wi.nani '*his horn' are conjectures of Bloomfield's (1925-27, 2:181, 186) based on mo.s(wi-)owi.wi.nani 'a moose-antler (obv.)' (Jones 1907: 106, line 16).

weracke appears unglossed in the Bodleian manuscript; the British Museum wecacke, which is glossed, must be taken as a miscopying. The penis bone (os baculum) of the raccoon was used by Eastern Indians as a toothpick.

outacan has a clear t in both manuscripts. The assumption by Michelson (1933a) and Geary (1953:209) that this is an error for *ouracan is circular reasoning; Siebert's reading ouracan (1975:320) is impossible.

42. Siebert (1975:330-1) gives a putative PA *θa.θ- 'crack, etc.' as the source of the root in Powhatan tatumsew "a Crack or Crack't" and tuttasewh "Rent or torne," but the analysis of these forms is uncertain, Cree ta.topayiw 'it tears' and related forms have ta.to- (not *ta.ta-) from PA *ta.tw-i- (Bloomfield 1925:141; Cree ta.tase.ka.w 'it is a crack' is of unclear analysis but seems different), and the Shawnee forms with la.l- appear to be reduplications.

42a. Hence the change tabulated in Goddard (1978a:75, Table 2, column 9) cannot be taken as an innovation shared by Nanticoke and Powhatan.

43. Siebert (1975:419) would add Cree, but here obv. sg./pl.

-a (or -ah) is best taken as by sound law from both PA *-ahi and *-ali (Bloomfield 1946:86, 93, 94, and note 12); -h- is generalized in pronouns as the mark of both the obviate and -the inanimate plural.

44. Massachusetts /s̥/, perhaps an apico-alveolar or the like and hence written "s" and "sh," is also the reflex of PA *θ and *s̥ after *ʔ or *h and perhaps also as first members of clusters; it contrasts with /s/ (< PA and PEA *s and *s̥): e.g. us [əs] "say thou unto them" (< PEA *əs̥ < PA *eši), ush [ʌs̥] 'go [sg.]' (PEA *ār < PA *a:lo). In contrast in Powhatan *s and *s̥ remain distinct (secon "to spit" < PA *sehkwi-; shekiin "to pisse" < PA *šeki-), and the devoiced continuant pronunciation of PEA *r, however it is to be interpreted structurally, was identified phonetically with /s/.

45. Geary (1953:210) gives chappacor 'roots', showing -or from *-ali; this is actually a North Carolina Algonquian form, but Siebert's subgrouping hypothesis would predict -s here as well.

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Iroquoian

Marianne Mithun

Probably the first North American language to be recorded was Iroquoian. As early as 1534, words were transcribed from Iroquoian speaking people encountered by Cartier in the Bay of Gaspé. From that time to the present, missionaries, philologists, and linguists have continued to explore the intricacies of these languages and their interrelationships. Much still remains to be discovered.

1. The Family

When Europeans first settled in North America, Iroquoian peoples resided as far north as Quebec, as far south as Georgia, from the coasts of Virginia and the Carolinas west to Ohio, Pennsylvania, and Ontario. The Iroquoian language family consists of two branches: a southern branch, represented by Cherokee, and a northern branch. Northern Iroquoian is composed of several sub-branches: Tuscarora-Nottoway, Laurentian, Huron-Wyandot, and the Five Nations languages, represented by modern Seneca, Cayuga, Onondaga, Oneida, and Mohawk. Several other Northern languages are known only from scanty documentation. These include Petun, Neutral, Wenro, Erie, and Andaste or Susquehanna.

Much essential work remains to be done on each of the modern languages. The urgency of primary research should be evident from the sketches below, in which current numbers of speakers are estimated, the speakers situated geographically and historically, and the major descriptive literature on each language surveyed.

For several reasons, estimates of the numbers of speakers of Amerindian languages can be only approximations. Degrees of linguistic competence are difficult to assess and categorize. Abilities may range from virtuosity in storytelling and formal oratory to passive comprehension only. Furthermore, because the majority of the speakers of these languages can also speak English (or French or Spanish), and generally choose to do so, members of a community are often unaware, themselves, of the linguistic skills of their neighbors. Finally, an indeterminate number of speakers have moved to cities. In general, the estimates provided here represent averages of the judgments of good speakers from each community.

1.1. Cherokee

The Cherokee language is spoken today by perhaps 10,000 people living in eastern Oklahoma, and by another 1100 in western North Carolina.¹ At least six different dialects are

presently discernible.²

The first Cherokee-European contact probably occurred during DeSoto's expedition in 1540. During the seventeenth century, the Cherokee inhabited the southern Appalachian region of Tennessee, North Carolina, Virginia, South Carolina, Georgia, and Alabama (Chafe 1973). In 1838-9, the group was forced to march to Oklahoma, but several hundred people hid in the North Carolina mountains until 1849, when they settled on land bought there on their behalf.

Probably the oldest Cherokee vocabulary still in existence is a 20 page manuscript by William G. DeBrahm, recorded in 1757 (DeVorsey 1971). Several other lists date from the end of the eighteenth century (Castiglioni 1790; Bartram 1791; Preston 1793). The arrival of missionaries in the early nineteenth century, along with the invention of the Cherokee syllabary and the acquisition of a printing press, resulted in a considerable number of manuscripts and publications in the language. The Bible was translated, as well as many hymns and religious tracts (Brown 1825; Worcester 1828, 1848, 1853, 1856; Worcester and Boudinot 1829, 1830, 1833, 1838). The Reverend Samuel Austin Worcester, a missionary among the Eastern Cherokee from 1825 until his death in 1859, published Cherokee almanacs nearly every year in addition to his religious materials. At least three Cherokee periodicals were

published during the nineteenth century: the Cherokee Phoenix, from 1828 to 1834, the Cherokee Messenger, 1844-7, and the Cherokee Advocate, 1844-54 and 1870-1906.

Two early grammars date from the mid-nineteenth century. John Pickering's grammar, published in 1830, is incomplete, but contains remarks on the alphabet, accentuation, and the article, the noun, the pronoun, and the adjective, clearly English categories rather than Iroquoian. A Kurze Grammatik der Tscherokesischen Sprache, based on Pickering's grammar, material in the Cherokee Messenger, and notes from Worcester printed in Gallatin (1836), was published by Hans Georg Conr von der Gablentz in 1852. Both can be found in Krueger (1963). For other material in and on Cherokee completed before 1888, consult Pilling (1888).

At the end of the century, Lewis Henry Morgan published North Carolina and Oklahoma kinship terminology (1871:291-382), Albert Gatschet recorded considerable eastern Cherokee vocabulary for the Bureau of Ethnology, and James Mooney collected vocabulary, including plant and personal names, myths, and ceremonial texts (Mooney 1887, 1891, 1900). Transcriptions of the Swimmer manuscript (Mooney and Olbrechts 1932), containing 137 sacred formulas, are rich both ethnologically and linguistically. In the early twentieth century, additional texts were recorded by Frank Speck (1926) and Frans Olbrechts

(1931).

During the twentieth century, grammatical work continued, changing slightly in theoretical orientation. Ernest Bender and Zellig Harris published a description of the phonemes of North Carolina Cherokee in 1946, after work with Will French and Mollie Sequoyeh. In 1949, Bender published a morphemic analysis of selected North Carolina texts. In 1953-4, William Reyburn published a set of three articles on Cherokee verb morphology, based on work with Jess Youngdeer and Annie Oocumma. Floyd Lounsbury has extensive unpublished field notes.

In the past few years several significant works on Cherokee have appeared. Willard Walker published a description of eastern Cherokee verb morphology in 1975, and in the same year, Duane King completed an extensive grammar and dictionary of the language. Durbin Feeling produced an Oklahoma Cherokee-English dictionary which includes a grammatical sketch by William Pulte. A Beginning Cherokee textbook by Ruth Bradley Holmes and Betty Sharp Smith appeared in 1976. William Cook is currently finishing a study of phonological, morphological, and syntactic processes affected by morphological restructuring.

1.2. Tuscarora

Tuscarora is spoken today by perhaps thirty people near

Lewiston, New York, and probably five or less at Six Nations, Brantford, Ontario.³ Dialect differences are discernible between Six Nations and Lewiston as well as within the Lewiston community. With one or two exceptions, the youngest speakers are now in their sixties.

The Tuscaroras were first encountered by Europeans in eastern North Carolina. Early in the eighteenth century, many of them began moving northward. They settled between the Oneida and Onondaga in New York and near the Susquehanna in Ohio, and were adopted into the League of the Iroquois around 1723. During the Revolution, most moved to Niagara. Soon afterward, about 130 Tuscaroras went to the Grand River in Ontario, along with other Iroquois who had sided with the British during the war. The rest moved to their present land near Lewiston, N.Y.

The earliest good documentation of the Tuscarora language is a vocabulary list in John Lawson's New Voyage to Carolina, first printed in 1709. In 1819, the Reverend J. C. Crane, a missionary to the Tuscaroras, published a Tuscarora spelling book. The Reverend Gilbert Rockwood transcribed 350 words from William Chew which were published in Schoolcraft (1846). Other word lists can be found in Gallatin (1836), Catlin (1845, 1848), and Morgan (1851). At the end of the nineteenth century and on into the twentieth, excellent work was done by J.N.B. Hewitt, himself a Tuscarora, while he was employed by the Smithsonian. He recorded numerous texts and left a 30,000 slip dictionary.

During the first half of the twentieth century, Frans Olbrechts published a discussion of pronominal prefixes in 1929, and Anthony Wallace and William Reyburn published a Tuscarora text in 1951. Lounsbury has a set of unpublished field notes from this time. In 1967, Joan Fickett published a master's thesis on Tuscarora phonology. A discussion of subordination can be found in Mithun (1973), and a grammar of Tuscarora in Mithun (1976).

1.3. Nottoway and Meherrin

These two extinct languages were once spoken along the Nottoway and Meherrin Rivers, respectively, near the coasts of Virginia and North Carolina (Binford 1967). All that remains of the languages are several town names and two word lists recorded early in the nineteenth century.

Edward Bland first encountered the two groups in the course of his trip to Roanoke Rapids, North Carolina, in 1650. The Meherrin lived in two towns, according to him, Unote and Cowochahawkon. Each contained approximately 80 inhabitants. Subsequent estimates set their population somewhat higher, but by 1730, after incursions of the Susquehannas and other Iroquois groups, the remaining Meherrins had merged with the Tuscaroras who did not migrate north. The only Meherrin data we have, the two town names, are sufficient to identify them

with some certainty as Iroquoian.

The Nottoways lived in at least two settlements at contact, one on the South side of the Nottoway River near the West Bend, the other two miles from Stony Branch. In 1669 they are reported to have numbered 300, but by 1729, no more than 200. By 1853, only 9 remained. In 1820, John Wood recorded a list of words from a Nottoway woman, Edie Turner living in Southampton County, Virginia. He sent the list to Thomas Jefferson. Sometime between then and 1836, James Tresevant recorded a second list, including the Nottoways' name for themselves, Cherohaka. A composite of these two lists, all that remains of the language, can be found in Gallatin (1836).

1.4. Laurentian

All data from Laurentian are contained in two word lists recorded during the sixteenth century.

When Jacques Cartier sailed into the Bay of Gaspé in 1534, he encountered a group of about 300 people on a fishing expedition. Their normal residence was Stadacona, near the present site of Quebec City. Two of the chief's sons, Domagaya and Taignoagny, were persuaded to return to France for a year with Cartier. There, 58 words of their language were recorded and appended to the account of this first voyage

(Biggar 1924). On his return in 1535, Cartier again met the Stadaconans. This time he captured the chief, Donnacona, his two sons, and eight others whom he took back to France for good. A second vocabulary list, containing 170 words, is appended to the account of this voyage (Biggar 1924). These vocabularies can also be found in Robinson (1948), Hoffman (1961), and Barbeau (1961). The language is referred to by Pilling (1888) as Hochelagan, after a neighboring town near modern Montreal, as Kwedech by Hoffman (1959) after a legendary enemy of the Micmacs in the area at that time, as St. Lawrence Iroquois, and as Stadaconan.

Sometime between 1542 and Champlain's visit in 1603 the Stadaconans vanished. Their fate remains a mystery.

1.5. Huron-Wyandot

Both Huron and a dialect, Wyandot, are now extinct. Huron proper was last spoken at Lorette, near Quebec City, in the mid-nineteenth century (Barbeau 1960). Wyandot was spoken until quite recently near Sandwich, Ontario, and Wyandotte, Oklahoma.

The earliest mention of the Huron can be found in Champlain's account of his visit to Huronia between August 1615, and May 1616. The Huron Confederacy consisted of four tribes,

the Attignawantan, the Attigdeenonguahac, the Arondahronon, and the Tahontaenrat. They inhabited a vast area in southern Ontario stretching from Lake Simcoe to Nottawasage Bay and Matchedash Bay to Cranberry, Orr, and Bass lakes. They numbered perhaps 20,000 (Trigger 1969). A Recollet missionary, Gabriel Sagard-Theodat, lived with them for the year 1623-24 and described their country, language, and customs in Le Grand Voyage du Pays des Hurons. The Jesuit Relations (Thwaites 1896-1901) contain the impressions of Jesuit missionaries living among them from 1634 to 1650.

In 1649, after suffering great losses from smallpox and wars with the Five Nations Iroquois, the Huron abandoned their villages. Some settled among other Iroquois and the Ottawa. Some built a new village in Seneca territory, Gandougarae. Others, converted Christians, went to Quebec City, where their descendants live today. Many of the Attignawantan settled with the Tionontati (Petun) until these, too, were defeated by the Iroquois. The survivors of this group, a mixture of about 800 Huron, Tionontati, and defeated Erie and Neutral, became known as the Wyandot. In 1701, they moved to Sandwich, Ontario. Some of these Wyandot eventually migrated southward into Ohio, Kansas, and, ultimately, Oklahoma.

Huron and Wyandot are fairly well documented, thanks to the efforts of the French missionaries living among them and

later to Marius Barbeau. Sagard published an extensive French-Huron dictionary in 1632. Jean de Bréboeuf, a Jesuit who worked intermittently with the Hurons from 1626 until his death in 1649, left a Huron catechism (Bréboeuf 1630), a grammar which was subsequently lost, and a treatise on the Huron language in one of his Jesuit Relations (Thwaites 1896-1901, vol. 10, p. 117-23). Pierre Joseph Marie Chaumonot, who led the band of Hurons to Lorette, wrote a grammar, later translated from the Latin and published (Wilkie 1831). Another Jesuit, Pierre Potier, working during the mid-eighteenth century at Sandwich, Ontario, wrote a grammar and dictionary partially based on that by Chaumonot, which is now available in Fraser (1920).

Additional short vocabularies and grammatical remarks can be found in Lahontan (1703), Lafitau (1724), Charlevoix (1744), and Chateaubriand (1828). Schoolcraft published 75 Wyandot numbers recorded by William Walker in 1852. Horatio Hale collected vocabulary along the Detroit River in the late 1880's.

Excellent documentation on modern Wyandot was left by Marius Barbeau. In 1911-12, he recorded 40 texts and vocabulary in Wyandot from Wyandotte, Oklahoma, and on the Detroit River in Essex Country, Ontario. These were published in Barbeau (1960) with word-by-word translation and free rendering,

but the vocabulary remains in manuscript form in the National Museum of Canada. Material collected at this time was also used in the preparation of an article on pronominal prefixes (Barbeau 1915). Pierrette Blin-Lagarde is currently completing a study of Huron based on a manuscript grammar perhaps written by Chaumonot during the seventeenth century.

1.6. Petun

The language of the Petuns is undocumented. According to Père Paul Le Jeune (Thwaites 1896-1901:20-43) they spoke Huron, but he also classified Neutral, Seneca, Onondaga, and Andaste as Huron.

The Petuns or Tobacco Nation were so called by the French because of the tobacco they cultivated and traded. Their Huron name, Tionontati (Tionnontatehronons=Etionnontarehronnons=Khionontaterrhonons=Khiontaterons=Khionontateronons=Kionontatehronon) can be translated 'there beyond the hill', referring to their home west-southwest of Huron, on the eastern side of the Blue Mountains. The nation consisted of two groups, the Wolves and the Deer, living in at least nine villages. The largest village, Ehwae, was burned by invaders in 1640. It is believed that the survivors later joined with defeated Hurons, Eries, Neutrals, and Wenros to form the Wyandot band.

1.7. Neutral

Except for several names, the Neutral language is undocumented. The Huron name for the Neutrals, Atiwandarok (=Atiowandarok=Attiwandarok=Atiraguenrek=Atirhangenret), 'they understand the language' indicate that Neutral was quite close to Huron, although remarks made by Huron-speaking Jesuits⁴ suggest that it was, in fact, different. Morgon (1871) remarks that the Neutrals, Eries, and Senecas understood each other.

The Neutral Confederacy consisted of approximately 28 villages in 1627, 40 in 1640, situated north of Lake Erie west of the Niagara River. Later 3 or 4 villages arose east of the river. They were hunters, gatherers, and farmers. Their population was estimated by the Jesuits at 12,000. The Neutral Nation was so called by the French because they seemed at first on good terms with both the Huron and the Iroquois Confederacy, mutual enemies.

They were defeated by the Iroquois during 1647-51. The survivors joined defeated Hurons, Eries, and others at Mackinac and Lake Superior to form the Wyandot band.

1.8. Wenro

The Wenro language is also undocumented. According to Père Le Jeune (Thwaites 1896-1901:16-253) the Wenros, who

were part of the Neutral Confederacy until 1637, spoke Neutral.

During the early seventeenth century, the Wenros (Ahouenrochrhonons=Awerherhonons=Wenrochronons=Weanohronons=Wenroronons=Awenrehronon) lived at the eastern end of Lake Erie, between the Neutrals and the Iroquois. Their number was estimated at 1200-1500. When the Neutrals broke off relations with them and the Eries began to move north into their territory, the Wenros were forced to leave their villages. Some went to live with the Neutrals, particularly in a town called Khioeta. Others sought protection under the Huron and, in 1639, a group of 600 people, largely women and children, set out for Huron territory.

1.9. Erie

The Erie language is undocumented except for several town names but, an Iroquoian-speaking group by this name is referred to in the Jesuit Relations, by Senecas and Wyandots in comments to historians, and on early maps.

The Erie (Rhiierhonons=Eriechronons=Riguehronons=Erigas), known to the French as the Nation du Chat or Cat Nation, were an agricultural group living on the southeast shore of Lake

Erie early in the seventeenth century. They are thought to be the same people as the Kahkwahs referred to by the Senecas. Two of their town names are mentioned in the Jesuit Relations, Rique and Gentaienton. In 1654, when the Senecas captured Rique, the Erie population was estimated at 14,500. The survivors of the war with the Senecas were absorbed by the Senecas and Wyandots.

1.10 Susquehannock

The Susquehannock or Andaste language is known through a list of words recorded by Johan Campanius, a Swedish missionary, in his journal of 1696.

The Susquehannocks, called Andaste (Andastoerrhonons=Andasto~~err~~ronnons=Andastoerhonon) by the Hurons and the Jesuits in Huronia, and called Minquas by the Dutch, were encountered by Captain John Smith, and then by Etienne Brule, an envoy of Champlain, about 1615 (Hunter 1959). In the early seventeenth century, they resided primarily in the lower Susquehanna Valley in York and Lancaster counties in Pennsylvania. They were known to Dutch and Swedish colonists as traders, passing knives, hatchets, and other iron and brass implements from them to the Nanticokes. They were known to the Jesuits as allies of the Hurons against their common enemies, the Iroquois.

In 1651, the Andastes formed an alliance with the Neutrals, who were under Iroquois attack. In 1652, they signed a treaty with Maryland, which was renewed in 1661 and 1666. In 1674, however, Maryland chose alliance with the Senecas, and by 1675, a combination of Marylanders, Virginians, Senecas, and European diseases had nearly destroyed them. The few survivors, estimated in 1697 as 40 warriors plus women and children, settled near Lancaster, Pennsylvania, where they took on the name of Conestogas. The last of the group were murdered at the Lancaster jail in 1763 by the Paxton Boys, as revenge for wrongs done to colonists by other Indians.

1.11. Seneca

Seneca is spoken today by about 80 persons at Tonawanda, 100 at Allegany, and 200 at Cattaraugus in western New York State. Perhaps a dozen persons at Six Nations Reserve in Ontario still speak it.⁵ Most speakers are at least fifty years of age. Only very slight dialectal differentiation can be noticed among the groups.

Europeans first encountered the Senecas between Seneca Lake and the Genesee River. During the seventeenth century, the band moved west toward Lake Erie. After the American Revolution, some members moved to Six Nations.

The earliest recorded Seneca is probably J.B. Hyde's hymnal from 1818. Vocabularies can be found in Seaver (1826) Alden (1827), Parker (1847), Morgan (1847), Gallatin (1836), Schoolcraft (1846), Marshall (1848), Jackson (1830), and Short (1818). A missionary at Buffalo Creek (Cattaraugus) from 1845-1875, Asher Wright, translated hymns and parts of the Bible into Seneca and produced a Spelling Primer in 1842 and a periodical, the Mental Elevator.

In the twentieth century, J.N.B. Hewitt published a cosmology text in Seneca with interlinear translation (1903). In 1949, Preston and C.F. Voegelin published an article on Seneca structure, and in 1952-3, Nils Holmer produced a grammar. Considerable work has been done since then on Seneca by Wallace Chafe, including his Handbook of the Seneca Language (1963) and his very important Seneca Morphology and Dictionary (1967). Esther Blueeye is currently completing a teaching grammar.

1.12. Cayuga

Cayuga is now spoken by approximately 370 individuals at Six Nations, Ontario, and by a few in Miami, Oklahoma.⁶ The youngest speakers are around thirty-five years of age. Dialect differences separate the two ends of the Six Nations Reserve (Upper and Lower Cayuga) and the Oklahoma community.

The Cayuga were first encountered on the shores of Lake Cayuga in New York State. After the American Revolution, most of them moved to the Six Nations Reserve, although a few stayed behind and eventually merged with the Senecas or moved into Ohio and then Oklahoma.

The first recorded Cayuga is probably a vocabulary transcribed by Georg Loskiel (1789). Other vocabularies can be found in Elliot (1846), Gallatin (1836), Schoolcraft (1846, 1851), and Smith (1884).

More recently, Lounsbury has collected extensive field notes on Cayuga, and Frank Speck (1949) has published some ceremonial vocabulary in his description of midwinter rites. Michael Foster included a brief grammatical sketch plus the text of the thanksgiving address in his monograph, From the Earth to the Sky (1975). A discussion of constituent ordering in Cayuga can be found in Mithun (1975).

1.13. Onondaga

Onondaga is now spoken by less than 50 people south of Syracuse, New York, and perhaps 50 at the Six Nations Reserve near Brantford, Ontario.⁷ The youngest speakers are around 50 years of age at this time. Dialect differentiation is discernable among the three groups.

The Onondagas were first encountered where many live today in New York. After the American Revolution, a number of them moved to Ontario.

Probably the earliest recorded Onondaga is a set of the numerals from one through ten transcribed by the Dutchman Wassenaer between 1622 and 1635. Between 1745 and 1751, a Moravian missionary, Pyrlaeus, produced an Onondaga-German dictionary which remains in manuscript form. David Zeisberger, another Moravian, completed a dictionary by 1760 and a grammatical treatise by 1780. These can be found in Horsford (1887) and Zeisberger (1887) respectively. Other vocabularies, recorded during the nineteenth century, appear in Jarvis (1829), Smet (1848), Schoolcraft (1851), Morgan (1871), Marshall (1877), Gatschet (1880), Smith (1882), Hewitt (1888), and Beauchamp (1888).

At the beginning of the twentieth century, Hewitt published Onondaga cosmological texts (1903, 1928) with interlinear and free translations. More recently, Wallace Chafe has produced a Semantically Based Sketch of Onondaga (1970), and Hanni Woodbury an extensive discussion of the process of Noun Incorporation in Onondaga (1975).

1.14. Oneida

Oneida is currently spoken by approximately 200 individ-

uals near London, Ontario, perhaps 50 near Green Bay, Wisconsin, and several in New York State, mostly near Syracuse. A number live in Detroit as well. The Ontario speakers are generally over 30 years of age, the Wisconsin speakers over 60. A very few children are learning Oneida as a first language. Dialect variation is clear among the three groups, as well as within the Wisconsin community.

The original home of the Oneidas was south of Oneida Lake, in New York State. After the American Revolution, some of them migrated to the Six Nations Reserve in Ontario. In 1846, a group left New York for Wisconsin, and in 1849, others left for the Thames River - London Reserve.

Barton (1797) contains Oneida vocabulary recorded by Dean of Westmoreland. Later vocabularies can be found in Schoolcraft (1845), Jones (1851), Skenando (1852), Beauchamp (1887), Morgan (1871), and Gallatin (1836).

In the twentieth century, Franz Boas published a partial grammatical sketch in 1909, and Floyd Lounsbury his Oneida Verb Morphology in 1953, an exhaustive description which was to serve as a model for almost all subsequent descriptive work in Iroquoian. A discussion of constituent ordering can be found in Mithun (1975 b). Clifford Abbott is currently preparing an Oneida dictionary.

1.15. Mohawk

Mohawk is spoken today by perhaps 3,000 people living at Caughnawaga and Oka in Quebec, St. Regis, Cornwall Island, Snye, Deseronto, and Brantford in Ontario, and Hogansburg, Buffalo, Rochester, Syracuse, and Brooklyn in New York State. Dialectal variation is discernable from one community to the next. A very few children are learning Mohawk as a first language, but it is not generally spoken by many under thirty years of age.

Mohawks were first encountered by Champlain in 1609 in the Mohawk River Valley in New York between Schenectady and Utica. Around 1670, many began to migrate northward, eventually settling at present Caughnawaga and Oka, near Montreal. Around 1750, some Caughnawagans moved upstream to St. Regis. Most of those who had stayed in the Mohawk Valley sided with the British during the Revolution, and soon afterward, they moved to the present Six Nations reserve in Ontario. Others fled toward Montreal and ultimately to the Bay of Quinté, now the Tyendinaga reserve. In 1881, some Oka Mohawks moved on to Gibson, Ontario.

The earliest Mohawk vocabulary can be found in a journal kept by Adriaen van den Bogaert, a surgeon at Fort Orange (Albany). Translations of the journal, which was originally written in Dutch in 1634-5, can be found in Wilson (1896), Jameson (1908), and Yager (1953). An ambitious dictionary, Radices verborum Iroquoiaerum was compiled by Jacques Bruyas in the late seventeenth century (Shea 1862). Mohawk liturgical

translations can be found in Bruyas (1667) and Pyrlaeus (1745). Other short texts and word lists are listed in Pilling (1888).

In the nineteenth century, Reverend Jean-Andre Cuoq published vast religious materials in Mohawk (Cuoq 1857), an interesting grammatical treatise (1866), and a Mohawk dictionary (1882). Other vocabularies from this time can be found in Gallatin (1836), Schoolcraft (1846), Morgan (1871), and Hale (1883).

Mohawk is one of the best documented of the Iroquoian languages. At the beginning of the twentieth century, Hewitt published a Mohawk version of the cosmology (1903), beautifully transcribed with both interlinear and free translation. Paul Postal completed a dissertation on Some Syntactic Rules of Mohawk in 1962 and comments on Mohawk phonology in Postal (1964). More recently, several extensive descriptions of the phonology and morphology have appeared, notably Nancy Bonvillain's Grammar of Akwesasne Mohawk (1973) and John Beatty's Mohawk Morphology (1972). Gunther Michelson's Thousand Words of Mohawk (1973) contains a brief grammatical sketch plus a bilingual root dictionary. A dictionary of Ahkwasasne Mohawk by Bonvillain and Beatrice Francis is arranged by topic. A discussion of some aspects of Mohawk syntax can be found in Mithun (1975). Nora Deering and Helga Delisle (1976) have put out an excellent teaching grammar.

A collection of histories, legends, and anecdotes in Mohawk with interlinear and free translation, Kanien'kéha' Okara'shón:'a (Mithun 1976) and a Mohawk spelling dictionary, Iontenwennaweienstákhwa' (Mithun (1977a) have just appeared.

2. Genetic Relationships

Several approaches have been taken in the investigation of the subgrouping of the Iroquoian languages and of wider relations of the family as a whole. The most commonly employed techniques include impressionistic estimates of overall similarity, intelligibility tests, lexicostatistic comparisons, and examinations of shared innovations and retentions. A combination of the results of these methods permits a fairly clear picture of the degrees of genetic relationship of languages within the family. Only the first, and to some extent, the last, provide insight into possible relations between Iroquoian and other North American families.

2.1. Subgrouping

2.1.1. Impressionistic assessments of similarities. The Northern Iroquoian languages are sufficiently similar so that their relationship was noticed immediately. As early as 1635, the Jesuit Father Paul Le Jeune noted the similarity among the Huron, Petun, Neutral, Erie, Wenro, Andaste, Seneca, Onondaga,

Cayuga, Oneida, and Mohawk languages, and divided them into two subgroups, the Huron (the first six), and the Iroquois (the Five Nations) (Thwaites 1896-1901, 8:115). Benjamin Smith Barton recognized Laurentian as Iroquoian in 1797.

Barton (1797) also considered Tuscarora to be Iroquoian on the basis of lexical similarities. That both Tuscarora and Nottoway were Iroquoian was reported to be common knowledge among the Cherokee by John Norton in 1816. In a letter to Jefferson dated 1820, Peter Duponceau confirmed the relationship of Nottoway after examining the Wood vocabulary. In 1910, Hewitt noted that it seemed closer to Tuscarora than the others.

The similarity between Cherokee and the Northern languages seems to have been first recognized by David Zeisberger in 1768, when he witnessed the adoption of a treaty between the Six Nations and the Cherokee. His notes suggest that he collected some Cherokee vocabulary at this time (King 1975), but these have never been found. Barton noted lexical similarities among all of the languages in his treatise of 1797, and their relationship was accepted by Gallatin (1836).

2.1.2. Intelligibility tests. In 1952, Harold Hickerson, Glen Turner, and Nancy Hickerson conducted a series of tests, taping texts from each of the seven extant languages and playing them back to speakers of the other languages. Comprehension was tested by requesting a summary of the text, then a

word-by-word translation. Although several factors could distort the results, notably the high degree of passive bilingualism among Iroquoian speakers, these generally accord well with impressionistic judgments. Cherokee and the Northern languages, including Tuscarora, were 0-5% mutually intelligible, Tuscarora and the Five Nations also 0-5%. Between Onondaga and Cayuga, Seneca, Mohawk, and Oneida, comprehension was 25-35%. Between Cayuga and Seneca, 75-80%, and Mohawk and Oneida, 80%.

2.1.3. Lexicostatistics. A number of lexicostatistic studies of the Iroquoian family have been carried out since the method was first developed (Hoffman 1959), (Lounsbury 1961), (Blin-Lagarde 1972). The exact percentages of shared cognates postulated among the languages vary somewhat, but the suggested subgrouping has remained the same.

Glottochronological estimates place the split between the northern and southern branches of the family at about 3500-3800 years ago. Tuscarora would have broken off from the other Northern languages 1900-2400 years ago, and the Five Nations languages would have separated 1200-1300 years ago (Lounsbury 1961).

On the basis of his statistics, Bernard Hoffman (1959) proposed the following subgrouping:

I. Northern Branch

A. Huron Group (Huron-Tionontati or Wyandot)

B. Iroquois-Kwedech Group

1. Kwedech (St. Lawrence Iroquois)

2. Andaste

3. Mohawk-Oneida

4. Onondaga

5. Cayuga-Seneca

C. Tuscarora Group (Tuscarora)

D. Nottoway-Meherrin Group

II. Southern Branch: Cherokee Group

This schema does move Andaste (Susquehannock) from the Huron Group to the Iroquois Group. An alternative, warranted by his percentages of cognates but not chosen by Hoffman would be to combine Tuscarora and Nottoway-Meherrin into a single group. Their resemblances to each other (65%) are greater than the similarity of either to the Huron Group (45%, 35%) or the Iroquois Group (35-60%), as well as the percentages of cognates shared by some languages within the Iroquois group (Laurentian-Cayuga 45%).

2.1.4. Shared Retentions and Innovations. Barton (1797)

first proposed the relationship between Cherokee and the Northern Iroquoian languages on the basis of shared lexical items. The first systematic demonstration of this relation-

ship was probably that of Horatio Hale (1883). He carefully noted both lexical and grammatical correspondences between languages of the two branches. At about the same time, Hewitt also wrote an essay which demonstrated some of their common characteristics and contained a comparative word list.

In a recent doctoral dissertation, Blair Rudes (1976) illustrates the close relation between Tuscarora and Nottoway on the basis of shared lexical items and phonological innovations. Out of 145 words, Rudes found 92 Tuscarora cognates, of which 35 had no other Northern Iroquoian cognates. Only 12 Nottoway words were cognate with Seneca, Mohawk, or Huron and not Tuscarora. Rudes further notes that Tuscarora and Nottoway share sound changes not found in the other Iroquoian languages.

The position of Laurentian in the family has been of interest not only to linguists but to ethnohistorians and archaeologists as well. It has been classified as each of the modern languages at various times, most often as Huron (Robinson 1948, Barbeau 1959) or Mohawk (Couq 1882). On the basis of lexicostatistic evidence, Hoffman (1959) concluded it was a separate language coordinate with the Five Nations languages. In 1961 Lounsbury pointed out certain features shared only by Laurentian and Cherokee (*u for example), perhaps a common residue from the parent language which was not affected by changes

originating in the central dialects. The Laurentian vocabularies could well be a mixture of Huron, Mohawk, and some third language which is now extinct.

On the basis of the Neutral name given to Père Chaumonot in 1641, Roy Wright has deduced that Neutral was closer to the Five Nations languages than to Huron. The name Oronhiaguehre "heaven bearer" or "priest" cited in the Jesuit Relations (Thwaites 1896-1901, 1841) indicates that Neutral did not share the Huron sound shift $g > y > \emptyset$.

Campanius' Susquehannock (Andaste) word list provides sufficient data for grouping the language with the Five Nations. Nearly all of the items have Five Nations cognates. (Hoffman finds it 90% cognate with Mohawk and Onondaga, 85% with Cayuga, and 80% with Seneca and Laurentian.) Andaste shares none of the phonological innovations found in Huron-Wyandot or Tuscarora-Nottoway.

The position of Cayuga in the family poses an interesting problem, first pointed out by Lounsbury (1961), examined by Chafe (1974) and currently evaluated in further detail by Chafe and Foster. Clearly Cayuga is quite close to Seneca, Hickerson, Turner and Hickerson (1952) found them to be 75-80% mutually intelligible. Hoffman (1959) found them 90% cognate. They also share a number of phonological innovations.

$\emptyset > e /k_k$ $r > n /_y$
 $\emptyset > h / \left\{ \begin{array}{c} t \\ k \end{array} \right\} _n$ $r > \emptyset$ (partial loss in Cayuga)

Both have an accent pattern based at least partially on syllable count from the beginning of the word.

There are, however, certain innovations which Seneca shares with the other Five Nations languages but Cayuga does not.

1) Cayuga shares a plural segment ka- in the pronominal prefixes with Huron, Tuscarora, and Cherokee. The other Five Nations languages have lost this.

2) The other Five Nations and Huron have extended dual numbers to third person pronouns. Cayuga does not share this innovation.

These differences suggest that Cayuga split off from the northern community before Huron. Sometime later, it would have rejoined Seneca and shared many of its innovations, but never completely merging, since Cayuga retained the ka- plural. Only recently, the two split again.

3. Reconstruction

The Northern languages are sufficiently similar so that phonological and lexical reconstruction are fairly straightforward. For parts of the following discussion, I have drawn

on Lounsbury (1971-2), Chafe (1973), and Foster (1977).

Proto Northern Iroquoian (PNI) probably had eleven distinctive consonants and six vowels.

Obstruents	Resonants	Laryngeals	Oral Vowels	
*t	*n	*h	*i	*o
*k	*r	*ʔ	*e	*a
*k ^w	*w		nasalized vowels	
*s	*y		*ɛ	*ɔ
*t̥s				

The obstruents were voiced intervocalically and initially before vowels. *t̥s had two allophones, in complementary distribution.

$$*t̥s > *t̥s̺ / _ \left. \begin{array}{l} *i \\ *y \end{array} \right\}$$

$$*t̥s > *t̥s / \text{elsewhere}$$

After Tuscarora had split off from the rest of Northern Iroquoian, this alveolar allophone merged with *s.

*t̥s > H., W., S., C., Oo., A., Oi., M., L. s

*owit̥sra' > M. yowísera 'frozen'

In Tuscarora, the reflex of the alveolar variant remained separate, appearing as θ.

*ts > T. θ*owí:tsra? > T. owíθra 'snow'

*r may have been a lateral. Oneida, some dialects of Mohawk, and Cherokee have a reflex of [l], while Tuscarora, Nottoway, Huron, Wyandot, Cayuga, early Onondaga, Susquehannock, other dialects of Mohawk, Laurentian, and other dialects of Cherokee (these now extinct) show [r]. The nasalized vowels could have been slightly different in color. The front nasal, reconstructed as *ɛ̃, shows up as Cherokee ɛ̃, Tuscarora ɛ̃, Nottoway ɛ̃ or ɛ̃, Cayuga, Huron, Wyandot, Seneca, Onondaga, Susquehannock, and Laurentian ɛ̃, but Oneida and Mohawk ɛ̃. The back nasal *ɔ̃ also shows up as Cherokee ɔ̃, Tuscarora ɔ̃, Nottoway ɔ̃ or ɔ̃, Cayuga ɔ̃ or ɔ̃, Seneca ɔ̃, Onondaga ɔ̃, but Susquehannock, Laurentian, Oneida, and Mohawk ɔ̃.

Stress was penultimate in the parent language and stressed vowels in open syllables were long.

3.1.1. Tuscarora. Phonetically, Tuscarora differs considerably from the other Northern languages. The following shifts took place among consonants.

*ts > θ
$$\left\{ \begin{array}{l} *ts \\ *t+*s \end{array} \right\} > ts$$

*t > ʔn / __ V	*t̚satá:wɛ̃ > θá:ʔnawə 'swim!'
> ʔ / __ $\left\{ \begin{array}{l} t \\ r \end{array} \right\}$	*t̚satri:yo: > θaʔrí:yu: 'fight!'
> t / elsewhere	*t̚satkáhtho > Oatkáhthu 'look'
*ʔ > Ø / # __ C	*tékni > ʔná:kti: > ná:kti: 'two'
*Ø > y / k __ e	*í:keʔt̚s > í:kyæʔθ 'I walk'
*n > n / __ $\left\{ \begin{array}{l} ? \\ h \\ y \end{array} \right\} V$	*ó:nɛ̃ > ù:nə 'now'
*n > t / elsewhere	*oná:takɔ > utá:ʔnakə 'town'

The oral vowels shifted in a counter-clockwise direction.

*e > æ	*á:t̚seʔ > ɖ:θæʔ 'new'
*a > ɔ	*á:wɛ̃ʔ > ɖ:wəʔ 'water'
*o > u	*onóʔt̚saʔ > utúʔθæh 'tooth'

The two nasalized vowels merged to schwa.

*ɛ̃ > ə	*kɛ́t̚syɔh > kə́t̚syəh 'fish'
*ɔ̃ > ə	

Stress remained penultimate but stressed vowels followed by single resonants and short vowels received falling tone.

V́: > V̀: / __ RV	*ó:nɛ̃ > ù:nə 'now'
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3.1.2. Nottoway. Nottoway retained most of the PNI sound system but shared one innovation with Tuscarora. PNI *n

shifted to Nottoway t except before nasalized vowels. (The Nottoway examples below have been left in Wood's transcription.)

*n > n / __ŷ *onŋhsaʔ > onushaq 'house'
 *n > t /elsewhere *oʔnyŋhsaʔ > oteusag 'nose'

One word in the list does not follow this rule.

*tékni > dekanee 'two'

Due to the limitations of our Nottoway data, it is not possible to account for this seeming exception with certainty. The word may have been reborrowed from Andaste, Onondaga, or Mohawk, there may still have been free variation between Nottoway t and n, or the sound shift may have been more restricted, not occurring after k.

Nottoway did not share the other innovations found in modern Tuscarora. PNI *t > t. PNI *t_s > t_s and s, not θ.

*kanáʔtaraʔ > gotatera 'bread'
 (T. utáʔnaræh)

*otóʔt_saʔ > otosag 'tooth'
 (T. utúʔθæh).

The nasalized vowels were distinct. The Nottoway reflex of PNI *ɛ̃ is transcribed as a, an, ain, and en, while the reflex of PNI *ɔ̃ is written u, un, or um.

*k^étsyo? > kaintu 'fish'
(T. kətsyə?)

3.1.3. Huron-Wyandot. Huron and Wyandot consonants underwent a number of conditioned sound changes. Already in Huron, velar stops were becoming spirantized in certain contexts. From the written documents, it appears that these spirants could be optionally deleted. The Huron examples are cited in Sagard's transcription.

$$\left. \begin{array}{l} *k > x (> y) \\ *k^w > x^w (> w) \end{array} \right\} / \left\{ \begin{array}{l} \# \\ v \end{array} \right\} _v$$

*ató:k^é > atuhoin/at^oen 'axe'
*ó:kweh > unxwi/onwe 'person'

In other contexts, stops were deleted entirely.

	*aknehyáhra?s > an ^h dehieras 'we two remember'
*k > ∅ / <u> </u> R	* ^é krí:yo? > erio 'I will kill it'
	*akwatá:ti > awatatiak 'we all speak'
	*akyatá:ti > aiatatiak 'we two speak'
*t > k / <u> </u> y	*sáty ^é ? > sakieiu 'sit down'
*t > h / <u> </u> $\left\{ \begin{array}{l} k \\ k^w \end{array} \right\}$	*tkanóhsa? > ganonchia 'at the house'
$\left\{ \begin{array}{l} *t \\ *k \end{array} \right\} > \emptyset / ? _s \#$	*thratétsy ^é ?ts > tatetsense 'he cures'
	*krihwanera?ks > rihwanderas 'I sin'
*t > ∅ / <u> </u> sh	*on ^é tsha? > annenchia 'arm'
	*tsatsh ^é :n ^é > sasanan 'your pet'
	*katsh ^é ?ta? > asseta 'bottle'

opt. * <u>t</u> s > $\left\{ \begin{matrix} t \\ s \end{matrix} \right\}$	*otsista? > asista/atista/atsista 'fire'
*tšy > ts	*a:katetsyç?t > atetsan 'I would cure'

PNI *s was palatalized in certain environments.

*s > š / $\left\{ \begin{matrix} h \\ \underline{\quad} \\ \underline{\quad} \end{matrix} \left\{ \begin{matrix} v \\ r \end{matrix} \right\} \right\}$	*tehsri:o > dechrío 'you should not fight' *awε?nahsa? > andachia 'tongue' *ká:ris > ,ariche 'legging'
---	---

The resonants also underwent considerable change.

*n > n / $\left\{ \begin{matrix} k \\ \underline{\quad} \\ v \end{matrix} \right\}$	*ončha? > honnenha 'seed'
*n > nd /elsewhere	*onyá'ta? > ondiata 'throat'

The resulting prenasalized stop was optionally velarized before *y. Its prenasalization was also optionally dropped, yielding a voicing distinction not found in the other languages.

opt. nd > ng / <u> </u>	*ondyáta? > ongyata/ondiata 'throat'
opt. nd > d	*ončhsa? > andechia/adecque 'sand'

PNI *r became a fricative before y.

*r > ž / <u> </u>	*káryo:? > H. ,ayot > H. yažu 'wild animal'
---------------------	--

PNI *y disappeared intervocalically.

*y > Ø /V__V

*oyé:ta? > aeinta 'firewood'

*w > Ø /#__

*wakéskwani > aesquandi
'I am laughing'

but *hwáhta > ouhatta 'maple'

The Huron reflex of *o was moving upward, yielding free variation between [o] and [u].

*o > $\left\{ \begin{array}{c} u \\ o \end{array} \right\}$

*ató:kε? > atuhoin/atqen 'axe'.

By the twentieth century, Wyandot had fricativized y in more environments.

*y > ž / $\left\{ \begin{array}{c} i \text{---} u \\ h \text{---} V \end{array} \right\}$

*tí:yoht > W. tižuh 'like'

*ehyá:ryo? > W. e:ža:žuh
'he will kill you'

The velar fricative x became y and the affricate became a glide.

$$\left\{ \begin{array}{l} *k > x > y \\ *k^w > x^w > w \end{array} \right\} / \left\{ \begin{array}{c} \# \\ V \end{array} \right\} \text{---} V$$

*ató:kε? > W. atú:yε? 'axe'

*yó:kweh > W. yó:weh (> yoméh)
'person'

The resulting w, along with the reflex of *w, was nasalized when adjacent to nasalized vowels.

w > m / $\left\{ \begin{array}{c} \bar{V} \\ \text{---} V \\ \text{---} \bar{V} \end{array} \right\}$ *yó:kweh > yó:weh > yoméh
'person'

*á:wε? > aouën > á:mε 'water'

PNI *o moved up completely in Wyandot.

*o > $\left\{ \begin{array}{c} o \\ u \end{array} \right\}$ > u

*ató:kε? > H. atuhoin/atoġen
W. atú:yε? 'axe'

Progressive nasalization could extend the full length of Wyandot words.

V > $\left\{ \begin{array}{c} n \\ v \end{array} \right\} / \left\{ \begin{array}{c} h \\ ? \end{array} \right\} _$

*hro?te?yε?áha > ho?te?yε?áha
'they are brother and sister'

3.1.4. Seneca. Seneca has probably undergone the most phonological change of the Five Nations languages. It retained most of the PNI sound system with the exception of *r. The *r conditioned several changes then was lost.

*a > æ/r_

*owí:ra? > *owí:ræ?

where Z ≠ $\left\{ \begin{array}{c} a: \\ ah \end{array} \right\}$

*kakáhra? > kaká:? 'eye'

*r > y / $\left\{ \begin{array}{c} i_v \\ Ob \ (h)_ \left\{ \begin{array}{c} o \\ ? \end{array} \right\} \end{array} \right\}$

*owí:ræ? > owi:yæ? 'offspring'

*hrohsrǫ:nih > hosyǫ:ni:h
'he has repaired it'

*wakathró:ri > akáthyo:wi:h
'I have told'

*r > w / $\left\{ \begin{array}{c} o \\ ? \end{array} \right\} _v$

*othó:re? > otho:we? 'cold'

*wa?katǫ:ri? > o?katǫ:wi?
'I breathed'

*r > n / _y

*káryo:? > kanyo:? 'wild animal'

*ara > æ:

*oyǫ?kwara? > oyǫ?kwæ:? 'smoke'

*a:ra > a:a

*kaká:ra? > kaka:a? 'story'

*r > ∅

*o?taríhε > o?táiε:h 'hot'

$$*a > \begin{bmatrix} \text{æ} \\ e \\ \text{ɛ} \end{bmatrix} / Z _ \begin{bmatrix} \text{æ} \\ o \\ o \end{bmatrix}$$

where Z \neq $\begin{cases} a: \\ ah \end{cases}$

*skaró:tɛ > sekeɔtɛ 'tell a story'

*ohsíkwarɔt > ohsikwɛɔt 'rattlesnake'

*kakáhra? > kaká:? 'eye'

Nasalization was assimilated to following vowels, altering their color.

$$\begin{bmatrix} *æ \\ *a \end{bmatrix} > \begin{bmatrix} \text{ɛ} \\ \text{ɔ} \end{bmatrix} / \left\{ \begin{matrix} n \\ \text{Y} \end{matrix} \right\} \left(\left\{ \begin{matrix} ? \\ (s)w \end{matrix} \right\} \right) _ \quad *wa?ɛ:na? > wa?ɛ:no? 'bow'$$

An epenthetic vowel separates velar stops.

∅ > e /k__k

*wákkɛ > ake:kɛ:h 'I have seen it'

Obstruents were lost under certain conditions.

$$\begin{Bmatrix} *t \\ *k \end{Bmatrix} > \emptyset / \left\{ \begin{matrix} \text{Ob} _ \# \\ _ \# \\ _ s \text{Ob} \end{matrix} \right\}$$

*wa?któ:kɛst > o?kto:kɛs

'I straightened it'

*hrató:rats > hato:wæ:s 'he hunts'

*hrá:ya?ka > ha:ya?s 'he breaks'

*t̲s̲ > t̲s̲

*kats̲ista? > kats̲i:sta? 'ember'

*t̲s̲ > s /__h

*onɛ̲tsha? > onɛ̲:sha? 'arm'

*y > ∅ /t̲s̲__

*kɛ̲t̲syɔh > kɛ̲t̲sɔh 'fish'

Resonants and laryngeals also underwent change. *w disappeared after *h, then *h was lost in certain contexts, but an epenthetic h appeared in others.

*w > ∅ /h__

*k̲n̲ɔ̲hwe?s > *k̲n̲ɔ̲he?s (> k̲hn̲ɔ̲e?s)

'I like it'

$$*h > \emptyset / \left\{ \begin{array}{l} \text{Ob} \\ \underline{V} \text{---} \text{V} \end{array} \right\} \left\{ \begin{array}{l} \text{Ob} \\ \# \end{array} \right\}$$

$$*h > : / \underline{V} \text{---} \text{R}$$

$$\emptyset > h / \left\{ \begin{array}{l} t \\ k \end{array} \right\} \text{---} \text{n}$$

$$*t > \emptyset / \text{---} \text{hn}$$

$$\text{R} > \emptyset / \text{---} \left\{ \begin{array}{l} h \\ ? \end{array} \right\}$$

*knóhe?s > *knóe?s (> khnóe?s)
'I like it'

*ohnyá'sa? > o:nyá'sa? 'neck'

*knóe?s > khnóe?s 'I like it'

*tní:kéḥ > *thni:kéḥ > hni:kéḥ
'we two see it'

*kanhóha > kahóa? 'door'

Stress in Seneca falls on the last, even-numbered, non-final syllable that is either closed or immediately precedes a closed syllable. Penultimate length in open syllables is retained (Chafe 1976).

3.1.5. Cayuga. Cayuga has preserved most of the PNI sound system. Certain dialectal differences similar to Huron separate Lower Cayuga from Upper Cayuga.⁸

*t > k / y (Lower Cayuga)

$$\left\{ \begin{array}{l} *t \\ *k \end{array} \right\} > : / \text{---} \text{s} \#$$

$$\left\{ \begin{array}{l} *t \\ *k \end{array} \right\} > \emptyset / \left\{ \begin{array}{l} k \\ s \end{array} \right\} \text{---} \#$$

$$s > \left\{ \begin{array}{l} f \\ s \end{array} \right\} / \text{h---} \text{r}$$

$$s > t / \left\{ \begin{array}{l} v \\ ? \end{array} \right\} \text{---} (\text{h}) \text{r}$$

*tsátyε? > sakyε? 'sit down'

*hrató:rats > ható:wa:s 'he hunts'
*íhraks > iha:s 'he eats'

*hwisk > hwis 'five'

'he is
*hrahsróhε > hahfróhε:?' cross'
*tsahsró:ni sahšró:ni 'fix it'

*ka?tsréhta? > ka'sréhta? >
ka'tréhta? *'it drags' > 'car'

Certain obstruent clusters are broken by epenthesis.

$\emptyset > h / \left\{ \begin{array}{c} t \\ k \end{array} \right\} _ n$	*tékni: > tekni: 'two'
$\emptyset > e / k _ k$	*wá?kε? > aké:kε? 'I saw it'

There is only partial loss of *r.

*r > y / i _	*owí:ra? > owí:ya? 'baby'
*r > w / $\left\{ \begin{array}{c} o \\ \emptyset \end{array} \right\} _$	*osnó:re? > osnó:we? 'fast' *wa?kató:ri? > aka:tó:wi? 'I breathed'
*r > n / _ y	*káryo:? > kanyo:? 'wild animal'
*r > : / V _ h	*hrathárha? > hathá:ha? 'he speaks'
*r > $\emptyset / V \left(\left\{ \begin{array}{c} h \\ ? \end{array} \right\} \right) _ V$	*oná?tara? > oná?ta:? 'bread' *wa?thráhri?t > atháhi?t 'he broke it'

In some cases, vowels which became adjacent with the loss of *r became diphthongs. If they were the same, they merged. If the first was e, it assimilated to the following vowel.

*e > $\left[\begin{array}{c} i \\ \epsilon \\ a \end{array} \right] / _ \left[\begin{array}{c} i \\ \epsilon \\ a \end{array} \right]$	*kyεté:ri > kyεtí:i:h > kyεtí:h 'I knew'
	*tyotyεǰhtqh > tyotyεǰhtqh > tyotyε:htoh 'it is first'
	*nihroyerás?qh > nihoyaás?qh <u>ni</u> hoyá:s?qh 'how he has done'

Resonants disappear before glottals, leaving vowel length.

R > : / V _ ?	*wákhren? > akhre:? 'I cut it'
	*a?aíhey? > a?á:he:? 'she died'
	*thóhsaw? > thohsa:? 'he began'

There is optional assimilation of nasalization over h under one condition.

*a > ɛ / \sqrt{h} __ *onɛ́haʔ > onɛ́hɛʔ 'corn'

Cayuga is distinguished from the other languages by its laryngeal metathesis in odd-numbered syllables counted from the beginning of the word. The metathesis is less prevalent among Upper Cayuga speakers.

Vʔ > ʔV / (C₁)__C₂ *káʔnoʔ > kʔanoʔ 'arrow'
 Vh > hV / C₁__V *kahɔ́:weh > kháɔweh 'boat'
 where C₁ ≠ $\left. \begin{matrix} h \\ ? \end{matrix} \right\}$
 V = odd numbered

Under certain conditions, the result is a voiceless syllable.

Vh > hV / (C₁)__C₂ *wáhshɛ > wh_ɔshɛ 'ten'
 V = odd numbered

Even-numbered penultimate syllables (not counting epenthetics) are stressed in Cayuga. Odd numbered, open penults are stressed, but if an odd numbered penult is closed (the vowel is followed by a laryngeal or consonant cluster), stress is antepenultimate. Open, penultimate, stressed syllables are long. Open, even-numbered pretonic syllables are also long. If the second of two adjacent vowels is

stressed, the stress moves to the first.

3.1.6. Onondaga. The following description is drawn from Chafe (1970) and Woodbury (personal communication). Onondaga retained most of the PNI sound system except for *r, which conditioned several changes then disappeared entirely. Note that the changes are not all the same as in Seneca and Cayuga.

*k > h / __k

*wá?kkε? > wá?hkε? 'I saw it'

$\left. \begin{matrix} *o \\ *o \\ *a \end{matrix} \right\} > \left. \begin{matrix} e \\ \epsilon \\ \ae \end{matrix} \right\} / r_$

*karóhyate? > *karéhyate?
(> kaéhya:te?) 'heavens'
*okáhra? > *okáhræ? (> okáæ?)
'eye'

V > V: / $\left. \begin{matrix} C_1 r \\ _ r C_2 \end{matrix} \right\}$
where $C_1 = R$
 $C_2 = h$

*o?tóhsra? > o?tóhsæ:?'feather'

*r > y / i__V

*owí:ra? > owí:yæ? 'baby'

*r > w / $\left. \begin{matrix} o \\ \epsilon \end{matrix} \right\} _ V$

*othó:re? > othó:we? 'cold'
*kahsó:ra? > kahsó:wæ? 'gun'

*ara > a:

where either vowel is stressed but neither is epenthetic

*karáhkware? > káhkwa:?'sun'

*ara > a / elsewhere

*r > ∅

*o?taríhε > o?táihε 'hot'

In Onondaga, unlike the other languages, high pitch and heavy stress do not necessarily occur together. All three-syllable words always have high pitch on the penultimate syllable. Otherwise, when stress is on the final syllable, high pitch falls on the penultimate

syllable if the vowel is long. If it is short, high pitch is on the antepenultimate syllable, (except that in words of three syllables, high pitch is always on the penult). Pretonic length occurs when that syllable is even, counting from the left.

When stress is penultimate, high pitch is antepenultimate, unless that vowel is the epenthetic morpheme joiner -a-. This rule does not apply to those epenthetics which became -ae-. Except in words of three syllables, high pitch and heavy stress occur together on the penult.

When stress is antepenultimate, high pitch is on the preceding syllable, again not counting the morpheme joiner unless it has become -ae-. In words of five syllables or more, the second vowel is lengthened in certain environments.

$V_2 > V_2:$ / $\left. \begin{array}{l} \text{Cr} \\ \text{tsy} \end{array} \right\}$ $*wa?katr\epsilon not\epsilon? \rightarrow wa?ka:t\epsilon:no:t\epsilon?$
'I sang'

3.1.7. Susquehannock. Susquehannock appears to have retained the PNI sound system nearly intact. The phonetic values of the segments match those posited for the parent. The examples below are left in Campanius' transcription.

The Susquehannock data do not show any of the phonological innovations which distinguish the other Iroquoian languages. An epenthetic e does appear between obstruents and resonants, probably a general tendency in Iroquoian.

∅ > e /Ob__R *tékroʔ > tickerom 'eight'

*r appears usually as 'r', but occasionally as 'l'. The Andaste liquid was probably midway between [l] and [r], or perhaps alternated between the two, as in modern Mohawk. Stress was penultimate and open syllables long, as in the parent.

3.1.8. Oneida. Oneida preserved most of the PNI phonological inventory. PNI *r and the nasalized vowels shifted slightly.

*r > l *ká:ris > ká:lís 'leggings'

*ɛ > ʌ *ó:nɛ > ó:nʌ́ 'now'

*q > ʋ *okóhsaʔ > okúhsaʔ 'face'

Under certain conditions laryngeals disappear from stressed syllables, leaving compensatory length and falling tone.

ʋh > ʋ̃: /__RV *okáhraʔ > okà:laʔ 'eye'

ʋʔ > ʋ̃: /__CV *kkahráʔke > kkahlà:ke
'on my eye'

Laryngeals are also lost from certain consonant clusters.

{*h}
{*ʔ} > ∅ /__Ch *t_satkántho > satkátho 'look'
*hraráʔthɛs > laláthʌs 'he is
climbing'

*h > ∅ /CC__

Epenthetic vowels separate glottal stops from other consonants under certain conditions.

$\emptyset > V_2 / V_1 C _ ? V_2$	$*wahrár'ok' > wahaló'o'ke'$ 'he chopped'
$\emptyset > e / VC _ ? \left\{ \begin{array}{l} \# \\ C \end{array} \right\}$	$*wa'hráshet' > waháshete'$ 'he counted'

Two developments in particular distinguish Oneida from the other languages. The accent is copied across a single consonant to the right, but pretonic length is retained.

$\acute{V}:CV > \acute{V}:C\acute{V}$	$*ató:k\epsilon > ató:k\acute{\lambda}$ 'axe'
---------------------------------------	---

Utterance-final syllables ending in vowels or glottal stops are generally devoiced and often exhibit alternations involving laryngeals, stress, and length.

$\left. \begin{array}{l} ?CC' > hCCV \\ \acute{V}:CV(?) > \acute{V}hCV \\ VCV > V:C\acute{V} \\ V:RV > V:hRV \end{array} \right\} / _ \#$	$*wa'tháyahya'kt > wa'tháyá:yahkt\epsilon$ 'he crossed over with it'
	$*kanatá'ke > kanatà:ke > kanatáhke$ 'in town'
	$*ohkwá:ri > ohkwá:í > ohkwá:li$ 'bear'
	$*hra'sl\acute{q}:ni > la'slú:ní > la'slú:hni$ 'white man'
$\left. \begin{array}{l} 1V > (e)1V \\ 1V' > (eh)1V \end{array} \right\} / Vhs _ \#$	$*hray\epsilon thóhsr\acute{q} > lay^{\wedge}thóhs(e)lu$ 'let him plant things'
	$*wa'hray\epsilon thóhsr\acute{q}' > wahay\epsilon thóhs(eh)ly$ 'he planted things'

$$\left. \begin{array}{l} \text{yV(?) > ih} \\ \text{WV > (e)W(V)} \\ \text{WV? > (eh)WV} \end{array} \right\} / \text{VC_}\#$$

$$W = \begin{Bmatrix} n \\ l \\ w \end{Bmatrix}$$

$$\left. \begin{array}{l} \text{RV? > hRV} \\ \text{V? > V} \end{array} \right\} / _\#$$

*tsátyε? > satih 'sit down'

*tšítne > tšítene 'let's go'

*onqtákri > onqtákehli 'sugar'

*kana'tsyóhare? > kana'tsyóhahle
'kettle which is hung up'

In some cases, final vowels are not devoiced.

∅ > h /VkwV_\#

*hrókwε > lókwah 'he has
picked it'

? > h /V_\#

*hróhsq? > lóhsuh 'he has
finished it'

$\left[\begin{array}{c} \text{V?} \\ \text{V:} \end{array} \right] > \left[\begin{array}{c} \text{V} \\ \text{V} \end{array} \right]_h / _\text{C}\#$

*yáhya?k > yà:yahk 'six'
*ra:kwí:t > la:kwíht 'let him
move over'

3.1.9. Mohawk. In Mohawk, the consonants remained nearly the same, except for dialectal developments similar to those in Huron and Cayuga.

*t > k /__y (Ahkwesahsne)

*tsátyε? > sákyΛ? 'sit down'

*k > t /__y (Caughnawaga,
Oka)

*kyé'thos > tyé'thos 'I plant'

*tš > ts (Caughnawaga, Oka)

*y > ∅ /ts__ (Caughnawaga,
Oka)

*otší'tšya? > otsì:tša?

*r > l (Ahkwesahsne)

*owi:ra? > owi:la? 'offspring'

The oral vowels remained the same, but the nasalized vowels shifted as in Oneida.

*ɛ̃ > ɛ̃

*ó:nɛ̃ > ó:nɛ̃ 'now'

*ɔ̃ > ɔ̃

*okóhsa? > okóhsa? 'face'

Mohawk also shares with Oneida the conditioned loss of laryngeals.

ʷh > ʷ: / __RV

*okáhra? > okà:ra? 'eye'

ʷʷ' > ʷ: / __CV

*kkahráʷ'ke > kkahrà:ke 'on my eye'

There is epenthesis between obstruents and resonants or glottal stops. Epenthetic vowels are not counted in the determination of penultimate stress.

∅ > e / $\left. \begin{matrix} \{t\} \\ \{s\} \\ \{k\} \end{matrix} \right\} \left. \begin{matrix} \{R\} \\ \{ʷ\} \end{matrix} \right\}$

*tní:kɛs > tení:kɛs 'we two see'
 *satrí:yo > saterí:yo 'fight!'
 *twá:kɛs > tewá:kɛs 'we all see'
 *ɛ́kket? > ɛ́kkete? 'I will scratch'
 *sní:kɛs > sení:kɛs 'you two see'
 *karisrí:yo > kariserí:yo 'good socks'
 *swá:kɛs > sewá:kɛs 'you all see'
 *sʷáhrak > seʷà:rak 'eat meat'
 *tékní > tékeni 'two'
 *kráʷthɛs > keráʷthɛs 'I climb'
 *kwɛnanótha? > kewʌnanótha? 'I read'
 *kʷáhraks > keʷà:raks 'I eat meat'

3.1.10 Summary of Reflexes. Table 1 shows the modern reflexes of the sounds reconstructed for Proto Northern Iroquoian.

Table I
Modern Reflexes of the Proto Northern Iroquoian Sound System

	T	N	H	W	S	C	Oo	A	Oi	M
*t	ʔn, ʔ, t	t	t, k, h	t, k, h	t	t, k	t	t	t	t, k
*k	k	k	k, x, y, ʃ	k, y, z, ʃ	k	k	k	k	k	t, k
*kʷ	kʷ	kʷ	kʷ, xʷ, ʃ	kʷ, ʃ	kʷ	kʷ	kʷ	kʷ	kʷ	kʷ
*s	s	s	s, ʃ	s, ʃ	s	s, ʃ	s	s	s	s
*ts	ʃ, tʃ	s, tʃ	s, ts	s, ts	s, ts	s, tʃ, f	s, ts	s, ts	s, tʃ	s, tʃ, ts
*n	n, t	n, t	ng n, nd, d	ng n, nd, d	n, ʃ	n	n	n	n	n
*r	r	r	r, ʃ	r, ʃ	w, y, n r, ʃ	w, y, n r, ʃ	w, y, ʃ	r	l	r/l
*w	w	w	w	w, m	w, ʃ	w	w	w	w	w
*y	y	y	y, z, ʃ	y, z, ʃ	y, ʃ	y	y	y	y	y, ʃ
*h	h	h	h	h	h, ʃ	h, ʃ	h	h	h, ʃ	h, ʃ
*ʔ	ʔ, ʃ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ	ʔ, ʃ	ʔ, ʃ
*a	a	a	a	a	a, æ, ʔ, ʃ	a	a, æ	a	a	a
*e	e	e	e	e	e	e	e	e	e	e
*i	i	i	i	i	i	i	i	i	i	i
*o	u	o	o, u	u	o	o, u	o, e	o	o	o
*ɛ	ʔ	ɛ	ɛ	ɛ	ɛ	ɛ	ɛ	ɛ	ɛ	ɛ
*ɔ	ʔ	ɔ	ɔ	ɔ	ʔ	ɔ	ɔ, f	ɔ	ɔ	ɔ

T = Tuscarora H = Huron S = Seneca Oo = Onondaga Oi = Oneida
N = Nottoway W = Wyandot C = Cayuga A = Andaste M = Mohawk

3.2. Cognate Sets

The results of the sound shifts outlined in the previous section can be seen in the cognate sets below. Data came from my own work with Tuscarora, Cayuga, Oneida, and Mohawk, from Wood's Nottoway manuscript, (1820), Sagard's Huron dictionary (1632), Potier's Huron grammar (Fraser 1920), Barbeau's Wyandot texts (1960), Chafe's Seneca dictionary (1967), his Onondaga materials (1971, 1973), Woodbury on Onondaga (1977 and personal communication), Campanius' Susquehannock lexicon (1696), Lounsbury's Oneida verb morphology (1953), Abbott's Oneida dictionary (n.d.), and the Cherokee dictionaries in King (1975) and Feeling (1975).

arrow	T. nú:kə
C. kʔanqʔ	
S. kaʔnəʔ	bread
L. cacta	
H. anda	M. kanà:taro
W. uʔndaʔ	Oi. kanà:talok
T. óʔtæh	Su. canadra
N. ata gun	C. onáʔta:ʔ
Ch. kaʔni bullet	H. aṇdatara
	W. daʔ ^a taraʔ
	T. utá:ʔnaræh
axe	N. gotatera
	Ch. ka:tu
M. ató:kʌʔ	
Oi. ató:kʌʔ	
Su. adwəgen/hadoogan	chipmunk
C. ató:kɛʔ	
S. ató:kɛʔ	M. ohryð:kʌʔ
L. addoque	Oi. tsihlyà:kwʌʔ
H. atuhoin/atoen	C. tsihyo:kɛʔ
W. atu:yéʔ	S. tsihóʔkwais

L. caiognen
H. ohioęn
W. uʒúʔyę
Ch. khiyu:ka

T. ukə́hθəh
Ch. akvhs(kwo) face(wash)

fast

cold

M. yothó:reʔ
Oi. yotho:lé
Oo. othó:weʔ
C. othó:weʔ
S. othó:weʔ
L. athau
H. ottoret
W. utu:re
T. áthuʔ
N. watorae
Ch. uhyʌdla

M. yosnó:reʔ/yostó:reʔ
Oi. yosnó:leʔ
Su. (z)atznwri (be) quick
Oo. osno:weʔ
C. osnó:weʔ
S. osnó:weʔ
H. sastoura
T. yustù:ræʔ
Ch. ka:tsʌnu:la

fire

eyes

M. okà:raʔ
Oi. okà:laʔ

Oo. okáħæʔ
C. okáħaʔ
S. kaká:ʔ
L. ygata/hegata/hetgata
H. aata/aara
W. huʔkaráta
T. ukáħræh
N. unkoħarac
Ch. khtho:li

M. otsístaʔ star
Oi. ó:tsisteʔ
Su. uthsijsta
Oo. otsístaʔ
C. otsístaʔ
S. katsí:staʔ
L. asista/azista
H. asista/attista/atsista:
W. tsistaʔ^a
T. utsísnæh burning coal
Ch. tsi:stahla ignite

fish

face

M. okúhsaʔ
Oi. okúhsaʔ
Oo. kakóhsaʔ
C. okóhsaʔ
S. okóhsaʔ
L. hogouascon
H. aęnchia
W. yeyonsha my face

M. kʌ́tsyų
Oi. kʌ́tsyųʔ
Oo. otsyóʔtaʔ
C. otsyóʔtaʔ
S. kętsqħ
L. quejon
H. titsiy(kiaye) (coupe
de) poisson
W. yętso
T. kʌ́:tsýęʔ
N. kaintu
Ch. atsatʔi

five

M. wisk
 Oi. wisk
 Su. wisck
 Oo. hwiks
 C. hwis
 S. wis
 L. ouyscon
 H. ouyche
 W. wis
 T. wisk
 N. whisk
 Ch. hi:ski

foot

M. ahsì:ta?
 Oi. ohsì:ta?
 Oo. ohsí?ta?
 C. ohsí?ta?
 S. ohsí?ta?
 L. ochedasco/ouchidascon
 H. a?chita
 T. úhsæh
 N. saseeke
 Ch. ahlahsihte:ni

hot

M. yo?taríhΛ
 Oi. yo?talíhΛ
 Oo. o?táihç
 C. o?táihç
 S. o?táihç
 L. odayan/odazan
 H. atarihen/otarixhein
 W. tarihaati
 T. yu?ná:ríhç
 N. tariha
 Ch. utihlehka

house, room

M. kanúhsa?
 Oi. kanúhsa?
 Su. onusse
 Oo. kanóhsà:yç? (laying
 house
 C. kanóhs(o:t) (standing)
 house
 S. kanóhs(o:t) (standing)
 house
 L. quanocha/canocha
 H. annonchia
 W. yanóhsa?
 T. ù:nóhsæh
 N. onushag
 Ch. khanΛs(ulv'i) room

jar

M. kátshe? bottle
 Oi. kátshe? pitcher, jar
 Su. kaatzie
 Oo. kç?tsé?ta(kç:wa) (in
 the) bottle
 C. katsç?
 S. katsç?
 H. atsen
 T. utshæh
 Ch. -atsi-

large

M. kowá:nΛ
 Oi. kakwanΛ
 Su. koonæ
 Oo. kowá:nç
 C. kowá:nç
 S. kowá:nçh
 L. hougaanda/hougnenda
 H. (andats)wannen grande
 (chaudiere)
 W. ayúwanç
 T. kwá:nç
 Ch. e:kwa

legging

M. ká:ris
 Oi. ká:lís
 Su. khaalis
 Oo. ká:is
 C. káišra?
 S. kaishæ?
 H. ariche
 W. urí:hša
 N. orisrag
 Ch. a:li:yuhi

new

M. -ase?
 Oi. wá:sé:
 Oo. -ahsè?
 C. á:se:?
 S. wa:se:?
 H. -asse 'green,' 'new'
 T. á:θæ?
 Ch. atse:hi 'green'

now

M. ó:nʌ
 Oi. ó:nʌ
 Su. honan
 Oo. ó:nɛ
 C. ó:nɛ
 S. o:nɛh
 H. onnen
 W. nɛ
 T. ù:nə

one

M. ʌhska
 Oi. uska
 Su. ónskat
 Oo. ská:tah
 C. ska:t
 S. ska:t

L. scgada
 H. escate
 W. skát
 T. ɔ̃:tsi
 N. unte
 Ch. so:kwu

person

M. (y)ú:kweh
 Oi. (y)ú:kwéh
 Oo. ɔ̃:kweh
 C. ɔ̃:kweh
 S. ɔ̃:kweh
 L. águehan
 H. onwe'honhouoy
 W. yomé
 T. ɔ̃:kwæh
 Ch. yʌ:wi

seed, (> corn)

M. ó:nʌhste?
 Oi. o:nʌste?
 Su. onæsta
 L. honesta/honnesta
 H. onesta
 W. tsunɛstat (one) seed
 T. ù:nɛhsnæh

seed, (> corn)

M. kanʌhà(:ke) (on the)
 seeds
 Oi. onʌna?
 Oo. onɛha?
 C. onɛha?
 S. onɛɔ̃?
 H. onneha
 W. dunɛhə?
 T. unɛhæh

shoe

- M. ahtahkwah(ú:wəh)
moccasins
Oi. áhta
Su. atackqua
Oo. ahtáhkwá?
C. ahtáhkwə
S. ahtáhkwá? (q:wəh)
moccasins
L. atta/athe
H. atakwa
T. uhnahkwæh(ə:wæh)
moccasins
N. otagwag

sit

- M. sátyʌ?/sakyʌ?
Oi. sati
Su. tzatzie
Oo. satyξ
C. sakyξ:
S. satyξ:
H. sakieiu
T. θá:ʔnyəʔ

sky

- M. orù:ya?
Oi. olù:ya?
Oo. kaξhya?
C. kaqhy(áte?)
S. keoyate?
L. quémhya
H. aronhia
W. yarónā
T. ù:rəhyæh
N. quakeruntiha
Ch. kalʌ:loʔi

slow

- M. skʌ:nʌ? peace, calm
skenʌ:ʔa slowly
Oi. skʌ:nʌ? peace
Su. otzkaenna pious
C. skξ:nq? peace
S. skɛnʔʔ:h slowly
T. ahskə:nə peace, slowly
Ch. -hskano:l be slow

swim, bathe

- M. satá:wʌ
Oi. sata:wʌ
Oo. satá:wξ
C. satá:wξ
S. satá:wξ
H. sattaħolan
T. θá:ʔnawə
Ch. -atawo:-

three

- M. áhsʌ
Oi. áhsʌ
Su. axe
Oo. áhsɛ
C. ahsɛ
S. sɛh
L. asche
H. hachin
W. áhsɛk
T. ahsə
N. arsa
Ch. tso:ʔi

tobacco

- M. oyʌ:kwa?
Oi. oyʌ:kwa?
Su. ojeengqua
Oo. oyξʔkwa?
C. oyξʔkwa?

- S. oyéʔkwaʔ
 L. quyechta/quietta
 H. ayentaque
 T. uyéʔkwæh 'smoke'

town

- M. kaná:tayʔ
 Oi. tkaná:tayʔ
 Oo. kanátà:yéʔ
 C. kaná:takʔ in town
 S. kanotayéʔ town
 L. canada town
 H. andata
 W. yaⁿdatá·é
 T. utá:ʔnakʔ
 Ch. tekantuhu

two

- M. tékeni
 A. tiggene
 Oi. tékni
 Oo. tékni
 C. tekhni
 S. tekhni:
 L. tigneny
 H. téni
 W. tendi
 T. nǎ:kti:
 N. dekanee
 Ch. tha:li

water

- M. awʔ:ke
 Oo. awéʔke
 L. ame
 H. aollen
 W. amə
 T. à:wəʔ
 N. auwá
 Ch. ama:

3.3. Grammatical Reconstruction

Good grammatical descriptions of Iroquoian languages are only now becoming available, so diachronic morphology has not yet been done. Chafe (in press) outlines the morphology of the Six Nations languages. Mithun (1975) reconstructs Proto-Northern Iroquoian constituent ordering and Mithun (1976) traces the development of subordination mechanisms.

3.4. Semantic Reconstruction

Chafe (1964) examines the relative age of Iroquoian religious practices as revealed in their terminology. William Wykoff is currently investigating tree terms for indications of the Proto-Iroquoian homeland. Mithun (1977) reconstructs terms for a Proto-Iroquoian aquatic culture which included boats and fishing.

4. Conclusion

Much remains to be done in comparative Iroquoian, and, in many areas, such work is only now becoming possible as good descriptive studies appear. The first priority, however, clearly remains the gathering of primary data while they are still available.

Notes

1. King (1975), Feeling (1975), William Cook, personal communication.
2. According to King (1975), three major dialects could be distinguished during the early historic period. The Lower or Elati dialect was spoken along the Eowee, Tugaloo, and headwaters of the Savannah River in northwestern South Carolina and Georgia. The Middle and Kituhwa dialect was spoken along the Oconaluftee, Tuckaseegee, Nantahala, and Little Tennessee Rivers in western North Carolina. The Western or Otali dialect was spoken in East Tennessee and along the Hiwasee and Cheowa Rivers in North Carolina, in northeastern Alabama, and in northwestern Georgia. The Lower dialect, now extinct, was last documented by Mooney on the Qualla Boundary in 1888. The Middle dialect is now spoken by about 700 on the Qualla Boundary. Variants of the Overhill dialect are now spoken by the Oklahoma Cherokee. Another dialect, spoken by about 350 people in the Snowbird community near Robbinsville, North Carolina, appears to be a mixture of the elements from the Middle and Overhill dialects.
3. Elton Green and Robert Mt. Pleasant, personal communication.
4. According to Père Bréboeuf, who, with Père Chaumonot, spent five months among the Neutrals, the Neutrals were "une

Nation differente de langage, au moins en plusieurs choses".

(Thwaites 1896-1901: 21.189)

5. Esther Blueeye, Hazel John, Myrtle Peterson, James Skye, Reginald Henry, Jacob Thomas, personal communication.

6. Reginald Henry, personal communication.

7. Audrey Shenandowa, Reginald Henry, Jacob Thomas, personal communication.

8. Because of the close geographic proximity of the Upper and Lower Cayuga areas, there is considerable dialect mixture.

The fate of the Cayuga s varies considerably from speaker to speaker, not always clearly along geographic divisions.

Some Lower Cayuga speakers have an optional variant [f] for /s/, while others do not. For some, the shift of s > t before r is optional, while for others it is obligatory.

Some speakers have a clear [u] in certain words corresponding to /o/ in the speech of other Cayugas and the other Five Nations languages. The occurrence of this [u] is not phonologically conditioned, but simply a part of certain lexical items such as oná?nu:? 'cold' (Oo. oná?noh, S. ono?no:), húskra 'slippery elm', and niwú:?u 'small' (cf S. niwu:?u 'small'). It also appears in taku:s 'cat', a borrowing, and in atyú: 'ouch', a cry uttered when something is too cold or too hot (cf. Mohawk atyú:). At present, there is not sufficient information to determine the origin of this sound.

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Caddoan

Wallace L. Chafe

The Caddoan languages were at one time spoken in the heart of the Great Plains, from South Dakota southward into northeastern Texas and extending eastward into the woodlands area of Arkansas and Louisiana.¹ Farthest to the north were the Arikara, who continued moving northward in historic times to settle eventually on the Fort Berthold Reservation in North Dakota. They were evidently a northern offshoot of the Pawnee, who lived at first in the Nebraska area but were eventually resettled in Pawnee, Oklahoma. South of the Pawnee, in the area which is now Kansas and part of Oklahoma, were the Wichita, whose descendants now live near Anadarko, Oklahoma. Still farther south were the Kitsai, who settled with the Wichita in Oklahoma in the nineteenth century. The Louisiana-Arkansas area, as well as some of eastern Texas, was inhabited by the Caddo, for whom the linguistic family was named by John W. Powell (1891). They too now live in the Anadarko area.

Linguistically, Arikara and Pawnee are very closely related, though not quite mutually intelligible. Within Pawnee there are two distinct but highly similar dialects, usually called South Band and Skiri. Kitsai is more distantly related

to Pawnee, and Wichita more distantly still. Caddo is only very distantly related to the other languages; thus the deepest division within the family is that between Caddo on the one hand and Northern Caddoan, consisting of all the other languages, on the other. There are at present fewer than 200 speakers each of Arikara, Pawnee, Wichita, and Caddo; the last speaker of Kitsai died about 1940.

There are several surveys of the Caddoan family and of the work which has been done on these languages. In this century the earliest was that written by Alexander Lesser and Gene Weltfish (1932), who as students of Franz Boas had done the first serious linguistic work within the family. A thorough discussion of the work done on Caddoan languages up to the early 1960's was written by Allan R. Taylor (1963a), who provided a bibliography of all primary published sources then available. Additional information of a survey nature was assembled by Wallace L. Chafe (1973, 1976), and a summary of work on this family was provided by Douglas R. Parks in his Preface to a volume of texts (Parks 1977).

The earliest data on these languages come from vocabularies collected by a variety of interested parties during the nineteenth century (Taylor 1963a). Lesser and Weltfish collected information on Kitsai and Pawnee respectively in the late 1920's (Bucca and Lesser 1969; Weltfish 1936, 1937, n.d.).

Lesser's material, which fortunately is extensive, will remain the only existing source of any consequence on the Kitsai language. No further attention was paid to Caddoan languages until Paul L. Garvin worked briefly with Wichita in the late 1940's (Garvin 1950). Daniel Da Cruz, a student of Garvin's, worked with Caddo in the mid-1950's (Da Cruz 1957). Taylor worked with an Arikara speaker in 1961, and published not only the discussion of sources mentioned above (Taylor 1963a), but also the first and so far the only published comparative treatment of this family (Taylor 1963b). But the major descriptive work on Caddoan languages (other than Kitsai) was accomplished subsequent to Taylor's two articles. David S. Rood, Douglas R. Parks, and Francesca C. Merlan completed dissertations on, respectively, Wichita (1969), Pawnee (1972), and Arikara (1975). Rood's and Parks' grammars of Wichita and Pawnee have now been published (Rood 1976, Parks 1976). A briefer treatment of Caddo grammar has also appeared (in Chafe 1976). And a volume of Caddoan texts has been published (Parks 1977), with texts collected by Parks in Arikara and Pawnee, by Taylor in Arikara, by Chafe in Caddo, by Lesser in Kitsai, and by Rood in Wichita. The only comparative work subsequent to Taylor (1963b) has been an unpublished paper by Parks and Rood (1975).

Sapir (1951) suggested that the Caddoan and Iroquoian language families are remotely related, and Chafe (1973, 1976) provided a small amount of evidence in support of such a relationship, as well as a possible relationship of Caddoan to Siouan languages, as might be suspected on the basis of other evidence that Iroquoian and Siouan are remotely related (Allen 1931, Chafe 1964).

In what follows I will sketch some of the features of comparative Caddoan phonology and morphology. For the phonology I have relied heavily on the work of Taylor (1963b), in which I have made only a few minor revisions. That does not mean that our understanding of Caddoan phonology is complete, but rather that the absence of available dictionaries makes it still difficult to find sufficient examples to substantiate further hypotheses in this area. We are now in a period where extensive lexical materials have been collected but have not yet been disseminated so that comparativists can make use of them. For the morphology I have relied on Parks (1976) for Pawnee, Rood (1976) for Wichita, and my own notes for Caddo. Arikara morphology is much like that of Pawnee. So far as Kitsai is concerned, further work with Lesser's material will be necessary before much can be said about phonological or morphological developments in that language.

Phonology

It will be convenient to discuss first the vowels of Proto-Caddoan (PC) and their reflexes in the modern languages, and then to discuss the consonants in a similar way. PC can be inferred to have had three vowels: *a, *i, *u. This system was preserved intact in Caddo, but was modified in one way or another in all the other languages.

Wichita also has three vowels--a, i, e--but they do not fully correspond to the three vowels of PC (see Rood 1975, 1976 for discussions of Wichita phonology). The *u of PC has evidently merged in Wichita with i; compare, for example, Pawnee kítuks 'beaver' with Wichita kitis, or Pawnee asú:ru? 'shoe' with Wichita asir?a. Essentially, then, the two vowels a and i in Wichita reflect the three vowels a, i, and u of PC. Wichita's third vowel, e, evidently developed from changes in various phoneme sequences, as is suggested by the fact that, unlike a and i, which occur frequently either short or long but rarely overlong, e occurs rarely short and frequently overlong (Rood 1976:230). The sequences *a?i, *ahi, and *ayi led to e?e, ehe, and e: respectively (Rood 1976:242). Perhaps also *a?a became e?e in Wichita; compare Caddo ka?as 'fruit' with Wichita ke?es (Taylor 1963b:130).

Pawnee and Kitsai have four vowels: a, i, u, and e. Here too the extra vowel, e, evidently arose through various

changes in phoneme sequences. For example, in Pawnee both ai and ia became e: (Parks 1976:68). Parks (1976:69) notes that Pawnee *e is a defective phoneme, only occurring long in morpheme-initial position and rarely long or short in final position." Arikara has not only the four vowels of Pawnee but also a fifth vowel o, whose origin is at the moment obscure (Taylor 1963b:129). The basic vowel correspondences in the Caddoan languages are summarized in Figure 1.

PC	Caddo	Wichita	Kitsai	Pawnee	Arikara
*a	a	a	a	a	a
*i	i	i	i	i	i
*u	u	i	u	u	u
*a and *i in various sequences		e	e	e	e
uncertain origin					o

Figure 1. Reflexes of Proto-Caddoan Vowels

PC seems to have had at least the consonants listed in Figure 2. In all the Northern Caddoan languages the consonant systems are much like this one. Caddo shows a significantly larger inventory, but even internal reconstruction within that language suggests that its earlier system was something more

like that of Figure 2. (It is perhaps significant that this is likely to have been the consonant system of Proto-Iroquoian as well.)

stops	p	t	k	
affricate		c		
spirant		s		
resonants	w	n	r	y
laryngeals	ʔ	h		

Figure 2. Proto-Caddoan Consonants

In discussing the changes which have taken place in the various Caddoan languages, it will be useful to be able to refer to sets of cognates as examples. Figure 3 provides enough examples for our present purposes. The reconstructions in the first column are for Proto-Northern-Caddoan (PNC) rather than for PC; the latter calls in some cases for further discussion based on the Caddo examples, to which we will turn after the Northern Caddoan languages have been accounted for. For the moment it should be kept in mind that the Caddo examples may not in all cases go back to the reconstructions given here--which are valid only for PNC--but rather to a somewhat different PC reconstruction. All the items in Figure 3 except 'liver' are also found in Taylor

	PNC	Pawnee	Arikara	Wichita	Caddo
'arm'	*win-	pí:ru?	wí:nu?	wi:r?a	mí:suh
'blood'	*pat-	pá:tu?	pá:tu?	wa:ckic?a	bah?uh
'bone'	*kis-	kí:su?	čí:šu?	ki:s?a	
'egg'	*nipik-	ripí:ku?	nipí:ku?	nik ^w i:k?a	nibih
'eye'	*kirik-	kirí:ku?	čirí:ku?	kirik?a	
'intestine'	*riyac-	ré:cu?	né:su?	niya:c?a	nahč'uh
'leg'	*kas-	ká:su?	ká:xu?	ka:s?a	k'á:suh
'liver'	*karik-	karí:ku?	karí:ku?	karik?a	kánk'uh
'skunk'	*niwit	riwit	niwit	niwi:c	wihit
'sun'	*sak- (h)un-	sakú:ru?	šakú:nu?	sa:khir?a	sak'uh
'wood'	*yak-	rá:ku? 'box'	há:ku? 'box'	ha:k?a/ -ya:k-	ya?k'uh

Figure 3. Some Caddoan Cognates

(1963b), but in some cases new words have been added or old ones corrected. Kitsai has not been included, but will be mentioned as relevant below.

The consonant system of Pawnee is identical with that shown in Figure 2 for PC, except that both *n and *y have merged with r. Thus Pawnee has only the two resonants w and r. These mergers took place after the separation of Arikara from Pawnee, as can be seen in the words for 'arm' and 'sun',

where Arikara has preserved the n, and in the word for 'box' (originally 'wood'), where Pawnee has r, Arikara h, but the original consonant may have been *y. One other change in Pawnee was that of initial *w to p (see 'arm').

Arikara has preserved the distinction between r and n only in medial position (compare 'arm' and 'sun' with 'eye' and 'liver'). In initial position Arikara went in the opposite direction from Pawnee and merged *r with n (see 'egg,' 'intestine,' and 'skunk'). That there were originally two resonants here is suggested by alternations such as the appearance of 'intestine' with a root-initial r when preceded by a prefix (Taylor 1963b:128). As noted already for the 'box' example, *y became h in Arikara, at least initially. The resonants in Arikara are thus w, n, and r medially, but only w and n initially. Arikara has developed a larger inventory of affricates and spirants than existed in PC. In addition to c and s, it exhibits palatalized č and š, and also the velar spirant x. č developed from the palatalization of *k before i (see 'bone' and 'eye'). š is the regular reflex of Proto-Caddoan *s in Arikara (see 'bone' and 'sun'), except that *s became x after a or u (as in 'leg'). The s which now occurs in Arikara is the reflex of *c (see 'intestine'). Arikara has also developed voiceless vowels and resonants in certain positions; for example, táwlt 'three' corresponds to

Pawnee táwit.

In Wichita the sound *p has entirely disappeared, having been replaced by w initially (see 'blood') and by k^W medially (see 'egg'). *t has become c in syllable-final position (see 'blood' and 'skunk'). As for resonants, except in certain clusters Wichita has merged *n and *r into n initially and into r non-initially; both are now usually written as the single phoneme r, though it is pronounced n in 'egg,' 'intestine,' and 'skunk' and is so written in Figure 3. Although *y seems to have become h initially (as in 'wood'), it has been kept medially (as in the combining form -ya:k- of this root).

Kitsai seems to have preserved the PC consonant inventory, except that *p has been replaced by k^W. Thus the Kitsai word for 'blood' is k^Wá:tu?. It is of course possible that the original sound was *k^W rather than *p, in which case Wichita and Kitsai have preserved the earlier situation and the other languages have innovated. It should be noted, however, that the Wichita and Kitsai peoples were in close contact, so that a change of *p to *k^W is likely to have been something which diffused within that group. Taylor (1963b: 128) reconstructed both *p and *k^W, but with reflexes of the latter being more like those of *w than those of *p. The evidence is at present too sparse to allow much certainty on this score.

The consonants in Caddo are those shown in Figure 4. The voiced stops in this language are the reflexes of PC *p and *t. Examples are 'blood' and 'egg' (Figure 3) and dahaw? 'three' (compare Pawnee táwit). PC *k, however, remained voiceless, as in 'liver.' As 'liver' also illustrates, glottalized stops and affricates were often produced in Caddo through coalescence of a stop with ? (In 'liver' the

plain stops	p	t	k
voiced stops	b	d	
glottalized stops		t'	k'
plain affricates		c	č
glottalized affricates		c'	č'
spirants		s	š
resonants	m	n	y
laryngeals	?	h	

Figure 4. Caddo Consonants

suffix -?uh was added to the stem kánk-, from *karik-.) An interesting problem is created, however, by the existence in Caddo of a glottalized stop in k'as- 'leg,' corresponding to PNC *kas-. One possible explanation is that glottalized stops were already present in PC, and that they were simplified in Northern Caddoan. (It may also be noted that the

Caddo root for 'wood' is yaʔk-, corresponding to PNC *yak-, suggesting the loss in Northern Caddoan of ʔ in preconsonantal position as well.)

The palatalized affricates and spirant developed in Caddo, at least in many cases, from earlier k or s followed by y, as when the locative suffix -yih was added to kánk- and k'as- to produce kánkčih 'in the liver' and k'á:ših 'in the leg.' The voiceless stops p and t which now exist in Caddo are principally the reflexes of w and n respectively when they occurred initially in verbs. Caddo n reflects both *n and *r of PC, whereas y has been retained (as in 'wood'), although it has become d initially in verbs. m developed out of w in some Caddo dialects, but not in the principal one spoken today. The latter dialect has, however, borrowed words with m both from other Caddo dialects and from other languages. The new nasal occurs, for example, probably as a means of avoiding an earlier taboo word with w, in matt'uh 'penis,' corresponding to Wichita wacʔa and Pawnee pá:cuʔ 'vagina.' English Commissioner (of Indian Affairs) and Bohemian have been borrowed as kamíšʔnah and buhímin respectively. One word for 'cat' is onomatopoeitic miyuʔ. Others are míst'uh and č'á:mis, both probably containing an element -mis- derived from Spanish mizo (Landar 1959). The

sequence nw also led to mm within a word, and m initially, as in mí:suh 'arm' from Pre-Caddo *niwisʔuh. If this last item is indeed related to PNC *win-, it suggests a metathesis of syllable-initial and syllable-final consonants either in Caddo or in Northern Caddoan.

The basic consonant correspondences in the Caddoan languages are summarized in Figure 5. Additional Caddo consonants arose in the ways sketched above.

Morphology

The morphology of nouns in the Caddoan languages is far simpler than that of verbs. In all the languages there are some nouns which occur as separate words without affixation of any kind, but for many nouns a suffix is required. All the languages have a neutral noun suffix which is used when no other suffix with a more specific function is called for. In Pawnee, Arikara, and Kitsai this suffix has the shape -uʔ, in Wichita -ʔa, and in Caddo -ʔuh. In PC it must have contained a glottal stop but the quality and even the position of the accompanying vowel is problematic. (The Iroquoian languages have a 'simple noun suffix' of identical function whose shape is usually -aʔ, though occasionally the vowel is a different one.) For examples see Figure 3.

PC	Pawnee	Arikara	Wichita	Caddo
*p	p	p	w-, k ^w	b
*t	t	t	t-, -c	d
*k	k	k, č	k	k
*c	c	s	c	č
*s	s	š, x	s	s
*w	p-, w	w	w	p ⁻² , w
*n	r	n	n-, r	t ⁻² , n
*r	r	n-, r	n-, r	t ⁻² , n
*y	r	h	h-, y	d ⁻² , y
*?	?	?	?	?
*h	h	h	h	h

Figure 5. Reflexes of Proto-Caddoan Consonants

Pawnee and Wichita have instrumental and locative suffixes which may occur in place of the neutral noun suffix; Caddo has only a locative one. There may be a correspondence between a PNC locative suffix **-hiri?* or **-hiri^h* (Pawnee *-hiri?*, Wichita *-hiri^h*) and the Caddo locative suffix *-yih*, both being descended perhaps from a form **-yih*. (This form is reminiscent of an Iroquoian suffix *-neh*, of similar function.) In both Pawnee and Caddo there are certain body part nouns which occur only with the locative suffix (never with

the neutral noun suffix), even though no locative meaning may be intended. (The same is true of some body part nouns in the Iroquoian languages.)

One other noun suffix that seems reconstructable for PC is a diminutive suffix **-ki*. It appears in Pawnee with the shape *-ki* (or, less often, *-kis* or *-kisu*) and in Caddo as *-ci*?. Pawnee *ré:cu?* 'intestine' contrasts with *récki* 'small intestine,' Caddo *náttih* 'woman' with *náttihci?* 'girl.' In both languages there are some nouns, especially various animal names, which occur only with this diminutive suffix: Pawnee *rikucki* 'bird,' Caddo *k'apáhci?* 'chicken.'

Verb morphology in the Caddoan languages is unusually complex, these languages all being extreme cases of the type known as polysynthetic. Parks and Rood (1975) have made a start on reconstructing certain verbal prefixes. Enough descriptive data are now available for a detailed study of comparative verb morphology, taking all the languages into account. As is true of other areas of these languages, the Caddo verb differs markedly in structure from the Northern Caddoan, but various resemblances are apparent and can be taken to reflect features of the PC verb. I will mention a few of them below, and suggest possible parallels in the Iroquoian languages.

In all the Caddoan languages there is a set of verb suffixes expressing, for the most part, aspect. One aspect suffix that may be reconstructable for PC may have had the shape *-s, perhaps with an associated glottal stop, and the meaning 'imperfective' or 'progressive' (ongoing action). Pawnee has an imperfective suffix -:hus (Parks 1976:195) and Wichita a similar suffix -s (Rood 1976:22). Probably cognate is the 'progressive' suffix of Caddo, -sa? (Chafe 1976:75-77). (Iroquoian has an aspect suffix of similar meaning whose shape is often -s or -?s.)

Verb prefixes in the Caddoan languages are numerous and diverse. They express, among other things, agreement (person, number, and case being divided among various prefixes in diverse ways), evidentiality, modality, and miscellaneous other functions. Noun incorporation is frequent. One peculiarity of the family is the occurrence of verb stems in two parts, which may be discontinuous if certain morphemes are present to separate them. The existence of a separate 'preverb,' as it has been called, is most apparent in Caddo, where the great majority of verbs have such an initial element, and where it is easily identifiable as to shape. In Wichita the complexity of the morphophonemics makes the preverb less easy to isolate. In Pawnee the preverb seems usually to be

a frozen relic of a benefactive or middle voice element (Parks 1976:143-144), and the same may be true in Wichita, whereas in Caddo there is a good possibility that these elements are at least in part derived from former instrumental prefixes (Chafe 1976:44-47). The existence of preverbs in all the languages, but with possibly diverse sources, presents an interesting challenge for future historical work.

Markers of person agreement include *k- (all languages) or *t- (Northern Caddoan) for first person and *s- for second person, with third person generally left unmarked. An indefinite third person, however, was marked with *y-. There is some indication that subject (or agent) agreement was originally marked with -i- following the person marker, and object (or patient) agreement with -u-. Thus Caddo has ci- (from *ki-) for first person agent and ku- for first person patient, as well as yi- for indefinite agent and yu- for indefinite patient. (Correspondences in Iroquoian languages are striking in this area: k- for first person, t- for inclusive, s- for second person, and -e- and -o- for agent and patient. Indefinite agent is marked by ye-.)

The marking of number agreement has become especially complex in the Northern Caddoan languages. Rood (1976:186-187) lists the morphemes and morpheme combinations expressing

number agreement in Wichita as shown in Figure 6. Pawnee has

-hiʔ-	'subject nonsingular'
-ʔak-	'third person patient nonsingular'
-ra:k-	'nonthird person plural, object if both nouns are nonthird'
-hiʔ- ... -ʔak-	'nonthird person object dual, otherwise same meaning as -ʔak- alone'
-ra:kʔak-	'combine meanings of -ra:k- and -ʔak-'
-hiʔ- ... -waʔ-	'dual subject with a few verbs'

Figure 6. Number Agreement Morphemes in Wichita

similar complexities (Parks 1976:166-170). The Caddo system is a bit simpler, as shown in Figure 7. The clearest reconstruction for PC is a form *wa-, perhaps indicating plurality for animate nouns. (In Iroquoian wa- marks plurality of nonthird person referents, which, it may be noted, are necessarily animate.)

Another verbal item which is reconstructable for PC is a dative or benefactive marker with the shape *t- or *r-, occurring after the agreement prefix but before the verb root

-haka- or -na-	'nonsingular patient'
-wiht-	'dual agent or patient'
-wa-	'plural animate agent or patient'

Figure 7. Number Agreement Morphemes in Caddo

or stem. In Northern Caddoan these forms have been analyzed as -ut- or -ur- (Parks 1976:143-144, 221-222; Rood 1976:19-20, 141-149), and have often become frozen as preverbs. The Caddo evidence (Chafe 1976:72-74) suggests, however, that the u was originally part of an agreement prefix, perhaps *ru- (Caddo nu-), marking a third person beneficiary as in tuc'ah 'is to him, is his' from Pre-Caddo *nu-t-ya?ah 'him-dative-be.' (Probably this dative marker corresponds to the Iroquoian 'semi-reflexive' -at-, sometimes -an- or -ar-, which occurs in the same position, has overlapping functions including occurrences in numerous frozen combinations, and may also have picked up its vowel, in this case a, from preceding agreement prefixes.)

Enough information on sentence structure and textual organization is now available from Parks (1977) that a start can be made toward comparing sentence and discourse structures in these languages. I would like to stress the desirability of undertaking such work while the languages (other than Kit-sai) are still in active use, for it is particularly in the

areas of syntax and discourse that fresh hypotheses, not yet available in any of the published grammars, will have to be tested against further data not yet elicited. Important strides were made in Caddoan linguistics during the 1960's, but a great deal more can be done--and much of it must be done soon if it is to be done at all.

Notes

1. I am grateful to Alexander Lesser, Douglas R. Parks, David S. Rood, and Allan R. Taylor for their helpful comments on an earlier draft of this chapter. The chapter was written while I was a National Endowment for the Humanities Fellow at the Center for Advanced Study in the Behavioral Sciences. The support of both institutions is gratefully acknowledged.
2. In verbs only.

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Ms.

Siouan

David S. Rood

O. Introduction

O.1. Languages

The Siouan languages are (or were) spoken throughout central and southeastern North America. From the Great Lakes to the Rockies in Canada and the Northern U.S. we find Winnebago, Dakota (in several dialects, variously called Santee, Yankton, Yanktonai(s), Teton (also called Lakhota or Lakota), Assiniboine, and Stoney--though the latter two are often treated as the same, and everything except Santee and Teton is often called Nakota), Mandan, Hidatsa, and Crow. In addition, in the central U.S. we find Dhegiha (usually separated into Quapaw, Kansa, Osage, and Omaha-Ponca) and Chiwere (composed of Iowa, Oto, and the extinct Missouri). Some scholars include Winnebago in Chiwere, but in this paper, unless otherwise noted, the two are kept separate. From the southeastern U.S. we have documentation for the three extinct languages Tutelo, Ofo, and Biloxi. There were other Siouan languages spoken in what is now Virginia and the Carolinas at the time of the first European contact, but we know practically nothing about them. Catawba is also Siouan (see Siebert 1945), but its relationship is so distant that it rarely enters into discussions of com-

parative Siouan.

0.2. Morphological Patterns

Morphologically all the languages have at least remnants of personal, locative, and instrumental prefixes and number, tense, and aspect suffixes or enclitics on verbs, and most contrast alienable and inalienable possession by means of prefixes on noun stems. There are distinct, separate words for adverbial notions, and separate words for conjunctions; the extreme polysynthesis typical of many American Indian families is not common. Syntactically, all are fairly typical SOV languages.

Historically, there has been a certain amount of fusion between personal prefixes and stems, so that the daughter languages often exhibit more than one verbal conjugation type. In particular, stems in *r- (also reconstructed *y- or *L-) show irregular paradigms in most of the languages. Similarly, kinship terms and some other inalienably possessed nouns have paradigms which differ from those of the other possessable nouns.

0.3. Problems with Resources

In contrast with language families such as Athapascan and Algonkian, Siouan historical studies are at a fairly primitive

stage. In part this is due to a dearth of interested scholars; but more importantly, it is a function of the relatively low reliability of much of the data which are generally available, or of the absence of data on some languages. Field work in the 19th and early 20th centuries resulted in data on Biloxi, Ofo, Tutelo, Dhegiha, Chiwere, and Dakota, but there are so many inconsistencies from one source to the next that it has been difficult to conduct detailed comparative studies. Available information on Crow, Hidatsa, Mandan, and Winnebago (and newer Dakota and Lakota material) is generally more useful. Since the early 1970s, new interest in most of the living languages has prompted re-examination of the available material, so we hope that the data problem will be resolved before much longer. For a survey of the history of Siouan scholarship, see Chafe (1973:1178-1189 and 1976); for some idea of work in progress in 1976, see Rood (1977).

There are several important specific problems to discuss regarding Siouan resources, since they pervade the work we will be dealing with in detail below. First, the large quantity of data on Dakota provided by 19th century missionaries is generally reliable except for the treatment of voiceless stops. Dakota has a clear and important distinction between aspirated and unaspirated p, t, č, k; but the published materials before about 1935 generally ignore the distinction completely; hence,

Dorsey (1885) and Holmer (1945, 1947) often present forms with unaspirated stops where there should be aspiration, and Wolff (1950-51), although aware of the problem, usually cites similarly incorrect forms. Even Buechel (1970) is not always helpful in this respect: it does contain forms with dotted p·, t·, k· for plain, and marked ḡ, ṡ, ḳ for aspirated stops, and these are reliable; but numerous forms have stop consonants without diacritics, or c, and these are ambiguous.

Similarly, most Dakota resources make an artificial distinction between q and y, generally in an attempt to spell homonyms distinctly.

A further important problem with Siouan material results from the fact that James Owen Dorsey, who collected most of what we have on Chiwere, Dhegiha, and Biloxi, did not always record the difference between aspirated and unaspirated stops. Robert Rankin (1974) has compared his own field notes with Dorsey's published and unpublished Dhegiha material, and reports that the Dhegiha languages all have four series of stops: glottalized, aspirated, tense unaspirated, and lax. In Kansa and Omaha-Ponca the lax stops are voiced, in Quapaw and Osage they are not. Dorsey's printed materials utilize four sets of symbols for stops: glottalized, voiced, plain, and inverted boldface; but the plain and inverted boldface symbols often seem to be used interchangeably. Matthews (1958:10) noted

that the transcriptions of individual words vary from one source to another in the Omaha-Ponca materials; and Rankin finds systematically different usage from language to language, as follows¹:

	<u>Omaha-Ponca</u>	<u>Quapaw</u>	<u>Kansa</u>	<u>Osage</u>
glottalized	p' t'(k')	t' k'	p' t' k'	p' t' k'
aspirated	p t k	p t k	p t k	p t k
tense	ḍ ʔ ɣ	p t k	p t k	p t k
lax	b d g	ḍ ʔ ɣ	b d g	ḍ ʔ ɣ

Even in the Omaha-Ponca material, Rankin notes, there is random variation between upright and turned p, t, k, thus confirming the general observation that Dorsey recorded aspiration inconsistently. However, Rankin assures us that a turned symbol reliably represents a Quapaw or Osage lax stop or an Omaha-Ponca tense stop; it is only the plain stops which are ambiguous. That is important, for it means that Holmer (1945), who essentially restricted himself to studying Omaha-Ponca forms with turned stops (sonant-surds), was using accurate recordings.

Both Wolff (1950-51) and Matthews (1958, 1959, 1970) chose to cope with Dorsey's inconsistency by leveling: the turned letters are not distinguished from the upright ones. Hence, they missed some problems and created others. For the same reason, they both dismissed Holmer's important discoveries either silently (Wolff), or as accidental (Matthews 1958:10)

(cf. further discussion of Matthews' position in 2.2 below).

My final comment on resources repeats the observations in Haas (1969) concerning Swanton and the Ofo and Biloxi dictionaries. She chides Siouanists for not searching the dictionaries carefully enough, for the English alphabetical lists are indexes to the Indian entries where the words are to be found, and not necessarily an English-oriented dictionary; in fact, the word in the English list may mean the opposite of what you might expect. Moreover, Swanton often put words where they did not belong (e.g., 'ripe' is found under 'blue' in the Biloxi work (Haas 1969:287)). Haas also objects to the practice by both Wolff and Matthews of ignoring Ofo aspiration, particularly since Swanton took the trouble to remark that it was very clear (Haas 1969:289). Like Dorsey, Swanton apparently failed to record aspiration consistently, resulting in doublet transcriptions; but when aspiration is marked, one can be quite sure that it is accurately recorded.

In what follows we will survey Siouan historical studies under four headings: subgroupings, historical phonology, historical grammar, and semantic subsystems. No work has been done on diachronic syntax, and such work as has been done concerning relationships between Siouan and other families is surveyed in Chafe (1973:1189-1199), to which we can add only Rudes (1974) on Siouan-Caddoan second person pronoun forms.

1. Subgrouping

The earliest historical work in Siouan was aimed at establishing which languages were more closely related. At first the subgrouping was based largely on geography; thus, for example, Biloxi and Ofo were put together, while Tutelo and Catawba were similarly associated (cf., for example, Kieckers 1931 as cited in Voegelin 1941b). In 1936, however, Swanton demonstrated that the linguistic affiliations of Tutelo and Catawba were quite distant, and that there was no reason to consider them a subset of Siouan in any sense at all.

1.1. Voegelin

A few years later Voegelin (1939) discussed the closeness of Ofo and Biloxi, and shortly thereafter (1941a) that of Crow and Hidatsa.

1.1.1. Pioneering papers. In the Ofo-Biloxi paper, Voegelin presented numerous sound correspondences ordered into some 29 sets, each correspondence said to be supported by from one to over thirty examples (most correspondences seem to have between 10 and 20 examples, but only one illustration is actually printed for each correspondence). He thus left little doubt that the languages are fairly closely related--but he said nothing about any possible affinities with the other Siouan languages.

Voegelin's Crow-Hidatsa paper is concerned with demonstrating that they are separate languages, rather than dialects of one language as Dorsey (1885) had asserted. His method is to show that various apparently rather extreme sound discrepancies exist in many places (he finds a total of seven). Pierce (1954) seems to confirm that there is not much mutual intelligibility between Hidatsa and Crow, even though his study was based on only one speaker of each language.

The most frequently utilized paper on subgrouping is Voegelin's classification article (1941b), which set up three groups: Ohio Valley, containing Ofo, Biloxi, and Tutelo; Missouri River, containing Crow and Hidatsa; and Mississippi Valley, which includes all the others. Following Haas (1968, 1969), we use the term Southeastern in place of Ohio Valley, since the latter is used by archeologists for a culture group, not a linguistic one.

1.1.2. Southeastern Siouan. Voegelin's evidence for the separateness of the Southeastern group was in the form of six sound correspondences, where the Southeastern languages shared one reflex, while the other languages had something else. The correspondences are presented in terms of reflexes of purported Proto-Siouan elements which, in general, no one else has accepted, but that should not detract from the importance of the correspondences themselves. Let us look at the six isoglosses

and discuss them one at a time, in the light of subsequent research.

1. Southeastern sibilant-vowel-stop corresponds to other languages' sibilant-stop sequences. Example: B(iloxi) ąsép, Of(o) ąfhépi, T(utelo) nisép (an apparent misprint in the Voegelin paper has hisép), but Q(uapaw) ispe, Os(age) (mohi)θpe, D(akota) qspe 'axe.' Wolff (118) reconstructs this to *ąsepi, and the reflexes of both *s and *p are regular² (including Chiwere ǰθwe and H(idatsa) (wi-)ipca, allowing for metathesis), but Wolff makes no attempt to deal with unstressed vowels, and Matthews (1958, 1970) does not deal with this set at all. No one else has ever pointed out any other instances of this loss of a vowel in non-Southeastern languages between *s and *p or any other stop.

2. Southeastern -tk- after a nasal vowel corresponds to plain -k- or -g- in the other languages (with the loss of vowel nasalization in Crow and Hidatsa). Example: T eştk, B sqtkáka, D sųkáku (Voegelin has şųkaku), Om(aha)P(onca) isága, W(innebago) hisųkara (the correct Winnebago citation form is hisųk (Miner:personal communication)), C(row) icúuke, H(idatsa) icúuka 'his younger brother.' Both Wolff (118) and Matthews (1958:131, 1959:261) reconstruct this as *sųk(a) (Matthews 1970 as *şúka), but neither discusses the intrusive -t- in Southeastern.

Nowhere else has T š been said to correspond to other languages' s, so the status of Voegelin's Tutelo form as cognate is seriously questioned; but Wolff and Matthews cite the appropriate Tutelo form as (w)isqtk. I cannot find Voegelin's form in any Tutelo list; the Wolff/Matthews form is in Hale (1883:37). The w- is excluded as not cognate--it is part of the recorded form. Matthews adds as the Ofo cognate akifōtku 'Saturday' (Ofo f comes from *s, Ofo s from *x). Thus, everyone agrees that Southeastern -tk- (in this word) corresponds to g or k elsewhere, but no one has offered an explanation for the phenomenon, nor any additional cognate sets illustrating it.

3. Southeastern languages sometimes have simple consonants when the other languages have clusters. Thus Southeastern -n- corresponds to a cluster elsewhere, as in 'three': D yamni, K(ansa) yabli, Os āabāi, M(andan) naamini, but B dani, Of tāni, T naani. The other example Voegelin cites ('white,' D et al. ska, B sa), mixes two different cognate sets (Matthews 1958:115, 117; Wolff 1950:118, 176). Voegelin's generalization does hold, but the simplification of clusters is not a uniquely Southeastern phenomenon; Holmer (1945) showed and Rankin (1974) confirmed that in Dhegiha (and apparently also in Dakota) something quite similar has happened, although not necessarily to

the same clusters in each case.

4. Southeastern languages all have n- where Dakota has zero and other languages have h-. Example: 'day': B napi, Of nopi, T nahąbe, Os hąba, Q hųba, W hąba (the correct form is hąp (Miner: personal communication)), D ąpe. Matthews (1958:35) claims that this is true³ only before *ǣ, and only in Ofo and Biloxi: it is the h of the Tutelo form which is cognate with the other Southeastern languages' n. Thus this feature is not at all diagnostic of Southeastern unity.

5. In Southeastern, some ǰ correspond to x of other languages: 'ghost': D wanaxi, Dh(egiha) wanaxe, H iraxi, but B anaǰi, Of naǰi, T wanuǰi. Neither Wolff nor Matthews found any recurrences of this correspondence. Wolff reconstructs 'ghost' *wa-nąx (120) but the *x here does not have the same reflexes as his normal *x, illustrated earlier (without citing this form, 118). Matthews reconstructs *náxi (126), but does not list the Southeastern forms as cognates. Since no further examples of this correspondence have been found, we must question its value as diagnostic of the grouping.

6. Southeastern ǰ corresponds to ǰ elsewhere. This correspondence holds up regularly: Voegelin cited the word for 'dog'; Wolff (116, under kʸ) lists also 'hand,' 'wash,' 'grease,' 'tongue,' et al. (n.b. 'dance' is wrong here); Matthews (1958:129, 1970:set 44) also recognizes this as a re-

gular correspondence and lists the reflexes under his *s̄ (in 1958) or *s (in 1970).

Voegelin's evidence for Southeastern unity thus turns out to be extremely weak. Of the six supposed isoglosses he presents, nos. 1, 2, and 5 are true only for the single word cited, and nos. 3 and 4 are not exclusively Southeastern developments; hence, only no. 6 has stood the test of further investigation. Nevertheless, the conclusion that these three languages form a distinct subgroup has never been challenged. Holmer (1947:4) asserts that they 'apparently constitute a linguistic group.' Wolff (1950:65) lists 36 cognates among the three languages, as a demonstration that 'these three languages clearly represent a distinct group within the Siouan family.' But since every one of the examples has a full-fledged Siouan etymology, it is not at all clear what this list really proves. Matthews (1958) groups the languages together as Southeastern (see pp. 49ff), but never discusses his reasons for doing so. Later Matthews (1959:253 and 1970:98) simply announces that he agrees with the others in setting up Southeastern as a subfamily. Finally, Haas (1968, 1969) reconstructs a number of Proto Southeastern Siouan forms, but again presents only vague arguments for accepting this as a subgroup, namely the observation (1968:83) that '(i) some sound shifts are shared by all three of these languages...and (ii) some vocabulary items are shared by two

or more of these languages for which cognates in other Siouan languages appear to be lacking.' Among the words in the latter category are, apparently, 'basket,' 'corn,' 'duck,' 'rabbit,' and 'snake.' Examples of the former category are hard to determine because we do not know what Haas herself postulates for Proto Siouan as a whole.

It seems unlikely that the cohesiveness of this subgroup can be challenged; rather, further investigation will probably only tend to support it. However, confirmation will have to come from the grammatical systems, from the quantity of shared unique vocabulary, or from shared intermediate phonological developments such as Matthews (1970) undertakes to describe. Rankin (personal communication) observes that the loss of glottalization, shared only with Missouri River (which is far away), is a similar kind of phonological change unifying this group. Headley (1971:49) suggests that glottalized stops may have been an innovation in Mississippi Valley languages, but gives no evidence for this beyond the geographical distribution of the phenomenon. Except for Voegelin's \check{s}/\check{c} correspondence, none of Matthews' 72 sets of sound correspondences shows any Southeastern reflexes which are not also shared elsewhere in Siouan. One contribution someone could make to this field would be to assemble evidence really confirming the unity of this subgroup.

1.1.3. Missouri River Siouan. The evidence for the unity of the Missouri River group is much stronger. Among the diagnostic characteristics are their common development of Proto Siouan nasal vowels as oral, of *s as c [ts], of *m, *n as w, r, of glottalized stops as plain stops, and of some *y as r. Only the first two of these are uniquely Missouri River traits (w and m, r and n are in complementary distribution in Mandan, too (Hollow 1970:19-24); Southeastern also lacks glottalization; and r is often the regular reflex of *y in Mandan (Hollow: personal communication), Chiwere and Winnebago). Nevertheless, the package as a whole is uniquely Missouri River. Moreover, the languages also share enough identical vocabulary so that scholars have sometimes declared them to be dialects of a single language. Actually, the vowel and consonant denasalization phenomena alone are adequate evidence for setting Hidatsa and Crow apart from all the other languages; the Mandan distribution of [m]/[w] and [n]/[r] is quite different. Thus, they are not only close to each other; they are also separate from everything else.

1.1.4. Mississippi Valley Siouan. Voegelin's Mississippi Valley group has received less general acceptance over the years than have the others. Voegelin himself was unsure of its cohesiveness, suggesting (1941b:249) on the one hand that Winnebago might be closer to Iowa-Oto-Missouri than to anything else,

and yet, on the other hand, that perhaps the languages which had clusters should be opposed to those which developed CVCV sequences (Dorsey's law; cf. below), namely Winnebago and Mandan. In his Crow-Hidatsa paper (1941a:39) he was much less hesitant, and declared flatly that Mandan and Winnebago were one group, as opposed to all the other Mississippi Valley languages. This alignment has never even been acknowledged, let alone accepted, by any other published source.

Additional hypotheses about subgroups were put forth by Wolff (1950), Matthews (implicitly in 1958; explicitly in 1959 and 1970), Headley (1971), and Chafe (1973), but of these scholars only Headley offered clear and specific reasons for his conclusions.

1.2. Wolff

Wolff (1950:61) presents the most conservative division, assuming that each language is a separate subgroup until proven otherwise. He lists seven equal groups: Crow-Hidatsa, Mandan, Dakota, Chiwere-Winnebago, Dhegiha, Southeastern, and Catawba. He presents numerous cognate sets for each of the groups of languages he combines, suggesting that these prove the closeness of the languages. However, such evidence really proves nothing, since the same words also have cognates outside the group.

1.3. Matthews

Matthews (1958) does not discuss subgroups at all, but when he cites reflexes of Proto morphemes (pp. 48-86), he does so using six groups: Crow-Hidatsa, Mandan, Dakota, Chiwere (which for him includes Winnebago), Dhegiha, and Southeastern. This is the same as Wolff's classification, since Matthews leaves out Catawba everywhere. In Matthews (1959:253), however, we find the assertion that 'on the basis of evidence from comparative linguistics, the Siouan languages are divided into four groups': Missouri River, Mandan, Mississippi Valley (Dakota, Chiwere, Dhegiha), and Southeastern. He cites as sources for the 'comparative linguistics' evidence Voegelin (1941b), Wolff (1950-51), and his own work, which, as we have seen, do not directly support this statement. Finally, in 1970, he cites Wolff's list and then modifies it: 'We agree with him that Mandan constitutes a separate subfamily; but we agree with Voegelin that Dakota, Chiwere, and Dhegiha constitute a single subfamily.' Thus he repeats his 1959 schema, but again without saying why.

The 1970 paper traces a number of separate phonological developments from Proto Siouan into the subgroups and then into individual languages. This is the best kind of evidence for subgroups, but one wonders about possible circularity. Have the subgroups been established because they show common inter-

mediate developments, or have common intermediate developments been described because we 'know' that the languages form a subgroup? The answer to this question is not at all clear.

1.4 Headley

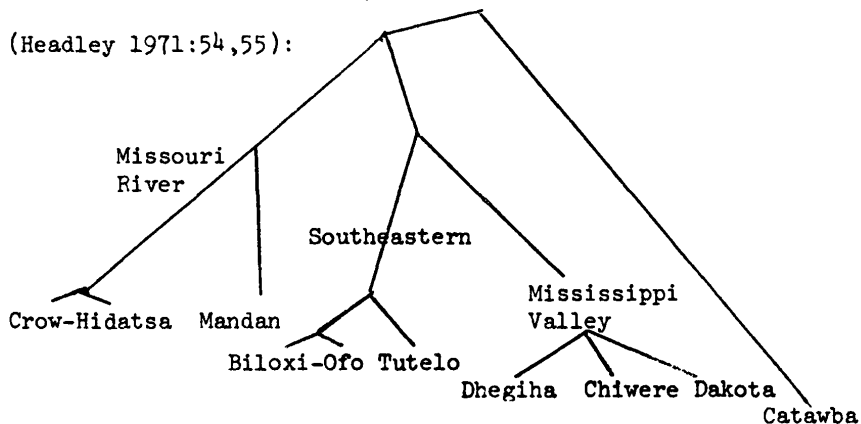
Robert K. Headley (Headley 1971)⁴ has studied the problem of Siouan subgrouping using the lexicostatistic technique known as glottochronology. This method measures the relative amount of shared cognate vocabulary (from a specific list of supposedly stable cultural concepts) in pairs of languages. Based on the hypothesis that the amount of such vocabulary is inversely proportional to the time the languages have been separate, i.e., that languages which have been separated only a short time will share most of these vocabulary items, one can determine the relative time of separation for pairs of related languages.

Headley subscribes to the strong version of this theory, namely, that actual dates of separation can be determined by it. Most linguists do not concur with this use of the figures, but one can nevertheless concede that the technique measures relative subgrouping in a family with respect to core vocabulary retention.

Headley used some of his own field work, but mostly standard published sources for his terms, and apparently determined cognates by inspection. I have not checked the non-Teton data

he used, but the Teton forms are strange. Not only does he omit all indication of aspiration, but he also uses recordings which interchange symbols for the same sound at random: nasalization is sometimes a hook, sometimes postvocalic n, and sometimes omitted; [ɣ] is sometimes g, sometimes r; [x] is either x or h; [ʒ] is either z or j, etc. These details would be disastrous for attempts at precise cognate determination by sound correspondences, but they probably do not matter when the determination is not so rigid.

Headley calculated maximum and minimum cognate percentages for the pairs of languages, then examined the figures in matrices to discover clusterings (Headley 1971:45-46). He concluded that a Siouan family tree would look roughly like this (Headley 1971:54,55):



The only difference between this schema and the others is at the second level of splits: no one else has suggested this initial binary division into Mandan-Missouri River versus South-

eastern-Mississippi Valley. If Matthews' hypothesis of sound-change diffusion (see 2.5 below) is accepted, then one must also assume enough proximity for lexical diffusion as well. This would distort the cognacy counts when the latter are made by inspection rather than by carefully determined sound correspondences, since borrowings would be included as cognates. Despite the appearance of a basis in hard, quantified facts, then, even this study remains inconclusive.

1.5. Chafe

Chafe (1973:1188-89) reviewed the history of Siouan subgrouping and concluded that the four groups (plus Catawba) which Matthews listed are the most reasonable; but he provided no explanations about how he came to that conclusion.

1.6. Summary

We are thus faced with a consensus about subgrouping which is based largely on the impressions of those who have studied the family, though there is a clear convergence of opinions from workers approaching the problem from different angles. Voegelin's evidence for Southeastern Siouan is weak, and his evidence for Mississippi Valley is negative: that is his wastebasket. Wolff's conclusions are also based on negative evidence, but he chooses to separate rather than to combine. Matthews (1970)

seems to provide considerable evidence in favor of early Mandan separation and of Southeastern unity, but none in favor of Mississippi Valley unity, although he does not claim, directly, that this is a point to the article. Instead, he suggests (personal communication) that the notion of a tree structure for this family breaks down, since distinct languages undergo the same innovations (see 2.5 below) presumably by some sort of wavelike spreading. Consequently, talking about 'Mandan separateness' or 'Mississippi Valley separateness' becomes pointless. Finally, Headley (1971) has relatively concrete evidence for his conclusions, but at least some linguists remain skeptical about the validity of results obtained this way. Other Siouanists apparently have simply accepted the answer offered by Voegelin or Matthews. The really definitive statement about Siouan subgrouping, taking everything into account, thus remains to be written.

2. Historical Phonology

Using the term 'comparative' in a nontechnical sense, we may say that comparative work on Siouan languages dates from the early nineteenth century. Adelung and Vater (1816:3:3: 238-274, 306-308), summarizing the reports of such explorers as Pike and Lewis and Clark, 'compare' vocabulary lists of languages to show how similar they are, and Gallatin (1836)

uses a similar 'comparative method' to establish linguistic families. Similarly, Siebert (1945) quotes 'comparative' remarks by Morgan (1870) regarding Catawba; and Hale's description of Tutelo (1883) and Swanton's first mention of Ofo (1909) are primarily concerned with demonstrating Siouan affinities. Most of this material must be considered informal comparison today, but at the time it had the desired effect of establishing correct familial relationships.

2.1. Dorsey

The first technical comparative study of Siouan languages is Dorsey (1885), although, in keeping with the accepted practice of his time, there is no systematic attempt on his part to describe historical developments. The article presents 204 words and morphemes in Dakota, Winnebago, Chiwere, and three Dhegiha dialects, arranged in tables so that words of the same meaning appear on the same line. Sound correspondences are for the most part left to the reader to determine, and of course any cognates in which meanings have shifted appear on different lines. Thus Dakota káya 'make' is compared with Chiwere ú 'make' instead of with its true cognate, gáxe 'make marks' (Matthews 1958:109).

The 'comparison' in the text of the article is of features of the sound systems: remarks such as that Dakota lacks á, r,

and θ , while Chiwere does not have \underline{b} , \underline{g} , $\underline{\check{z}}$, \underline{l} , \underline{s} , or \underline{z} . Nevertheless, Dorsey makes some attempt to enumerate specific correspondences, such as that between Dakota initial \underline{d} - and Dhigiha $\underline{\check{s}}$ + dental clusters; he could even be said to 'reconstruct' $\underline{*sd}$ - for Dakota in such words. Furthermore, he takes note of the frequency with which certain fricatives seem to alternate in (nearly) synonymous words within and between the languages, thus pointing to a problem in comparative Siouan which was not fully solved until Matthews (1970).

Dorsey's most completely formulated sound law, however, was one which is now referred to by his name. Dorsey's law describes the regularity with which Winnebago has changed Proto Siouan $*C_1C_2V_1$ sequences into $C_1V_1C_2V_1$ sequences when the first member of the cluster was an obstruent and the second a sonorant. Although Voegelin (1939, 1941a,b) and Wolff (1950:173) point out that in some respects Mandan developed similarly, the credit for first formulating this statement about Winnebago belongs to Dorsey. It is probably the most important contribution made by the article.

2.2. Holmer

Between 1885 and 1945 no work on Proto Siouan as such was published. Instead, scholars focused on the question of which languages belonged together as subgroups within the family.

The next historical phonological work appeared in two papers by Nils Holmer (1945, 1947) of the University of Uppsala. Both utilized data published by James Owen Dorsey, and both dealt with Proto Siouan consonant clusters.

Wolff and Matthews both essentially ignored these studies. Wolff mentions Holmer only in his bibliography; Matthews (1958: 10) does mention Holmer, but because Dorsey's transcriptions are inconsistent (see the introduction above), he concludes either that Holmer discovered coincidences, or else that Dhegiha lost the aspirated/tense distinction between the field work for the two papers. Matthews (personal communication) recalls trying very hard to make sense of the Dhegiha transcriptions before giving up, and that he was advised by those who should have known better that additional field work was no longer possible on those languages. Moreover, he credits Holmer with being his inspiration for the *w- which he reconstructs for some of the clusters which are reflected by Dhegiha sonant-surds. In my opinion, even without Rankin's work, Holmer's discoveries were far too consistent and explained too much to deserve such cavalier dismissal. Rankin (1974) has demonstrated that Holmer was basically correct in many of his conclusions. Rankin (personal communication) continues, however, to admit that there are still unexplained problems with regard to the sonant-surds, and maintains a belief that they probably have several different

sources.

Holmer (1945) examines the occurrences of those consonants in Omaha-Ponca which Dorsey called sonant-surds. According to Rankin (1974), they are phonetically voiceless and tense initially, voiceless, tense, and long medially. Holmer finds three classes of positions in which these occur, plus an unexplained residue. The classes are:

1. Sonant-surds in Omaha-Ponca correspond to heteroorganic stop clusters in Dakota and to \underline{h} + stop in Hidatsa. The place of articulation for the Dhegiha and Hidatsa stop is that of the second element of the Dakota cluster.

2. Sonant-surds initially before stressed vowels may correspond to whole syllables preceding the stops in other languages. Therefore, in Dhegiha, $*C_1V_1\text{stop}\acute{V}_2 > *C_1\text{stop}\acute{V}_2 > \text{sonant-surd}\acute{V}_2$; that is, the first vowel was syncopated and the resulting cluster behaved as if it were part of group one. In these cases, however, Dakota often lost the whole initial syllable, so there are no Dakota clusters.

3. Possessed or reflexive stems often begin with sonant-surds where the plain stems do not. Presumably, class two once included these forms, mostly kinship terms and verbs with the suus prefix *ki. (This prefix marks the object of a verb as possessed by the subject: Lakhota kté 'he killed it' but kikté 'he killed his own.') The possessive prefixes or *k formed

clusters with stem initials, which then became sonant-surds. Today, however, analogical new prefixes are attached to the stems with initial sonant-surds. In effect, then, the morpheme represented by the prefix is present twice in these forms.

Holmer's paper is of high quality with regard to internal consistency, attention to detail, and respect for the data on which it is based. Unfortunately, those data are in some cases inaccurate, so that some of his conclusions are necessarily wrong. Rankin (1974) examines the Holmer article in the light of both his own field work with Dhegiha languages and more accurate Dakota data, and is able to resolve some of Holmer's problems. In particular, Holmer's refusal to accept a correspondence between Dakota aspirated stops (doubtless in part because he lacked adequate information about such aspiration) and Dhegiha sonant-surds is shown to be unnecessary. Rankin reconstructs *hC clusters for Proto Siouan when Dhegiha shows sonant-surds corresponding to Dakota aspirates, stating that Proto Siouan *hC and *Ch clusters merged in Dakota to Ch. The *h of these *hC clusters may represent an older stop, but does not necessarily do so. This is not essentially different from Holmer's suggestion that Hidatsa h + stop clusters represent the transition stage between full clusters (Dakota) and sonant-surds (Dhegiha).

Holmer (1947) observes that in Ofo (and also in Biloxi and

Tutelo) an initial vowel occurs in words whose cognates in other languages have no such vowel. He points out that this vowel is regularly a- when the word can be reconstructed as beginning with a consonant cluster whose first member was labial, i- otherwise; but the first members of the clusters have disappeared. Ofo initial vowel plus stop sequences thus correspond to sonant-surds (tense) articulation in Dhegiha. Moreover, Ofo maintains aspiration of the following stop corresponding to either aspiration or glottalization in Dakota.

Again, Holmer shows a number of apparent exceptions to his rule--in particular, vowels where none should appear--to be regular, by reference to morphology, suggesting that some i's are the third person possessive prefix, and some pre-Ofo clusters are the result of subjective or possessive prefixes fusing with stems. Moreover, he is able to explain (1947:6) some paradigmatic irregularities in verbs by applying his phonological rule: *m- 'I' before stems in *r- (Holmer uses *v-) (Ofo t) results in a-, which is the first person marker in a few synchronically irregular verbs. Wolff (1951:200) does not mention this verb class in the Southeastern languages, and neither does Matthews (1958:68).

Rankin (1974) notes that Dhegiha tense stops (sonant-surds) which correspond to Dakota aspirates also correspond to Ofo vowel plus aspirated stop. Although he agrees that the cluster

reconstructions are probable, he is unable to find evidence for the specific first member of the cluster, so he reconstructs the Ofo vowels to Proto Siouan.

2.3. Wolff

The next and first really major contribution to Siouan historical phonology was Wolff (1950-51), who provided reconstructed Proto Siouan words to illustrate sound correspondences. Wolff dealt with consonants and stressed vowels, and reconstructed 146 roots and stems as well as the personal prefix morphology. He identified further instances of Dorsey's law, and described for the first time the Siouan version of some phenomena much like those described by Verner's law for Germanic: the reflexes of some Proto Siouan consonants alternate between voiced and voiceless, depending on their position relative to Proto Siouan stress: voiceless reflexes appear if the sound was before a stressed vowel, voiced if the following vowel was unstressed. Specifically, Wolff's *t, *k, *kʷ, *s, *l, and *lʷ show these alternations, most consistently in Dhegiha and Chiwere, but *kʷ, *s, and *x also in Dakota.

Wolff reconstructs the following Proto Siouan phonemes, plus stress, although very little can be said about stress because of inadequate data:

p	t	k ^y	k	q	(=?)														
								i		u									
	s		x	h				e		o		i		ɥ					
	m	n								a				ɤ					
w	L	L ^y																	

As we already noted in the introduction, he ignores aspiration in Dakota and Ofo and the turned letters in the Dhegiha records, and consequently does not need to worry about where they came from.

He also reconstructs several consonant clusters, mostly with *q or *L as second element, but also combinations of nasals, stops and nasals, and stops and fricatives. The only stop plus stop clusters are *tk, *kk^y, and *k^yk. He lists, but does not exemplify, *sp.

Wolff's articles contain a number of internal inconsistencies, both minor and major. Among the minor ones, we find that his *L is actually written *r once in the second installment and consistently throughout the third installment, and that body parts are reconstructed as doublets, sometimes with initial *i and sometimes without it. Since that *i is a third person possessive prefix, and since body parts are inalienably possessed in all Siouan languages, that vacillation is easy to explain--but Wolff does not mention it.

Most disturbing, however, are the places where he violates his own rules, or where he is simply arbitrary. We already men-

tioned one example: *x is discussed and illustrated on p. 118, where it is asserted that it remained x in Biloxi and Tutelo but became s in Ofo. On p. 120, however, in the word 'ghost,' *x inexplicably represents č in all three Southeastern languages. Similarly, in the set for 'peel, skin,' for which he reconstructs *-xápe (115) and *-xapi- (118), the Dakota reflex of *x is z, whereas by his rules we expect x. (Matthews (1970) explains this as one of his sound symbolism examples; cf. 2.5 below.) As a third example, note the set for 'heart' (115), *LYáti, where the Osage, Omaha-Ponca, Mandan, Chiwere, and Winnebago reflexes of *LY are all those expected before an un-stressed vowel. When this set is repeated (121), it is reconstructed *LYáti, which makes sense.

The worst offenses of this kind are between parts 2 and 3, where he deals separately with consonants and vowels, and seems to have paid very little attention to the results of one part when working on the other. Just to cite one example, the set for 'wind' (169) shows *t reflected as š in Mandan, h in Crow and Hidatsa, and c also in Hidatsa, none of which are mentioned as possibilities in the rules for *t (115).

Also disturbing are the numerous doublet reconstructions: 'peel' and 'heart,' just cited; 'black' as *-sipí (115) and *sepi (118); 'breast' as *amək (117), but the same set also as 'chest,' *mək (170); *natú glossed 'hair, head' (115) but also

'brain' (119), and so on.

Finally, there are a number of instances where he includes as members of a cognate set forms which can be made to fit only by extreme pressure, and yet he does not discuss the problems. An example is the set for 'sister' (115), *i-tâke, where Ofo itôfka, Tutelo T tahak, and Crow isahká.te are included as cognates, with no mention of possible sources for f in Ofo, h in Tutelo, or most of the sounds in the Crow form. Matthews (1959:260-62) indicates that neither the Ofo nor the Crow form is cognate, and, since the *t is really aspirated, making the more accurate reconstruction *thâki, there is some possibility, albeit irregular, source for the Tutelo -h-.

Wolff's work suffers, then, from inadequate data, especially on stress and on Dakota aspiration, from inadequate use of available data, especially on Ofo aspiration and Dhegiha stop articulation types, and from general carelessness about consistent reconstruction and observation of his own rules. Despite these shortcomings, he was able to describe the Proto Siouan phonemic system in such a way that later work has essentially only changed the symbols (*k^y, *L, *L^y, and *q), modified some individual reconstructions, added or subtracted individual items from cognate sets, and added more cognate sets and more consonant clusters to the list for Proto Siouan. Wolff's most important original contributions were probably the Proto

system, the explanation of the development of many of the voiced stops and fricatives in those languages that have them, and the assembly of numerous probable cognate sets.

2.4. Matthews' Handbook

The next and largest single contribution to Proto Siouan was Matthews' Handbook (Matthews 1958). It contains 72 sound (i.e. phoneme, phoneme sequence, and cluster) correspondences, reconstructions of 34 prefixes, 11 suffixes, and nearly 300 roots, and a sketch of the Proto Siouan stem class system and its development into the various daughter languages. It clearly represents an immense amount of painstaking analysis of the individual languages, to the extent that such is possible without field work, and a rigorous compilation of the results. However, the book itself bears all the horrible earmarks of a dissertation manuscript hastily prepared to meet a deadline: typographical errors, changes in notation from part to part, and hopelessly inadequate explanation of symbols, abbreviations, terminology, and decisions. There are no indexes and no cross references between phonological rules and examples, and even the table of contents is essentially useless.

Matthews' outline of Siouan grammar will be discussed in the next section; here we will concentrate on his phonology.

Basically, the system he reconstructs for Proto Siouan is

a replication (and hence a verification) of Wolff's. He uses \check{s} for $*kY$, $*r$ for $*L$, $*?$ for $*q$, and $*y$ for $*LY$, and reconstructs many more clusters, but everything else is the same. To account for the personal prefix irregularities, he describes specific reflexes of such phoneme sequences as $*wayi$ or $*yar$ separately from the reflexes of the individual phonemes. The rules are ordered with respect to each other, and the parts of a rule are ordered within it. Matthews (personal communication) now explains that, while he really felt he had captured Proto phonetics better by his symbols than Wolff had by his, the structuralist atmosphere prevailing at the time he was writing enabled him to avoid justifying this and to argue that there were, indeed, merely some symbol changes. By the 1970 article, however, he had amassed justification for the reconstructed phonetics.

The haste with which the manuscript must have been prepared is probably responsible for the unexplained use of capital letters in the rules and transcriptions. Probably the author decided to omit the capitals late in the course of his study, but the copying of earlier file slips retained them. For example, on one page (112) we find Crow $\check{r}u\check{u}SI$; Hidatsa $t\check{E}\check{E}$; Dakota $\check{h}\check{a}\check{s}kA$; Omaha Kansas $D\check{a}\check{b}e$. Matthews (personal communication) says that these are morphophonemes in the structuralist recordings from which he took these forms. Perhaps a similar

explanation accounts for the use of capital letters in the environmental statements for rules, such as for prefix 066 in Dhegiha (68).

Moreover, there are some disturbing inconsistencies which could probably have been avoided with more careful final checking, such as the fact that there is no example of **km*, although on p. 1, Matthews takes the trouble to remark that it occurs only before nasal vowels. Wolff's single example of that cluster is the set for 'seven' (175), which is probably what Matthews had in mind, too, judging from his rule (18). Similarly, I cannot find any examples for **kp* (19), and numerous correspondences seem to hold for only one example: **tx* in **-txə* 'locative suffix' (88ff); unstressed **yi* as 'second person ergative' (63ff), stressed **yí* (119) in 'yellow,' etc. In this connection, we also note that the only example of **pʔ* seems to be 'bitter,' for which the Dakota cognate is said to be *pʔá*. However, the only form I have heard for this word in Lakota is *phá*, and that is the Dakota form in Riggs (1890) and Williamson (1902) as well (without indication of aspiration, of course; but both dictionaries would have marked glottalization). The citation *pʔá* keeps recurring in the literature (Wolff 1950: 173; Haas 1969:290; but Rankin (1974) has *phá*); moreover, it is always the only example of **pʔ*. There may be dialect variation in Dakota, or perhaps there is a misprint in a Dakota

dictionary somewhere, but until the form is verified, I would advocate removing it from the data base.

One final problem in using Matthews occurs when trying to interpret the symbols in his phonological rules. One must pay very close attention to commas, semicolons, dashes and spaces: * -V apparently means 'initially before a vowel,' while *-V apparently means 'before a vowel' in some of the early rules (e.g. p. 16); but later (e.g. p. 36) # apparently replaces the space. There may be another kind of cross, badly blurred in the manuscript I have, but perhaps \times , in some rules. The description of *r on p. 38, for example, has it reflecting as n in Mandan between the second kind of cross and *ú; yet Mandan Rúse reflects *rús on p. 112. Either R means n in Mandan, or \times means 'non-initially,' or Matthews has made a mistake. Some problems of this sort are essentially insurmountable, to say nothing of being infuriating even when they can be solved.

In general, however, Matthews is considerably more careful than Wolff to be sure that his rules cover the forms he cites. He does not include aberrant words in his cognate sets, or else he sets up ad hoc special environments in his rules to account for problems. For example, *u usually gives i in Omaha and Quapaw; however, the word 'shoot' in Omaha is ú. Since other languages point to *ú as the reconstruction for this word (111), Matthews states (40) that *u goes to u in Dhegiha

when stressed and following initial *ʔ. Perhaps inevitably, this rigor is not maintained completely, as we noted with respect to h before *q̣ (above, footnote 3).

Matthews was able to use Dakota material which recorded stress and aspiration more accurately, so his reconstructions of specific words often differ from Wolff's. However, as we have said, he, too, ignored parts of the Dhegiha and Ofo data. The latter may or may not be serious, since the careful use of the other material generally leads to cluster reconstructions in the same places the Ofo and Dhegiha material would (Matthews opts for *w as the first member of such clusters, where Holmer had suggested *m and Rankin prefers *h when he cannot find evidence for specific stops); but someone should sit down with the Ofo and Dhegiha sources and go through these forms again to be sure. In addition, someone should look at Matthews' results with a view to systematizing them: after studying Matthews, one has the impression that Siouan must have developed without regard to distinctive phonological features.

The importance of Matthews' work to historical Siouan phonology, then, is as a verification of Wolff's work and a much expanded and more accurate catalog of sound correspondences and cognate sets. It is a good description and organization of the facts, but it makes no attempt to explain any developments whatsoever. Working from this beginning, using the discoveries

in phonological theory of the past fifteen years or so, much more systematic and explanatory descriptions of the history of the family, as well as a better understanding of subgrouping and intermediate developments, could be attained.

2.5. Matthews' Continuants

A good example of the kind of work which should be possible, given this foundation, is Matthews' (1970) paper on non-nasal continuants. In that paper he discusses the possible generalizations about the development of *s, *s̃, *x, *w, *r, and *ɣ,⁵ using the principles of historical linguistics which result from generative phonological theory.

There are three important points in this article. First, the symbols *s and *s̃ are reversed from the way they had been used previously; i.e., what Wolff called *k^v and what Matthews (1958) called *s̃ is now *s, and the former *s is now *s̃. The problem is that Mandan regularly has alveolars corresponding to the palatals of the other languages, so that an interchange rule is required, either for Mandan or for everything else. Previously, statistical considerations had led to the hypothesis that Mandan innovated; but Matthews argues from the nature and number of explanatory rules required that it is simpler to posit that Mandan is conservative and the other languages all innovated. It is debatable, however, whether it is more realis-

tic to posit 'the same' rule which recurs at different times in different sequences (in other words, independently) in several languages, or a larger number of rules, each of which occurs only once. Matthews (personal communication) explains the 'one rule' hypothesis as one innovation followed by the spread of the rule from one group to a neighboring group. This is plausible, and easily explains why the rule sequences might differ from group to group. One wonders, however, how Mandan avoided being contaminated by the diffusion, since it separated two sets of languages which succumbed to it.

Second, Matthews explains the immense confusion, noted already by Dorsey (1885:923), within one language and between languages, of *s, *s̃, and *x and, in the languages where they are used, their voiced counterparts. He notes that in modern Dakota there is a kind of sound symbolism in the use of these consonants, such that s or z occurs in 'diminutive,' s̃ or z̃ in 'normal,' and x or ɣ in 'augmentative' variants of the same roots (e.g. zí 'yellow,' z̃í 'tawny,' ɣí 'brown'). Petrified remnants of a similar phenomenon can also be found in other languages. He then proposes that this sound symbolism be reconstructed to Proto Siouan, and that its productivity be assigned to loss in the various languages sometimes before, sometimes after, the *s/s̃ interchange. Indeed, the loss was probably gradual throughout each language, so that some roots

lost the distinction before the interchange, while others retained it, even in a single language. If the semantic distinction associated with the sounds were lost before the interchange, roots reflecting *s̃ would have normal meanings now, while those with *s would retain diminutive meanings. Because of the interchange rule, modern languages (except Mandan) would therefore show some examples of s in normal but s̃ in diminutive forms:

*s̃ [+normal] [-sound symbolism] > s [+normal]

*s [+diminutive] [-sound symbolism] > s̃ [+diminutive]

On the other hand, if the symbolism were still in effect at the time of the interchange, then the meanings of the words would also shift when the sounds shifted, so we would get words with the reflex of *s with the normal meaning, while words reflective of *s̃ show diminutive meanings. The original sound-meaning correlation would therefore obtain, and no shifts would be observable:

*s̃ [+normal] > s, but [+sound symbolism] equates [s] with [+diminutive], so the form becomes s [+diminutive]

*s [+diminutive] > s̃, but [+sound symbolism] equates [s̃] with [+normal], so the form becomes s̃ [+normal]

Matthews tries to find a genuine example of this in the Dakota word mnísoṭa, which he says is the name for the Missouri River, and which is said to mean 'muddy water,' even though

sóta in isolation means 'milky, cloudy' and it is šóta which means 'muddy.' Somehow the equation of 'Missouri' with 'muddy' survived the sound and meaning shift of *šóta to sóta. Unfortunately, the weakness of this argument is not only in its appeal to a mysterious 'folk knowledge' which could maintain such a semantic equation, though that should be weakness enough; Matthews also has his facts wrong. The data for this example were supplied by the person whose idiolect was analyzed in Matthews (1955). The speaker could think of only one word for 'river,' mnísóta, and claimed it referred specifically to the Missouri and meant 'muddy water' (Matthews: personal communication). Most speakers believe, however, that mnísóta is the name of the Minnesota River, and it means 'milky water.' The Missouri is called Mníšošē, which really does mean 'muddy water.' Matthews' argument about the development of the stems showing sound symbolism is reasonable and well supported even without this evidence, however.⁶ Providing one accepts the notion that the same phonological changes can recur in related languages in differing order either by some sort of 'drift' phenomenon or by wave-theory spreading of an innovation across language boundaries, the flip-flop hypothesis is plausible.

The third major contribution of this article is a theory of explanation for some otherwise irregular cognate sets, where Mississippi Valley languages show voiced fricatives before Proto

Siouan stressed vowels (recall that Wolff pointed out that such consonants should appear only before unstressed vowels).

Matthews suggests that in Proto Siouan these were allophones of the sonorants, such that the obstruents occurred before high vowels, the sonorants elsewhere. In those languages which never developed voicing, these allophones were soon devoiced and fell together with the voiceless fricatives, but in Mississippi Valley languages they were added instead to the instances of voiced fricatives resulting from the stress conditioned allophony, and remained voiced. There are a few counterexamples, however, instances where *rú must be reconstructed. Matthews thinks that *r was retained before this *ú by analogy with *r before unstressed *u in the prefix meaning 'by means of the hand.'

Matthews admits that this paper leaves out a great many details (in particular, all the developments of the sounds into the individual Mississippi Valley daughter languages). Nevertheless, it presents a clear, plausible and coherent description of what may have happened, and is exactly the kind of general picture of overall language evolution which we need before we can claim to understand the history of these languages.

2.6. Others

We have now discussed in detail Dorsey (1885), Holmer (1945, 1947), Wolff (1950-51), and Matthews (1958, 1970), and in passing Rankin (1974) and Haas (1969). Two other papers which contain remarks on the history of Siouan phonology are Haas (1968) and Chafe (1964). The former of these relates field recordings of Biloxi to the rest of Southeastern Siouan and reconstructs (83) for Proto Southeastern Siouan an aspirated series of stops and two aspirated fricatives, *sh and *xh. The status of the two fricatives needs to be examined further, since there are sources for this *h in some of the Proto Siouan reconstructions of two of the four examples Haas cites. The PSS *xh of 'ear, hear' may reconstruct to PSi *x? (Chafe 1964, set 31; Matthews 1958:111 posits *xk); and 'white,' with PSS *sh, is reconstructed to PSi *wsahə by Matthews (1958:117). Here the Ofo aspiration, which Wolff and Matthews ignored, is apparently crucial to understanding exactly what happened in the history of Siouan.

The Chafe paper compares Proto Siouan and Pre-Seneca in order to reconstruct the Proto Siouan-Iroquoian phoneme system and some words. In general, Chafe's reconstructed Siouan system matches that of Matthews (1958), except that he uses *q for *u. Chafe lists 67 reconstructed Proto Siouan words, about forty percent of which are not treated by anyone else. In many

of these cases, he relies on but one Siouan language, however, since he is interested in correspondences with Seneca.

One other reportedly complete Proto Siouan phonology, by Terrence Kaufman, remains unpublished and generally inaccessible.

2.7. Summary

From this review, we can see that the need for further work in comparative Siouan is great. We seem to have a general consensus about the Proto sound system, and about many of the developments into the daughter languages: the introduction of voicing where it exists, the loss of nasalization in Crow and Hidatsa, the simplification of consonant clusters in many languages, the development of prothetic vowels in Crow, Hidatsa, and the Southeastern languages, confused development of non-nasal continuants, and so on. But no one has written the history of any Siouan language; only one paper deals with the systematic development of the sound system; and there are undoubtedly hundreds of additional etymologies waiting to be discovered. Matthews' Handbook is clearly the best and most thorough tool prepared to date, to the extent that its symbols and abbreviations can be deciphered, but it needs clarification, verification, and supplementation in almost every respect.

Perhaps the most serious barrier to progress in this endeavor, however, is still the inadequacy of our data, especially

on Dhegiha and Chiwere. As we mentioned in the introduction, some steps are being taken to correct this. If we combine new data with better utilization of the Ofo and Biloxi material we already have, we should be able to effect the necessary corrections in Matthews without a great deal of additional reexamination of his foundations.

3. Historical Grammar

The only available study which has attempted to reconstruct Siouan grammar is Matthews' Handbook (Matthews 1958). Because it is an isolated study, all we can do here is summarize it and discuss internally evident shortcomings; confirmation of the accuracy of individual assertions must await more detailed examination of the histories of individual languages. For an example of how this can work, see the discussion of Taylor (1976) and Rankin (1977) below.

Matthews reconstructs prefixes, suffixes, and roots, their co-occurrence properties, and their position classes. His position classes for verb prefixes are repeated here in Table 1. In addition, he sets up 061 *i 'third person possessive,' 091 *tha 'possessed,' and 092 *wi 'ordinal number,' which do not occur with verbs. The 020 and 060 series can also occur with nouns.

It is difficult to compare this with Wolff's personal pre-

011 *u 'future tense,' 'ergative' object etc.	012 *wa 'indefinite object'	021 *muk 'first person' (often plural or inclusive in the daughter languages)	031 *a 'on'	032 *i 'instru- mental'	033 *o 'in'	041 *a 'indefinite locatives' (often the first part of discontinuous morphemes in the daughter languages)	042 *i	043 *o		
051 *na 'by inner force'	052 *ra 'by heat'	053 *wā 'by cut- ting'	054 *wō 'by using a point'	062 *wa 'first person possessor or ergator' (often plural)	063 *mi 'first person possessor or ergator'	064 *vi 'second person possessor or ergator'	065 *ya 'second person agent'	066 *wa 'first person agent'		
'impersonal instrumentals'			'personal prefixes'							
071 *ixki 'reflex- ive'	072 *k 'comple- tive'	073 *ka '?'	074 *khi 'recip- rocal'	075 *ki 'suus; dative'	076 *ki 'suus; dative'	081 *ra/*ka 'by force'	082 *ra 'by foot'	083 *pa 'by pushing'	084 *pu 'by pres- sure'	085 *ra 'by mouth'
'(oblique) case relationships'			'instruments controlled by the subject'							

Table 1: Siouan Verb Prefixes
(after Matthews (1958:48-86))

The glosses of the individual reconstructed morphemes in this table are not given by Matthews, but are my summaries of the meanings of the purported reflexes in the daughter languages.

fix reconstructions, because Matthews posits six forms (the 020 and 060 series) to five of Wolff's, yet they both refer to the same groups of reflexes. Moreover, in neither case do the prefixes as reconstructed conform to the phonological rules in the text of the articles.

The problems with Matthews' schema are legion, but most are rendered more acute than necessary because of the total absence of any discussion of how this structure was determined. For example, why are 062 and 066 both *wa, when they contrast in the daughter languages?⁷ Why do we need both the 030 and 040 series? Why do we need both 075 and 076? What does 'er-gator' mean (it seems to be 'patient') and is it really different from 'ergative' (compare 011 and the 060 series)? Prefix 011 is said to be reflected in Dakota as o 'ergative,' but from my fairly detailed knowledge of the morphology of that language, I cannot guess what he is referring to. Where are prefixes 067 and 068 (referred to on pp. 106, 108 et passim)? These questions are but a sample of those we would like to ask, and which must eventually be answered. There are undoubtedly good answers to all of them, but we must re-trace Matthews' steps to find them. Matthews (personal communication) has provided some explanations himself: 063 *mi is probably confined to nouns; 030 and 040 are needed because sometimes we find two of these in one verb in some languages; and 075 and 076 are

both needed to account for one Dakota dative, -kiči-. Of course, when only one -ki- occurs, it is impossible to know whether it reflects 075 or 076.

There is no doubt that this structure is a legitimate hypothesis, and a reasonable first approximation to a reconstruction for the ancestor of the Siouan languages, but there is equal certainty that it needs careful study and probable revision.

The suffixes (87-101) are somewhat less problematic. There are two classes, one of which contains a verbalizer *khe and three forms, *kta, *ti, and *txa, which show up as prepositional ('at,' 'toward,' 'from') suffixes in the daughter languages. The other class contains eight markers of number and sentence type (declarative, interrogative, imperative, etc.).

Matthews also posits four main classes of Proto Siouan roots (45; 102-136), defined by the affixes which they could take: positionals, which occur alone or with the first class of suffixes, and which result in definite articles in the daughter languages; particles, which occur alone or with the second class of suffixes; verbs; and nouns. Verbs are divided into stative and active for Proto Siouan, although the distinction is said (1958:106-107) to be nearly absent in Crow-Hidatsa⁸ and (to a large extent) in Southeastern, and is more elaborate in one variety of Osage. These developments are tied to the

use and non-use of certain of the instrumental prefixes, which convert stative verbs to active verbs when they are productive.

There are four classes of nouns: alienably possessed, inalienably possessed, numerals, and demonstratives. Again, the general outline of the development of each class in the daughter languages is sketched, with most of the evolution described as recombination of Proto Siouan elements so as to eliminate some classes or create new ones. Once the reader achieves familiarity with the symbols used (the appendix to this article summarizes them and may save future readers some puzzling), the discussion seems to be reasonable and straightforward, albeit very brief.

It is useful to notice that Matthews' reconstructions are arranged alphabetically by morpheme type, even though that is not made very obvious. Thus when the alphabetical order suddenly begins over again in the middle of p. 112, we have switched from active verbs to stative verbs. Similarly in the nouns, pp. 130, 134, and 135 contain new lists. Since prefixes, particles, locationals, and suffixes each constitute a separate list, too, one must be sure to check nine different places to find morpheme initial examples of reconstructed sounds.

The state of Siouan historical grammar is thus just about the same as that of historical phonology. We have a clear foundation, an outline of the morphological categories and

their evolution, but no details and no real sense of how the various parts of the grammars have interacted, beyond the one correlation between verb class and instrumental prefix use. Again, a good part of the problem can be blamed on the absence of an adequate data base. We have no grammar of any Dhegiha language, and only recently one of a Southeastern language (Einaudi 1976); many of the grammars of other languages are sketches, covering little more than phonology and the most obvious morphology. Work is currently in progress to correct for some of this, though there is room for more. Another look at history from the perspective of advances in linguistic theory and better data should soon be possible.

4. Semantic Subfields

Perhaps the most interesting studies in comparative Siouan are three papers on specific subfields which catch the curiosity of anyone who looks at Siouan languages. They build on the general comparative studies we have discussed, but carry the work much further. Matthews (1959) reconstructs the Proto Siouan kinship system; Taylor (1976) deals with verbs of motion; and Rankin (1977) discusses the verbs of position which also have aspectual and classificatory functions of varying sorts in the daughter languages.

4.1. Kinship Terms

The Siouan kinship system catches one's interest primarily because of the great diversity among the tribes speaking related languages. Matthews examines the terms for kin in each language, taking one level of relationship at a time, and notes which terms are cognate, which are combinations of cognate elements, and which innovations. He next reconstructs both sound and meaning for Proto Siouan, and discusses the irregular derivations. Then he applies internal reconstruction to these results to obtain a morphological analysis for a possible Pre-Siouan system. That system, he thinks, might well have been of the Omaha type.

The article is based on a large mass of data, carefully sorted and analyzed. The complex abbreviations used for glosses make the discussion extremely opaque for anyone not familiar with the literature on kinship systems, but the reconstructions of the terms are certainly plausible phonologically (except, again, for the normalization of Dhegiha and Ofo data). This is an excellent example of a linguistic contribution to cultural prehistory.

4.2. Motion Verbs

Taylor (1976) begins with the observation that Siouan languages all have a number of verbs of motion, and that they all

distinguish the end point, or arrival, from starting or progressing movement. Moreover, these verbs often have morphological irregularities in the daughter languages, especially with the use of the suus-prefix.

Taylor seeks the appropriate description and reconstruction of the Proto Siouan situation, and traces its evolution. In contrast with Wolff and Matthews, who each reconstructed three motion verb stems (though not the same ones), Taylor shows there must have been four stems, contrasting two directions and two aspects: *hi 'arrive there,' *rA 'go, be going' (the A represents an ablauting vowel common in Siouan verbs), *hu 'come, be coming,' and *rhi 'arrive here.'

This introduces a new consonant cluster (*rh) into Proto Siouan, but a plausible one, supported by parallelism with possible explanations for the irregular verb 'to say,' whose second person form must come from something like *e-y-he or *e-r-he. Most reconstructions of the second person agent posit *y, but Taylor cites Terrence Kaufman (personal communication) as preferring *r; compare Matthews' (1970) use of *r̥ and Rudes' (1974) hypothesis of Siouan rhotacism. The reflexes of *yh are the same as those of Taylor's *rh. This carefully argued paper demonstrates the kind of refinement of phonological and semantic detail which is both possible and needed if Siouan studies are to advance.

4.3. Positional Verbs, Articles, and Noun Classifiers

Rankin (1977) observes that the modern Siouan languages all have a variety of forms for the intransitive verbs of position, 'sit,' 'stand,' and 'lie.' One or two stems for each meaning can be reconstructed to Proto Siouan, but in the daughter languages these often have aspectual function with other verbs, and in some, viz. Mandan, somewhat in Winnebago and Biloxi, but most of all in Dhegiha, they have developed as part of a noun classifier system, and serve as definite articles. The Mandan, Winnebago, and Biloxi systems apparently are 'incipient' classifier systems, because the verbs still refer to position of the object rather than shape. The languages where the old stems lost their lexical verbal role are, not surprisingly, the very languages which have found new stems for the position verb functions.

Rankin thus demonstrates that three of Matthews' four 'positional' stems--Matthews' K class--are genuine active verbs, not a special class at all. The fourth K-class stem is *k_i, which is the source of the definite article in Dakota, Tutelo (Matthews 1958:102) and Catawba (Matthews: personal communication). It seems likely, in view of this discovery, that *k_i may also have another source, and that Matthews' K-class may turn out to be unnecessary, though both Matthews and Rankin (personal communication) protest that there must have been

something special about these verbs already in Proto Siouan.

5. Summary and Conclusion

What do we know about the history of the Siouan languages, how firmly founded is this knowledge, and where do we go from here? We have for Proto Siouan phonology and morphology an outline which is founded about as solidly as the comparative method permits: each reconstructed morpheme contains symbols for recurrent sound correspondences among the daughter languages, and the meanings of the reflexes of the morphemes are generally identical, or at least very similar. On the positive side, some relatively regular and systematic developments from Proto Siouan into the daughter languages have been thoroughly documented--e.g. Winnebago vowel epenthesis (Dorsey), the development of contrastive voicing (Wolff), the development of certain Dhegiha and Southeastern initials (Holmer), and the history of non-nasal continuants (Matthews 1970). On the negative side, many proposed consonant clusters are supported by only one or two examples, and the development of the inflectional and derivational morphemes seems highly irregular at this point. Similarly, we really know very little about the history of stress or of the unstressed vowels.

In the realm of subgrouping, we have a consensus which is not really very well supported. The closeness of Crow and

Hidatsa, and their separation from the rest of Siouan, cannot be doubted, but the position of Mandan relative to these two seems unclear. Similarly, the Southeastern languages seem to share large quantities of unique vocabulary, if not a great deal else, and in particular Ofo and Biloxi are clearly closely related. But Haas' Proto Southeastern reconstructions and Matthews' (1970) rules for Southeastern intermediate developments seem to me to be possibly the result of an assumption of Southeastern unity rather than demonstrations of that unity.

Beyond these two groups and an obvious closeness between Winnebago and Iowa-Oto, the documentation of unity or separateness is based only on Headley's glottochronological study. Dakota, Chiwere, and Dhegiha share the development of contrastive voicing, and Mandan is unique in its distribution of s and š; but whether or not these constitute good arguments for the unity of the first three and the separateness of Mandan is debatable, especially since Matthews (1970) was unable to describe the details of the so-called Mississippi Valley group's evolution of continuants. Firm establishment of subgroups within the family remains a task for the future.

I have repeatedly remarked about the absence of reliable data and the underutilization of Ofo and Dhegiha data. Because of these factors, it would not be entirely improper to conclude that everything we think we know about Siouan needs to be re-

examined. In fact, however, the primary task is rather to examine the developments of the slighted languages from what we have already guessed about Proto Siouan. It is probable that our reconstruction of Proto Siouan will not be changed much by such study, though the histories of the separate languages will be much better understood thereby. In connection with a discussion of data, however, it is worth warning future students of the field that there are some problems with the reliability of citations of forms in all the historical studies: the use of p'a, cited above, is an example. The tendency of Siouanists to copy each other instead of the data sources needlessly perpetuates misprints and other errors; it behooves everyone to check final citation forms very carefully with as original a source as possible.

Much of what should be done in Siouan, therefore, is the dull and thankless labor of re-working old ground to ensure accuracy and thoroughness. Far more exciting, of course, and equally necessary, is work which assumes the correctness of what we have and builds on it. Attempts like Matthews' (1970) to picture systematic developments and to utilize new hypotheses about language change in general must be encouraged, and studies of details such as the three papers discussed in section 4 are similarly important. Finally, of course, the whole realm of Proto Siouan syntax remains unexplored, despite masses

of texts in a wide variety of languages.

Notes

I would like to thank the following for their helpful critical comments on an earlier draft of this paper: Jean Charney, Mary Coberly, Robert Hollow, Hu Matthews, Ken Miner, Robert Rankin, Allan Taylor.

1. [pʔ] does not occur in Quapaw; the reflex of PSi *pʔ is ʔ. [kʔ] does not occur in Omaha-Ponca today, though formerly there were alternations between [kʔ] and [ʔ] (Rankin: personal communication).
2. Of f and fh both seem to reflect P(roto) Si(ouan) *s, but no one knows what fh means phonetically, nor is the historical difference between the two clear. In at least one instance fh seems to come from *sVh: cf. Haas' (1968) reconstruction of 'white' in Southeastern, compared to that of Matthews (1958:117) for PSi, as discussed in section 2.6.
3. Here is one place where Matthews' rules conflict with his examples. The rule on p. 35 is that in Biloxi and Ofo *h becomes n before *á, and on p. 124 the set for 'day' supports this. But on p. 102, *há 'stand, be standing' is said to be reflected as B xa, D há, a correspondence not accounted for in any rules. On p. 109, *há 'boil' has no Biloxi or Ofo cognates.
4. I would like to give special thanks to Ken Miner for bring-

ing this study to my attention.

5. He uses *r̥, defined as a palato-alveolar sonorant, in place of *y in the text of the article, but retains *y in all the reconstructions of cognate sets.

6. There are other errors in the Dakota data in the article. Specifically, a number of words are stressed incorrectly in the etymologies: set 2, 'eye,' should be istá; set 3, 'face,' is ité; set 29, 'tail,' is sité; and set 56, 'heart,' is čhaté.

7. Allan Taylor has suggested to me that perhaps a nasal hook was omitted by mistake in one of the reconstructions. This is plausible, but even then the phonological rules do not work. Matthews (personal communication) thinks now that 062 *wa is probably a misprint for *ma.

8. Mary Coberly has pointed out to me that Matthews' Hidatsa grammar seems to indicate that there are still two conjugation types, but that the semantic basis for the division is no longer obvious. It is not clear, however, how many examples of the different classes exist in that language. Matthews (personal communication) says that between 10% and 20% of the verbs that take active prefixes are stative in meaning.

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Appendix

Some Symbols and Abbreviations in Matthews' Handbook

- A. Languages: identified by the first digit of the reference number (three-digit numbers for prefixes, four-digit for suffixes)

0 - general	4 - Dakota
1 - Proto Siouan	5 - Chiwere (includes Winnebago)
2 - Crow-Hidatsa	6 - Dhegiha
3 - Mandan	7 - Southeastern

Abbreviations: see pp. 1-14 for language names. The first one or two letters are used elsewhere to refer to the language or dialect.

- B. Prefixes: second digit (see Table 1 in this article):

1 - miscellaneous	6 - person markers
2 - first person (plural)	7 - dative, suus, reflexive, etc.
3 - vocalic prefixes (locative) *i, *a, *o	8 - subject-controlled instruments
4 - same as 3	9 - miscellaneous non-verbal: *tha (91) 'possessed' and *wi 'ordinal number'
5 - impersonal instrumentals	

- C. Stem classes:

A - Adverbs	
K - Positionals (articles; 'standing,' 'sitting,' etc.)	
L - Particles (enclitics and phrase final suffixes showing sentence types, number, negation; also conjunctions, etc.)	
M - Verbs	
M ₁ - active verbs	
M ₂ - stative verbs	
N - Nouns	
N ₁ - alienably possessed	
N ₂ - inalienably possessed	
N ₂₁ - kinship terms	} further subdivided in some languages (see pp. 122-123, etc.)
N ₂₂ - body parts	
N ₃ - numerals	
N ₄ - demonstratives	

- D. Suffixes (second digit) (from p. 87):

1 - occurs after verbs	6 - occurs after verbs and adverbs
2 - occurs after nouns	7 - occurs after particles, verbs, and nouns
3 - occurs after positionals and particles	8 - occurs after verbs, nouns, and adverbs
4 - occurs after particles and verbs	
5 - occurs after verbs and nouns	

The third and fourth digits refer to specific suffixes; pp. 94-101 contain a list of the suffixes in the individual languages.

- E. On p. 45, r seems to mean 'root.'

Southeastern Languages

Mary R. Haas

1. Introduction

In aboriginal times the southeastern area was one of great linguistic complexity (Haas 1971, 1973). But parts of this area were among the very first in the New World to suffer the gradual encroachment of Europeans. Consequently, languages and probably not a few linguistic families were wiped out long before the linguistic scholar came on the scene. Early records made by Europeans contain reference to many tribes whose languages are unknown to us. For this reason attention will be given in this paper only to those languages and linguistic families which are tolerably well known.

Linguistic families represented in this area are:

(1) Muskogean, (2) Algonkian, (3) Iroquoian, (4) Siouan, and (5) Caddoan. The Muskogean family is contained wholly in the Southeast while the Algonkian, Iroquoian, Siouan, and Caddoan families have their widest distribution to the north and/or to the west of the area. Besides these families there are several important languages which are best referred to as 'language isolates'. They are not closely related to

any of the families or to each other, though some appear to be distantly related to each other and/or to some of the families. These isolates are Timucua, Yuchi, Natchez, Tunica, Chitimacha, and Atakapa.

The several linguistic families, as represented in the Southeast, and the several language isolates are discussed below together with what has been suggested regarding their affiliation.

2. Muskogean

2.1. The extant Muskogean languages are Choctaw and Chickasaw (formerly in Mississippi, Alabama, and eastern Louisiana), Alabama and Koasati (Alabama), Hitchiti and Mikasuki (southern Alabama and Florida), and Creek or Muskogee (Alabama and Georgia). Apalachee (northern Florida), an extinct language known to us from a seventeenth century letter is also Muskogean. Most of the tribes speaking these languages were forced to move west of the Mississippi River during the great Indian removal of 1836-40. Consequently, Choctaw, Chickasaw, Creek, and Seminole (Seminole Creek) are now spoken in eastern Oklahoma (formerly Indian Territory) in the areas of the old Indian nations bearing their names. Choctaw is also spoken by groups in parts of Mississippi and Louisiana while Seminole (Seminole Creek) and Mikasuki are

spoken by the Seminole Indians of Florida and of the Seminole Nation in Oklahoma. Alabama and Koasati are spoken in eastern Texas and western Louisiana, respectively. Hitchiti may be extinct but was remembered a few decades ago by a few individuals living in the Seminole Nation.

Many of the language names in the Muskogean family denote political rather than linguistic distinctions. It is as if we called English by a distinct name depending on whether it was spoken by Americans ('American'), Canadians ('Canadian'), Australians ('Australian'), or Britishers ('English'). Thus Choctaw and Chickasaw are actually subvarieties of the same language. In other words, Chickasaw (Pulte 1975) is one of several Choctaw dialects, but politically the distinction between Choctaw and Chickasaw is ancient. Hitchiti and Mikasuki are also very close and the same is true of Creek and Seminole Creek. Alabama and Koasati are also close but perhaps not quite as close as the other pairs just mentioned.

The several closely related pairs of languages listed in the preceding paragraph give us four subgroups:

- (1) Choctaw-Chickasaw
- (2) Alabama-Koasati
- (3) Hitchiti-Mikasuki
- (4) Creek (including Seminole Creek)

These subgroups can easily be demonstrated on the basis of pervasive lexical and grammatical similarities. Whether further groupings could be demonstrated remained in doubt for a considerable time, owing particularly to the scantiness, in the case of several of the languages, of adequate descriptive materials. An early attempt at a reduction in the groups was made by Swanton (1922:11) who set up a Southern division whose principal constituents¹ were the first three subgroups above, and a Northern division consisting of Muskogee (i.e. Creek). But in a major work on culture areas Kroeber (1939:65) found this classification unsatisfactory because "the most distinctive dialect group of the family [Muskogee] lies almost surrounded by the others, and...the peripherally situated dialects are not the most aberrant." In the meantime Haas was engaged in comparative work on these languages and, basing her results primarily on sound correspondences, divided the four subgroups in a different way, namely (1) a Western division, consisting of Choctaw-Chickasaw, and (2) an Eastern division, consisting of the other three subgroups (Haas 1941a). Later she added Apalachee to the Eastern division (1949) and surmised that it was most likely a member of the Alabama-Koasati subgroup.

The basic sound correspondences separating the two divisions (Haas 1949) are shown below. (Abbreviations used are:

W, Western division; E, Eastern division; PM, Proto-Muskogean; Ch, Choctaw; Ala, Alabama; K, Koasati; Hitch, Hitchiti; Mik, Mikasuki; Cr, Creek; Apal, Apalachee.)

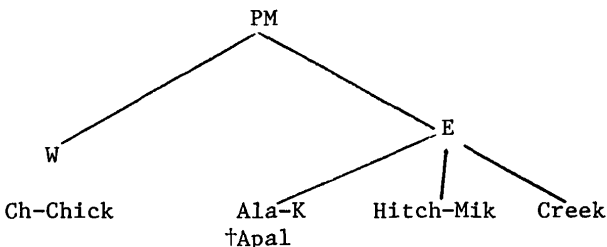
- (1) W n : E ĩ. PM *N. Examples (a) and (b).
- (2) W s : E c. PM *c. Example (b).
- (3) W final i : E final o. PM *i/o. Example (a).

Examples:

- (a) 'fish': Ch nani; Ala-K lalo; Hitch la·l(i);
Cr laló. PM *NaNi/o.
- (b) 'see': Ch (p)isa; Apal (p)ica; Ala-K hica;
Hitch hi·c(i·ki); Cr hic(ita). PM *(p)ica.
- (c) 'father': Ch -nki²; Apal. -lki; Hitch -lk(i),
Cr -lki. PM *-Nki. (Ala-K not cognate.)

The separation of the two divisions can be illustrated by the family tree model shown in Table 1.

Table 1



There is also morphological evidence which seems to support the separation into two divisions. For example, Proto-Muskogean had at least three classes of pronominal subject inflection for verbs. In the first of these classes the pronominal affix was attached directly to the verb stem. In the second and third classes the affixes were attached to a transitive and an intransitive auxiliary, respectively (Haas 1946b, 1977). The languages of the Western division (i.e. Choctaw-Chickasaw) reflect only Class I inflection. The languages of the Eastern division, on the other hand, are more retentive of the protosystem and show reflexes of Classes I, II, and III in Alabama-Koasati and of Class II only in Hitchiti-Mikasuki and Creek. In Alabama-Koasati Class II is transitive and Class III is intransitive, but in Hitchiti-Mikasuki and in Creek Class III is no longer restricted to the inflection of intransitive verbs but is used with transitive verbs as well. The morphological evidence adduced here supports the separateness of the Western and Eastern divisions but at the same time it raises the problem of subgrouping within the Eastern division. The fact that Hitchiti-Mikasuki and Creek both have Class III inflection appears to constitute a shared paradigmatic innovation and this, theoretically, should constitute a basis for placing them together in a single subgroup distinct from Alabama-Koasati. However,

there is little further support for this.³ On the contrary, Hitchiti-Mikasuki exhibit some interesting phonological traits which could, perhaps, be interpreted as evidence of a quite different kind of subgrouping. These phonological traits are especially interesting because they cross the barrier between the Western and Eastern divisions. Two will be illustrated. The first concerns the development of PM *k^w which appears as b in Choctaw-Chickasaw, Alabama-Koasati and Hitchiti-Mikasuki, but as k in Creek (or p in definable circumstances) (Haas 1947). Example:

'mulberry': Ch bihi, K bihi, Hitch bi- (in bi-hasi
'mulberry month'), Cr kí. PM *k^wihi.

This sound correspondence sets Creek apart from all the other languages.

The second phonological trait referred to above constitutes a phonological rule and involves retention in Choctaw-Chickasaw and in Hitchiti-Mikasuki and innovation in Alabama-Koasati and Creek. The rule is:

PM *Vk > a. / $\left. \begin{array}{c} (1) \\ m \\ n \end{array} \right\}$. Example

'yellow': Ch lakna; H lakn(i); Ala-K la·na;

Cr lá·n(i·). PM *lakna.

We thus see that when a variety of traits are examined they point in contradictory directions as far as subgrouping

is concerned. The examination of lexical isoglosses reveals similar contradictions.

2.2. In the preceding section we have examined some of the contradictory evidence regarding subgrouping. How can the contradictions be reconciled? It must first be recognized that the problem is in part genetic and in part areal or diffusional. Moreover, it is frequently difficult to distinguish the two. At the present time the following set of conjectures seems plausible.

Stage 1. The split into the Western and Eastern divisions occurred very early, but except for the basic phonological and morphological differences mentioned in the preceding section, all the languages remained quite close. Nevertheless, the poles were Choctaw, on the one hand, and Creek on the other. The other languages were more or less pulled between these two poles.

Stage 2. At the time of the W-E split (characterized by the treatment of PM *N, *c, *i/o, etc.) PM *k^w had not yet undergone any change except in Creek where early delabialization is a reasonable assumption. The other languages except Creek remained in fairly close contact and gradually a shift of *k^w to b took place in all of them.

Stage 3. Alabama-Koasati and Creek contracted *ak to a before resonants. No change took place in Choctaw-Chickasaw

or Hitchiti-Mikasuki.

Stage 4. Hitchiti-Mikasuki began to show strong influence from Creek. Perhaps the convergence of Hitchiti-Mikasuki and Creek in regard to the subject inflection of verbs belongs to this stage. Furthermore, the Hitchiti-Mikasuki numeral system closely resembles Creek (where the latter differs from the other languages) and Hitchiti-Mikasuki also shares many vocabulary items with Creek where both differ from the other languages. Particularly diagnostic is a word like Hitchiti acin(i) 'cedar', borrowed from Creek acína, which in turn is borrowed from Cherokee.

Many more details could be worked out in regard to the four stages proposed above. As more analysis is carried out in each of the several languages it will become possible to enlarge the picture quite importantly.

2.3. In recent years there has been a resurgence of interest in several of the Muskogean languages. Recent work on Choctaw has been done by Nicklas (1975), Heath (1977), and McClaran and Herrod (1977), while Pulte (1975) has worked on Chickasaw. West continues work on Mikasuki (West 1974a, b) and Haas on Creek (1977a, b, c). Other investigators are also at work and we can expect to see more results in the near future.

3. Other Linguistic Families

3.1. The Algonkian family is the most widespread in North America but it is only weakly represented in the Southeast. There may have been several Algonkian languages in Virginia and Carolina, but we have information on only two, Powhatan and Pamlico, and records of them go back to the seventeenth and early eighteenth centuries. Frank T. Siebert, Jr. has made a detailed study of Powhatan in an important paper entitled "Resurrecting Virginia Algonquian from the Dead: The Reconstituted and Historical Phonology of Powhatan" (1975). Shawnee was also spoken in the Southeast but its intrusion into the area is thought to be post-Columbian. The language is still spoken and still being studied (Voeglin 1937-49; Parks 1975).

3.2. Southeastern representatives of the Iroquoian family are Cherokee and Tuscarora. Cherokee constitutes a separate southern branch as against all other members of the family which make up the northern branch (Lounsbury 1961). Tuscarora is a southern outlier of the northern branch. Cherokee is still spoken in North Carolina and in northeastern Oklahoma and is still the subject of much study (Walker 1975). A fine dictionary has recently appeared (Feeling and Pulte 1975).

3.3. There are two recognized branches of Siouan in the Southeast, (1) the Catawba branch, which stands somewhat apart from the other branches (Siebert 1945), and (2) the Southeastern or Ohio Valley branch, which comprises Biloxi, Ofo, and Tutelo (Haas 1968, 1969). All are extinct, but Biloxi, in particular, has received recent attention (Einaudi 1974).

3.4. The Caddoan family was represented by several bands in northwestern Louisiana, southwestern Arkansas, and northwestern Texas. The different bands probably spoke distinct dialects, but these became amalgamated into what is known as Caddo. Aside from the collection of vocabularies, the language was little studied until fairly recently. Chafe (1973:1165) has made an intensive study and a major publication will eventually result. In the meantime some Caddo examples are presented in a paper on phonological theory (Chafe 1968).

The remaining Caddoan languages lie outside of the Southeast. A comparative study has been made by Taylor (1963a, b).

4. Language Isolates

4.1. With the important exception of Yuchi, the language isolates of the Southeast are extinct. Though attempts have been made to place each of them in a larger grouping

(i.e. with other isolates, with families, or with both), most such attempt remain somewhat controversial.

4.2. Timucua, of central and northern Florida, has probably been extinct since the eighteenth century. A grammar was composed by Francisco Pareja in 1614 (Pareja 1886). Recent studies, based on earlier material, have been made by Granberry (1956). There have been suggestions that Timucua is affiliated with Warao, of Venezuela and Guyana (Granberry 1970), or with Macro-Arawakan (Swadesh 1964). Swadesh's justification is not convincing as it stands (Haas 1971:51), but Granberry's suggestion probably deserves further examination. All language isolates are very difficult to place and Timucua is not particularly exceptional in this respect.

4.3. There are still quite a few Yuchi speakers living near Sapulpa, Oklahoma (Crawford 1975:72). They moved there from Georgia together with the Creeks during the great Indian removal of 1836-40. Texts and a grammar of the language are available (Wagner 1931, 1934). Some analysis of the language has also been done by Wolff (1948, 1951). Quite recently there has been considerable renewed interest in the language, particularly on the phonology (Crawford 1973) and the morphonology (Ballard 1975). Both investigators are continuing their work on the language.

4.4. The Natchez were virtually wiped out in their eighteenth century wars with the Franch and with other Indians. A few took refuge among the Cherokee and the Creeks and were removed with the latter to Indian Territory (eastern Oklahoma). A handful of surviving speakers remained in the twentieth century. Nineteenth century vocabularies were taken down by Gallatin (1836), General Pike (Pilling 1889:69), and Gatschet (Swanton 1907:514). Swanton, in 1907, discovered five remaining speakers living in the Cherokee Nation and collected texts and other materials then and in following years (Swanton 1911:256-57). In 1931 the Committee on Research in Native American Languages, headed by Franz Boas, sent Victor Riste, a student at the University of Chicago, to work on the Natchez language.⁴ Although he collected considerable material, he did not work any of it up. In 1934 the same Committee sent Haas to work on the language and she collected extensive grammatical and text materials then and again in 1936. Most of the material remains unpublished but Haas has given class lectures on the language in recent years and expects to write up all her materials within the next few years.

Dr. Charles Van Tuyl, of Bacone Colleg, Muskogee, is currently working on the Gallatin, Pike, and Gatschet vocabularies and other archival materials.

4.5. The Tunica were found living along the Yazoo River in the seventeenth century. Later they moved into Louisiana where they settled south of the Red River, near what is now Marksville, Louisiana. Gatschet collected linguistic materials in 1886. Twenty years later Swanton collected some additional materials and at the same time checked Gatschet's. On the basis of these materials, Swanton wrote a grammatical sketch of the language (1921). The most extensive materials were collected by Haas in 1933 and on four brief subsequent visits under the auspices of the Committee on American Native Languages. A grammar (1941b), a grammatical sketch (1946), texts (1950) and a dictionary (1953) have been published.

4.6. The Chitimacha were always a small tribe. When first encountered by the French in the late seventeenth century they were living along the Bayou Teche in southern Louisiana. Their language has been worked on by Gatschet, Swanton, and Swadesh. Swadesh's work was the most extensive and it was carried out in 1932 under the auspices of the Committee on Research in American Native Languages. He has published two articles (1933, 1934) and a grammatical sketch of the language (1946). In addition he prepared a larger grammar, texts, and dictionary (1939) but these have not been published. They form a part of the Boas Collection of the American Philosophical Society (Freeman and Smith 1966).

4.7. Atakapa appears to have died out around the turn of the twentieth century and so our most extensive materials on the language are those collected by Gatschet in 1885. Swanton worked up Gatschet's material and published a sketch of the language (1929) as well as a dictionary (1932). A reanalysis of this material is urgently needed, but it is a task which requires rather special philological as well as linguistic skills.

5. Problems of Linguistic Interrelationships

5.1. Problems relating to the linguistic prehistory of the Southeast have concerned scholars for two centuries. Various attempts at classifying these languages have been made over the years. Here we shall mention only those that are in some sense current.

5.2. Swanton (1907, 1924) suggested a relationship between Natchez and Muskogean. In 1919 he published a small volume comparing Tunica, Chitimacha, and Atakapa and proposed placing them together in a stock which he named 'Tunican'. In 1929 Sapir published his overall classificatory scheme for all of North America. He incorporated Swanton's suggestions on the Southeast and also added some of his own. He set up Yuchi as an outlying relative of the Siouan family and also suggested a special relationship between Iroquoian

and Caddoan. He then placed all of these groupings, including Swanton's, in his widespread Hokan-Siouan superstock. He divided Hokan-Siouan into six main subdivisions (distinguished by Arabic numerals), three in the West and Southwest and three in the Southeast, as shown in Table 2.

Table 2

1. Hokan-Coahuiltecan [with several subgroupings]
2. Yuki [= Yukian, a small family in northern California]
3. Keres [= Keresan, a small family in the Southwest]
4. Tunican [based on Swanton 1919]
 - (a) Tunica-Atakapa
 - (b) Chitimacha
5. Iroquois-Caddoan
 - (a) Iroquoian
 - (b) Caddoan
6. Eastern group
 - (1) Siouan-Yuchi
 - (a) Siouan
 - (b) Yuchi
 - (2) Natchez-Muskogean [based on Swanton 1924]
 - (a) Natchez
 - (b) Muskogean
 - (c) Timucua (?)

We have to assume that this arrangement was intended to indicate nearness or farness of relationship. The most difficult problem, though Sapir did not state it in those terms, was that most of these items were either language isolates (viz. Tunica, Atakapa, Chitimacha, Yuchi, Natchez, and Timucua; see section 4) or small 'family isolates' (viz. Yukian and Keresan) which have a shallow time depth (probably around five hundred years) which makes them little different from language isolates.

5.3. Various suggestions for rearrangement of the constituency of these subgroups have been made since 1929. A slight rearrangement of Sapir's Tunican and Natchez-Muskogean subgroups was proposed by Haas (1951, 1952) who placed them together in a subgroup named 'Gulf'. In these papers she presented reconstructions for the Proto-Gulf words for 'water' and for 'land' and then compared them with Proto-Siouan because she hoped to use them as stepping-stones toward validating Sapir's Hokan-Siouan hypothesis. In addition a paragraph showing some Yuchi comparisons with Siouan was added (1951:79).

In 1963 Elmendorf presented materials showing lexical similarities between Siouan and Yukian (subdivision no. 2 in Table 2). He followed this up with some comparisons which also include Yuchi (1964). As Table 2 makes clear, Sapir had

placed Yukian in his Hokan-Siouan superstock but not in close affiliation with anything else in Hokan-Siouan, not even Hokan, as is sometimes assumed.

Soon after the appearance of Sapir's 1929 classification, Allen (1931) proposed a special relationship between Siouan and Iroquoian. Little more was done about this suggestion until 1964 when Chafe presented evidence of his own for a Siouan-Iroquoian connection. More recently Chafe has attempted to combine this with Sapir's Iroquoian-Caddoan suggestion, thus making it possible to propose the combining of all three families (Chafe 1973) into a Macro-Siouan stock.

5.4. In 1958_b Haas published a paper postulating a relationship between the Algonkian family and the Gulf languages, including the Muskogean family. This cut across two of Sapir's most farflung superstocks (viz. Hokan-Siouan and Algonkin-Wakashan). Between Sapir's 1929 classification and the Algonkian-Gulf proposal of 1958, no major change in the former had been suggested. At the same time little in the way of substantiation of Sapir's more distant relationships had been worked out. The earlier comparative papers of Haas (1951, 1952) were intended to be the beginning of the substantiation of Sapir's Hokan-Siouan. Another paper on the Hokan-Coahuiltecan word for 'water' (Haas 1954) took in the western part of the Hokan-Siouan stock and suggested a

connection between the reconstruction of the Proto-Gulf and Proto-Hokan-Coahuiltecan words for 'water'. In the meantime investigations in other directions made it clear that other relationships might be worth considering and that these might even cut across the Sapir classification. One such postulation was that of the Algonkian-Gulf connection mentioned above.

The competition among such suggestions as Hokan-Siouan, Algonkian-Wakashan, and Algonkian-Gulf has had the very salutary effect of prompting us to take a new look at the various amalgamations that have been proposed over the years. Thus after a long period in which the lumping of linguistic families and isolates was the order of the day, an era of splitting seems to have now set in, often accompanied by proposals for various kinds of regrouping.

5.5. Some of the larger regroupings mentioned in sections 5.3. and 5.4. are shown in Table 3. However, the placement of the language isolates and the family isolates is going to remain a great challenge for some time to come. With these it is not possible to arrive at any time depth at all for the language isolates and nothing greater than around five hundred years for the family isolates. But the reconstruction of linguistic families gives us time depths of from two to four thousand years. At this point it is actually easier to compare protolanguage with protolanguage while the language

Table 3

Macro-Siouan	Algonkian-Gulf
(1) Siouan-Yuchi * **	(1) Algonkian-Ritwan (Haas 1958 _a)
(a) Siouan	(a) Algonkian
(b) Yuchi	(b) Wiyot
(2) Iroquoian	(c) Yurok
(3) Caddoan	(2) Gulf
<hr/>	
*Siouan-Yukian	(a) Muskogean
(1) Siouan-Yuchi	(b) Natchez
(2) Yukian	(c) Tunica
<hr/>	
**Siouan-Gulf	(d) Chitimacha
(1) Siouan-Yuchi	(e) Atakapa
(2) Gulf (as in righthand column)	

isolates and family isolates are still left dangling. This being the case, we must retain our skepticism regarding isolates.

5.6. There remain many unsolved problems regarding the linguistic affiliations of the Southeast, but renewed research activity in this area means that progress is being made.

In the past similarities among languages have often been considered explainable only on a genetic basis. This is true

in spite of the fact that many of the earlier groupings were originally suggested by typological similarities. Moreover Boas's (1920, 1929) well-known objections to some of the genetic schemes of Kroeber, Radin, and Sapir were resisted at the time as representing an antihistorical bias. But in recent years an increasing amount of attention is being given to areal linguistics, i.e. the tracing of traits across the basic genetic boundaries. This is fast becoming a very promising field of investigation, especially since it is now generally recognized that genetic linguistics and areal linguistics are not antithetical but complementary. Consequently the proper delineation of linguistic prehistory requires us to take full advantage of both lines of investigation.

Notes

1. The other constituents are languages for which we have no data. One language, Tawasa, for which data has since come to light, turns out to be a dialect of Timucua.
2. The Choctaw word for 'father' has been reanalyzed by the Choctaw as an alienably possessed noun with -ki as its stem. Comparative evidence shows it to have been an inalienably possessed noun with stem as shown here.
3. There is lexical evidence to support various kinds of subgroupings so it is not here given any special weight.

4. Boas turned over Riste's notebooks to Haas. In due course they will be deposited in the Boas Collection of the American Philosophical Society.

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Timucua and Yuchi: Two Language Isolates of the Southeast

James M. Crawford

I shall restrict my topic to a consideration of Yuchi and Timucua, two language isolates of the Southeast which have not been proved to be related to any other language or language family. Yuchi is a language without dialectal variation, once spoken in Georgia and presently spoken by about thirty people in Oklahoma. Timucua, now extinct, consisted of six to eight dialects and was spoken in northern Florida from about Tallahassee eastward to the St. Johns River near Jacksonville and southward to Cape Canaveral on the Atlantic Ocean and Tampa Bay on the Gulf of Mexico.

Timucua

Our knowledge of Timucua is derived entirely from the sixteenth-century writings of two Frenchmen, Jean Ribaut and René de Laudonnière, in which numerous Timucua lexical items occur, and from the following seventeenth-century Spanish sources: (1) a religious text ("Confessionario"), three catechisms, and a grammatical sketch, written by Francisco Pareja and published in Mexico between 1612 and 1627; (2) two religious texts written by Gregorio de Mouilla and published in Mexico in 1635; and (3) two letters with accompanying Spanish

translation, one written to the governor of Florida in 1636 by a Timucua chief, the other written and signed by six Timucua chiefs in 1688 and addressed to the king of Spain.¹

The existence of several of these items has been known to the scholarly world since at least the early 1800s. Four items (Pareja's "Confessionario", his grammatical sketch, two of his three catechisms, and the 1688 letter) were discovered in Spain in the latter half of the 1800s. There are reasons for believing that Pareja wrote and published other religious tracts, as well as a Timucua dictionary. It is to be hoped that copies of these will be located eventually, either in Spain or Mexico.

Copies of these materials, either original or photostatic, are in the New York Historical Society Library and the National Anthropological Archives. Only a few of the items, however, have been published. Buckingham Smith, who discovered it in Madrid, privately printed in facsimile in 1859, the 1688 letter of the Timucua chiefs. About half of the letter was published by Smith (1860), although not in facsimile, in Historical Magazine. Pareja's grammar, discovered in Madrid in 1881, was published in 1886 (Pareja 1886). Milanich and Sturtevant (1972:78-113) published in facsimile selected pages from Pareja's "Confessionario". Selected, and occasionally edited, extracts from catechisms and other religious texts were

published by Albert Samuel Gatschet and by Raoul de la Grasserie in the 1870s and 1880s.² Grasserie (1889) published also a Timucua-French vocabulary.

In addition to Gatschet and Grasserie, the scholars who have examined and analysed Timucua in some detail are John Reed Swanton, Julian Granberry, and Thurston Dale Nicklas. Swanton, according to Granberry (1970:606), worked on Timucua for many years and by the mid 1950s had prepared a large Timucua-English and English-Timucua lexicon.³ Swanton's only publication on Timucua is his 1929 article, "The Tawasa Language," in which he attempts to connect the language of the Tawasa tribe with Timucua and the Muskogean languages. Granberry's sole publication on the Timucua language is his 1956 article on its phonemes and prosodics. After receiving a grant from the American Philosophical Society to continue his work on Timucua, Granberry (1970:606) stated that he had several articles in progress on the structure and genetic affiliations of Timucua. So far as I know, he has not published these articles. Nicklas has worked on Timucua intermittently for several years and expects to publish soon a "short grammar" of the language (personal communication).

Genetic Affiliations

The observation of Adelung and Vater (1816:285) that

Timucua niha "older brother" resembles Illinois nihe "my brother" is the first expression of interest in the relationship of Timucua to other languages. Brinton (1859:137) took note of this resemblance and claimed to be able also to detect resemblances between the Yuchi numerals nowah "two" and nokah "three" and the Timucua ordinals of these numerals, respectively, naiucha-mima and naka-pumima and observed that Timucua "iti-na, my father, sounds not unlike the Cherokee etawta."⁴ Brinton apparently had searched for resemblances to Timucua among the Carib languages. Although he cited no examples, Brinton (1859) wrote that "these [resemblances to Yuchi, Cherokee, and Illinois] are trifling compared to the affinities to the Carib, and I should not be astonished if a comparison of Pareja['s Timucua] with Gilü and D'Orbigny placed beyond doubt its relationship to this family of languages" (137). Brinton, nevertheless, considered Timucua to be an "independent stock," as he so stated in his American Race (1891:90).

Gatschet examined in some detail two of Pareja's catechisms and his "Confessionario" and presented his findings in three papers, subsequently published, before the American Philosophical Society in 1877, 1878, and 1880. Gatschet (1880) stated that "all his attempts to connect it [Timucua] by its radical elements with some other language spoken in the neighborhood of its native soil have proved infructuous, and that

therefore he regards it as constituting a linguistic family for itself" (465). In the same paper Gatschet reported that "our present knowledge of Timucua shows that it stands in no radical connection with the Galibi dialects of South America (Arowak, Cumanagota, Chaymas, etc.), nor with the extinct Galibi idioms of the West Indies (Eyeri, Taino, Lucato, etc.), nor with the Carib on the coast of Honduras" (466). Brinton apparently had detected resemblances between Timucua and Carib which Gatschet did not acknowledge as such. But Gatschet later did discover resemblances between Timucua and other languages, even Carib. In his "A Migration Legend of the Creek Indians," Gatschet (1884) wrote that "a few words of their language...show affinity with Maskoki, others with Carib" (12). Gatschet (1888) later explained some of the resemblances as borrowings: "The Timucua language of Florida has borrowed several terms from the Maskoki dialects, especially from Seminole-Creek, which was spoken in closest vicinity to it. Among these are ífa dog, hú'li (spelt there 'hurri') war, yatíki interpreter, tóla laurel or sweet-bay; while the word ábu, ápu stick, wood, tree (in Creek and Hitchiti ábi, ápi stem, stick) was common to both families" (193). On the other hand, "the terms híniha and holá'hta were probably borrowed by the Creeks from the Timucua" (193).⁵ According to Gatschet (1888), the Timucua even borrowed a word from the Yuchi: "paracussi sub-chief,

village-chief [which is] from the Yuchi pá'län ku-siäⁿ 'chief very small'" (193).⁶

Powell (1891:123) accepted Brinton's and Gatschet's view that Timucua was not close to any other language and designated it as a separate family in his classification. Powell observed, however, that "both the latter authorities [Brinton and Gatschet] are inclined to take the view that it has affinities with the Carib family to the southward, and it seems by no means improbable that ultimately the Timuquana language will be considered an offshoot of the Carib linguistic stock. At the present time, however, such a conclusion would not be justified by the evidence gathered and published" (123).

Sapir (1921:408) made no mention of Timucua in his "A Bird's-eye View of American Languages North of Mexico," in which he proposed six "great groups, presumably genetic," to encompass the fifty-eight families of the Powell classification. Sapir (1925:525-26) rearranged and added to the languages of the Hokan-Siouan group. Sapir's tentative scheme for Hokan-Siouan now consisted of six sub-groups, the last of which he called the "Eastern group" (526). Under the "Eastern group" Sapir listed as coequal: (1) Natchez-Muskogian [sic] and Timucua, (2) Siouan, and (3) Yuchi. Sapir (1929) retained the six sub-groups of Hokan-Siouan in his Encyclopaedia Britannica article. However, in the "Eastern group" Sapir now

linked Siouan with Yuchi and, under "Natchez-Muskogian," listed as coequal Natchez, Muskogean, and Timucua, with a question mark after Timucua (139).

Swanton (1929) attempted to show that Tawasa "was a dialect belonging primarily to the so-called Timuquanan stock" (453). Swanton presented as evidence for this a table of "Tawasa-Timucua Correspondences" (450-51). For the purpose of showing a connection between Tawasa, Timucua, and Muskogean, Swanton presented three additional but shorter tables: "Tawasa-Timucua-Muskogean Correspondences," "Tawasa-Muskogean Correspondences," and "Timucua-Muskogean Correspondences" (451-52). The resemblances between Tawasa-Timucua and Muskogean are not entirely convincing, of which fact Swanton was aware, since he noted that "as in the case of Natchez, it appears that the resemblances [to Muskogean] are closest in the processes and the structure generally than in the vocabulary" (452). The resemblances which Swanton claimed to have found in the processes and structure of Timucua and Muskogean, "including a virtual structural identity," led him to conclude that "it seems practically impossible to maintain longer the separate position of the latter [Muskogean]" (453).

Mary R. Haas (1951:77) observed that the Timucua word for "water" *ibine* fits surprisingly well with her reconstructed

Proto-Gulf word for "water" *ak^wini. Haas asked the question: "Is Timucua a Gulf language?" and answered by stating that the evidence contained in the word for "water" gives us good reason to look further into this interesting possibility. She noted, however, that the highly plausible nature of this one comparison is insufficient to allow us to be positive and that it is difficult to find other cognates which appear similarly close to Proto-Gulf reconstructions (77).

Swanton in 1956 turned over to Granberry all his Timucua material (Granberry 1970:606). For the next several years Granberry, using for the most part Swanton's Timucua-English and English-Timucua lexicon, undertook a detailed study of Timucua for the "primary purpose [of determining] its affiliations with other American Indian languages, for it seemingly had no relation to other North American languages" (Granberry 1970:607). He compared Timucua "carefully on every level of structure with languages of every phylum, stock, and family of the Gulf and Circum-Caribbean areas" and concluded that "while more comparative work definitely remains to be done, it can be stated with at least moderate confidence that Timucua seems to show closest genetic relationship with Warao, of the Orinoco Delta region of Venezuela and Guyana" (607). Granberry claimed to have found that "Timucua shares 55 percent cognates with Warao" and that the remaining forty-five percent can be derived

from Proto-Arawak, Proto-Gulf, Proto-Muskogean, and late Muskogean (607). Granberry made surmises as to the date of separation of the Timucua from the Warao and that of their migration to Florida, as well as to the approximate dates of the entry of Gulf and Muskogean words into Timucua (607).⁷ Nothing further has appeared in print by Granberry about Timucua, but it is hoped that he will eventually publish the evidence which led him to these conclusions.

Morris Swadesh (1964:548) presented twenty-four sets of forms in Timucua and various Arawakan languages, which he claimed was evidence for placing Timucua in a "Macro-Arawakan" phylum. The sets show varying degrees of phonetic similarity and contain few recurrent sound correspondences. The resemblances may very well be coincidental. Swadesh's evidence for a relationship between Timucua and the Arawakan languages is unconvincing.

Mary R. Haas (1971:50) listed Timucua as "of doubtful affiliation" and queried its relationship to Muskogean, Siouan, and Arawakan. Haas observed that Swanton in 1929 had suggested a possible Muskogean affiliation for Timucua and that Swadesh in 1964 had found a small number of Arawakan resemblances, but pointed out that "Siouan resemblances of a similar nature can also be found" (51).

In summary, resemblances have been stated to exist

between Timucua and the following: Illinois, Yuchi, Cherokee, Muskogean, Gulf, Arawakan, Warao, and Siouan. Those noted by Adelung and Vater in Illinois, by Brinton and Gatschet in Yuchi, and by Brinton in Cherokee are upon close examination not resemblances at all and can be discounted. The resemblances which Swadesh found in Arawakan may be coincidental (or they may represent borrowings). If these are all that Swadesh was able to find, it cannot be maintained that he has made a convincing case for a genetic relationship between Timucua and Arawakan. As Haas noted, although she did not give examples, one can find Siouan resemblances of a similar nature. Some of Gatschet's, as well as Swanton's, Timucua-Muskogean resemblances, as Gatschet noted, can be explained as borrowings. Some of Swanton's resemblances are probably coincidental. In any case, the correspondences of the sounds are not sufficiently regular and recurrent to prove a relationship. And until Granberry publishes his evidence, we must hold in abeyance his claim for a genetic relationship between Warao and Timucua.

Timucua, then, is a language which deserves the attention of a competent and persevering linguist, one who is willing to devote much time and labor to the very considerable amount of material available in the language.

Yuchi

Nothing other than a few vocabularies were collected in Yuchi during the nineteenth century. The first was one by Nathaniel Ware, collected about 1820, and sent to Peter Duponceau. Shortly after 1820, another vocabulary was collected by John Ridge, a Cherokee, from a Yuchi chief who was visiting Washington (Gallatin 1836:97; Freeman 1966:387).⁸ The Ware and Ridge vocabularies were published by Gallatin (1836) in his comparative vocabularies (307-67). General Albert Pike, who collected vocabularies of most of the Musko-gean languages in Indian Territory about 1861, collected also a Yuchi vocabulary (Pilling 1885:587; 1889:69). Gatschet (1885) published a one-page article on the Yuchi tribe and language, based apparently on material which he collected in Indian Territory in the early months of 1885 (Powell 1888: xxxv-xxxvi). Although Gatschet published nothing more on the Yuchi language, he did prepare, in 1901, a manuscript entitled "Some Grammatic Comments on the Yuchi Language," which is located in the National Anthropological Archives. A few other short vocabularies were collected during the latter part of the nineteenth century by J. W. Powell, by L. F. Hadley, by Jeremiah Curtin, and by a collector whose identity cannot be established. Copies of these vocabularies are in the National Anthropological Archives.

In 1904, 1905, and 1908, Frank G. Speck collected ethnographic material on the Yuchi people and obtained numerous Yuchi vocabulary items and a few texts (Speck 1909:5). Scattered throughout his "Ethnology of the Yuchi Indians" (Speck 1909) are the Yuchi forms for a large number of cultural items. Speck (1911) also collected and published some Yuchi songs (201-10). Much of Speck's Yuchi linguistic material, including his texts, remains unpublished in the National Anthropological Archives.

Franz Boas sent Günter Wagner to Oklahoma to work on Yuchi in 1928. Wagner worked on the language during the summer of 1928 and for a shorter period during the winter of 1929 (Wagner 1931:viii). Wagner collected and published a considerable body of Yuchi texts (1931) and published a grammatical sketch of Yuchi (1934). Wagner also prepared an English-Yuchi dictionary, but never published it (Voegelin and Harris 1945:33).

Mary R. Haas collected some Yuchi material in 1940 (Haas 1964:499).

Hans Wolff took down a Yuchi text and collected a small amount of vocabulary material during a brief visit to the Yuchi in 1947 (Wolff 1948:240, 1951:48). Wolff published two articles on Yuchi, one on phonemes and "person markers" (1948) and one a short text and its analysis (1951).

Émile Benveniste (1950) published an article on the function of the two Yuchi negative particles from an examination of their occurrences in Wagner's (1931) texts.

I collected a Yuchi vocabulary in the summer of 1969, while making a reconnaissance of speakers of southeastern Indian languages.⁹ I spent the summers of 1970 and 1971 and a portion of the summer of 1973 in Oklahoma working on the Yuchi language, during which time I collected several texts and a considerable body of linguistic material.¹⁰ I have published an article on Yuchi phonology (Crawford 1973) and am presently engaged in the preparation of a dictionary and a grammar of the language.

W. L. Ballard traveled from Georgia State University, Atlanta, to Columbus, Georgia, one day a week during the academic year 1970-71, in order to work with a Yuchi speaker who was living temporarily in Columbus (personal communication). Ballard spent the summer of 1971 in Oklahoma and collected additional Yuchi material. Ballard has prepared in typescript an English-Yuchi lexicon (1973) and a Yuchi-English morpheme lexicon with an accompanying English-Yuchi index (1974). Ballard (1975) has published an article on Yuchi phonology and the personal pronominal prefixes. During the summer of 1975, Ballard returned to Oklahoma for additional field work on Yuchi.¹¹

Genetic Affiliations

Gatschet was the first to express an opinion in print about the relationship of Yuchi to other languages. Before he had collected any Yuchi himself, Gatschet (1884) wrote: "From what we know of it, it shows no radical affinity with any known American tongue" (18). The following year, Gatschet (1885) expressed the same opinion, but added that "it exhibits some general resemblance in structure to Creek and the other dialects of the Maskoki family" (253).

Powell, who usually deferred to Gatschet's judgment of language relationships and who occasionally remarked on possible interfamilial affinities, omitted any mention in his 1891 classification of possible relationships that Yuchi might have to other families.

Sapir (1921:408) linked Yuchi with Siouan and Muskogean to form a group within Hokan-Siouan. Sapir (1925) revised Hokan-Siouan and made Yuchi coequal with Siouan and with Natchez-Muskogean and Timucua in the "Eastern group" (526). In his last revision Sapir (1929:139) set up within the Eastern group the two sub-groups: Siouan-Yuchi and Natchez-Muskogean. This rearrangement indicates that Sapir now considered Yuchi and Siouan to be closer to each other than either to Natchez, Muskogean, or Timucua, of which three the Natchez-Muskogean sub-group now consisted. In none of the three

articles did Sapir present any evidence for his grouping of the languages and language families.

Influenced by Sapir's hypothesis of a link between Siouan and Yuchi and of a link between these two and Muskogean and Natchez, Haas (1951:79) suggested that Yuchi *ce* (or *tse*) "water" may have come from $*(a)k^w i(ni)$, which she reconstructed as the Proto-Gulf form for "water".¹² As possible evidence of a relationship between Yuchi and Siouan, Haas (79) also called attention to the phonological similarities between the Proto-Siouan reconstructions of Hans Wolff for "two", "black", "brain", and "bitter" and the Yuchi forms for these words. Haas (1964:497-98) presented a "preliminary list of comparisons," consisting of thirty-four sets of forms, from Tlingit, Proto-Athapaskan, Proto-Siouan, and Yuchi, as possible cognates for demonstrating the genetic interrelationship of these four linguistic groups.

William W. Elmendorf (1963) presented a considerable number of sets of forms from the Siouan languages, mainly Biloxi and Ofo, and from the Yukian languages, mainly Wappo, as possible evidence for a Yukian-Siouan relationship and listed ten additional sets to which Yuchi forms were added (308). According to Elmendorf (1963), "if we accept the Yukian-Siouan connections advanced here, and if we accept a special Siouan-Yuchi connection, then we must infer that

connections between Yukian and Yuchi should also be detectable" (308). It was Elmendorf's opinion that "there is nothing in this very brief preliminary comparison to contradict an assumption of special relationship between the three groups, Yukian, Siouan, and Yuchi" (308). Elmendorf (1964) attempted to document "further this relationship with a more extensive selection of Yuchi items" (328) and presented ten sets from Yuchi and Yukian, six new sets from Yuchi and Siouan, and ten new Siouan-Yukian sets. The new comparisons, Elmendorf (1964:340) believed, strengthened the assumption made in the 1963 article of a genetic connection among these three groups of languages.

So far as I know, no other connections for Yuchi have been proposed, nor have there been published any other comparisons which attempt to demonstrate a relationship between Yuchi and another language. Several years ago I spent some time making a search for cognates between Yuchi and Siouan, using Biloxi and Ofo (Dorsey and Swanton 1912). I presented the sets which I had discovered in a paper read at an anthropological meeting (Crawford 1970). With more Yuchi material to work with, collected in 1970 and 1971, I have intermittently made further searches for possible cognates between Yuchi and Siouan. But even with the additional material, I have been able to add but little to what I had already found. If Yuchi

and Siouan are related, the time depth of separation is probably so great that it will be exceedingly difficult, if not impossible, to prove the relationship. I say this in spite of the fact that it is possible to find homophonous and nearly homophonous morphemes and segments of morphemes in Yuchi and Siouan. One would expect that languages, no matter how distantly related, might share a few identity correspondences and a certain number of homophonous or nearly homophonous cognates. But when all the evidence for a genetic relationship consists of nothing else and when the identity correspondences are not regular and recurrent, one is inclined to suspect that the similarities may be coincidental or due to borrowings. It is quite possible that borrowing may be the explanation for many of the Yuchi-Siouan similarities. Similarities between Yuchi and Yukian, on the other hand, can scarcely be attributed to borrowing, or at least to recent borrowing. The explanation must be either coincidence or genetic relationship. Elmendorf's assumption of a genetic connection between Yuchi and Yukian can be viewed only as a possibility, but nevertheless one which should be further explored.

It might be expected that phonological similarities could be found between Yuchi and some of the southeastern languages other than Siouan. And indeed this is the case. I

present below some which I have found in Atakapa and Tunica. Some of the similarities I found may be coincidental. Borrowing may explain some of them. On the other hand, some of the similarities may indicate cognation and be evidence of genetic affiliation. I make no claim for genetic affiliation, although I am inclined to consider genetic affiliation as a reasonable explanation for the similarities in the sets given here.¹³

Yuchi-Atakapa Similarities

YUCHI	ATAKAPA
1. šo "body"	co "heart, soul, seed"
2. hæ "not"	ha, -ha "not"
3. hɔ̣- "he (m.s.)"	ha, ha- "3rd. pers. pron."
4. hi- "it"	hi- "it"
5. nɛ̣- "you"	na "2nd. pers. pron."
6. y'ɔ̣ "spider", yɔ̣da "bee"	i-oñ "to sting"
7. zoθo "unshelled corn", zot'i "shelled corn"	tso'-ots, tso-o'ts "corn" (ots "tooth; grain")
8. cya "dry"	tsak, tsaxk "to dry"
9. ša- (in šač'wanẹ "rabbit", šathọnẹ "fox", šat'anẹ	ca "person" (cf. cakó, cáko "bear", cāks "fox", cakc "lynx, wildcat")

"wildcat", etc.)

- | | | | | |
|-----|---------|------------|------------------------|-------------------|
| 10. | ču | "boat" | tu | "boat" |
| 11. | y'užiha | "Yuchi" | yu [^] k'hiti | "Indian; Atakapa" |
| 12. | k'o | "throat" | ko-i, ku-i | "throat" |
| 13. | k'ɔ̣ | "make, do" | ka | "make, do" |

Yuchi-Tunica Similarities

- | | YUCHI | | TUNICA |
|-----|--------|------------|---|
| 1. | p'a | "look" | pó "look, see" |
| 2. | t'o | "seed" | tósu "seed, grain" |
| 3. | tho | "short" | -tóhku, -tóho- "diminutive
suffix" |
| 4. | šaya | "squirrel" | číya "squirrel" |
| 5. | ti | "name" | -étisa "name, be named" (cf.
-éti "friend") |
| 6. | saha | "one time" | sáhku "one" (cf. sáhu
"other", táshu "the other
one") |
| 7. | s'æ | "land" | ʔésa "flat, level" |
| 8. | ši | "to stick" | šíhpu "to stick, pin, stick
through" |
| 9. | khyaka | "heron" | yáka- "heron, egret" (cf.
(cf. y'aka "white") čúhkišáhka "gray oak") |
| 10. | če | "belly" | č'čihki "belly" |

the drawings. Arrangements are being made with the Beehive Press of Savannah, Georgia, to publish the drawings in facsimile.

9. Funds for the reconnaissance were provided by a research grant from the Franklin College of Arts and Sciences of the University of Georgia.

10. My work on Yuchi was supported by two grants from the National Science Foundation: GS-3056 and GS-28812.

11. Ballard has in press another article on Yuchi, entitled "More on Yuchi Pronouns."

12. The Yuchi word for "water" is ζe , phonetically [dze] (my Yuchi notes).

13. The Atakapa forms are from Gatschet and Swanton (1932). The Tunica forms are from Haas (1953). The Yuchi forms are from my Yuchi field notes and are phonemic. Atakapa and Tunica forms are given as they appear in their sources. It is to be noted that Atakapa \underline{c} is [š] and that Yuchi \underline{c} is [ts]. Atakapa \underline{n} is [ŋ].

14. Haas (1953) makes the following remark about $\text{?}\acute{o}ndetiši$: "The word is almost certainly of foreign origin since native Tunica words do not have the phoneme \underline{d} . The second part of the word may be from Mob[ilian]; cf. $\underline{w}akatiši$ which means 'milk' in Mob[ilian], acc[ording] to Y[ouchigant]. The source for $\text{?}\acute{o}nde-$ remains unidentified" (292). It is conceivable that the Yuchi form is also from Mobilian. Although there is no evidence that the Yuchis ever spoke Mobilian, they may have had contact with Mobilian speakers, from whom they adopted the word. It may be, however, that the similarities in the Yuchi and Tunica words are merely coincidental.

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The Languages of South Texas and the Lower Rio Grande

Ives Goddard

Introduction

The area of southern Texas has traditionally been assigned by anthropologists to three linguistic families: Coahuiltecan, Tonkawan, and Karankawan. Especially for the groups classed together as Coahuiltecan the impression has been one of cultural and linguistic uniformity, or at least close similarity. Newly available information, however, both ethnohistorical and linguistic, makes it clear that this was an area of great linguistic diversity. Consider, for example, the tantalizing statement in a 1740 description of the five missions of the Colegio de la Santa Cruz on the San Antonio River (Santa Ana 1961:308):

Though many languages are found in these five missions, there are four that are the most common. To write the language of the largest group, it is necessary to pronounce the alphabet in the manner of the Italians, and with a care to this alone it is possible to write all of it: it is abundant and beautiful and is pronounced entirely with the same accent as Spanish. The second is more common [sic], is very pleasant, and is pronounced with great purity: the accent is as poor as it can be. The two remaining ones are deep and pronounced with so much difficulty that the only ones who will succeed in it [sic] are the princes of Africa, such is the haughtiness and vanity with which it is pronounced. The language of just using signs is universal in all the nations, making long discourses for any purpose as if it were any

other, spoken language; we make use of this one at the beginning, not having other means, and interpreters for many of them are completely lacking.

In 1762 there were reported to be more than 200 languages in the missions of the Colegio de la Santa Cruz (Los Dolores et al. 1961:263). Even allowing for exaggeration, the linguistic diversity of the area is evident.

The mention of a fully developed sign language in Texas in 1740 is clearly a significant reflection of the existence of a variety of languages there. An earlier documentation is from Pierre Talon, who was held captive on the Texas coast in 1688 and described a universal language of conventional signs with which he could make himself understood by Indians whose language he did not know (Villiers du Terrage and Rivet 1929: 308). Later documentation of the use of sign language among tribes of different languages comes from the lower Rio Grande in 1828 (Berlandier and Chowell 1850:146) and East Texas in 1805 (Sibley 1832). In fact, it is very likely that the Texas sign language was the ancestor of the Plains sign language of the nineteenth century.

The most important information on these languages to come to light recently is in the collection of vocabularies made in the South Texas-Lower Rio Grande area by two members of the Mexican Boundary Commission in 1828-1829, Jean Louis Berlandier and Rafael Chowell.¹ These manuscript vocabularies,

which appear to be fair copies, have been in the British Library in London since 1913 but have only recently become known to linguists (Berlandier and Chowell 1828-1829). Some irregularities in page numbering suggest that this collection may not now contain vocabularies of all the languages originally recorded. That there were other copies appears from a statement by Gatschet that vocabularies of the "Cotonames" and "Carrizos" taken down by Berlandier were lost in the Smithsonian fire of April, 1865 (Gatschet 1884a). The languages represented in the British Library materials are Lipan, Comanche, Tonkawa, Karankawa, Cotoname (Carrizo de Camargo), Comecrudo (Mulato), Garza, Carrizo de Mamulique, and (from a later period) Yucatec Maya. A complete edition is now being planned. Other new sources will be mentioned in connection with the survey of the individual languages.

Survey of Languages

The following survey will give an idea of what the languages were in the area and what data are available on them; they are discussed in the approximate order of the extensiveness of their documentation, from most to least. The classification of the languages will be taken up subsequently.

Tonkawa

The earliest data on Tonkawa are the vocabulary of Chowell and a few words recorded by Berlandier (Berlandier and Chowell 1828-1829); the place and date of recording are not known.² Words and sentences recorded by Oscar Loew (in 1872) and Baron Friedrich von Rupprecht at Fort Griffen, Texas, were published by Gatschet (1876:72-76, 89-91, 93-94, 99-143), who subsequently did field work at Fort Griffen in 1884 (Gatschet 1884). Gatschet and James Mooney made a few additional notes from visiting Tonkawas in Washington (Gatschet 1889-1898). The major body of materials are those of Harry Hoijer, based on field work in Oklahoma, mostly in 1928 (Hoijer 1933, 1946, 1949, 1972).

A number of tribes which are prominent in the eighteenth-century historical sources but for which no linguistic data are available have been classified as Tonkawan because of their associations with the Tonkawa. Bolton (1908; in Hodge 1907-1910, 2:437-438) reached this conclusion about the Yojuane, Mayeye, and Erviplane because the mission of San Francisco Xavier de Horcasitas was founded for them and the Tonkawas in 1748-1749, and because the distribution of tribes among the three missions founded in the area at the time was "avowedly on the basis of linguistic grouping" (Bolton in Hodge 1907-1910, 2:438). For the Mayeye this relationship is

supported by the statement of one of Gatschet's Tonkawa informants that the Méye (or Míyi) spoke a dialect of Tonkawa (Gatschet 1891:36). For the other putative Tonkawans, however, given the shifting nature of the associations among the Texas tribes recorded from this period it is probably reasonable to leave open the question of their linguistic relationships until further historical research is done.

A remarkable feature of the Tonkawa materials of Chowell and Berlandier is that the words appear to be either identical with those later recorded or completely different. There are only a few cases of words that appear to show sound changes, and these are minor. In the following list numbers 1-3 are identical, numbers 4-6 show syncope or contraction in [ewa] and [awa] sequences, and the rest show entirely different lexical items:

gloss	Chowell (1829)	Hoijer (1928)
1. tongue	<u>netjal</u>	<u>netxal</u>
2. arrow	<u>sajae</u>	<u>sax[?]ay</u>
3. cloth	<u>saaju</u>	<u>c[?]ax^w</u>
4. leg	<u>yaqueguan</u> ([yakewan])	<u>yak^wan</u> (:yakawa- 'kick')
5. man	<u>aaqueguan</u> ([a [?] akewan])	<u>ha[?]akoⁿ</u> (:ha [?] akewa- 'copulate')
6. feather	<u>eeyaguan</u> ([e [?] eyawan])	<u>?e[?]eyoⁿ</u> 'feathers; work' (?:e [?] eyawa- 'work')

(for phonemic neshawnan 'the one who is made to carry a burden'; Hoijer 1949, nos. 947 and 585) has been replaced by ?ek^wanesxaw (apparently ?ek^wan-hes-xa(w) 'dog for riding'; Hoijer 1949, nos. 45.2, 44, 993, and 739). It is interesting that although this replacement had already taken place in 1829 (Chowell has ecuanech-jau 'caballo') it apparently became a favorite example for the Tonkawa to cite, since Hoijer was given the archaic word for 'horse' as nesawonan (Hoijer 1949, no. 298; note the absence of a text citation), which is either Gatschet's form (with the regular loss of h after a consonant) or from a reduplicated verb hawawne- 'to carry burdens' (Hoijer 1949, no. 585). Gatschet gives a number of other examples of archaic words (Gatschet 1884:64, 151, 155, 189, 204), including two that match words recorded by Chowell: tóptcho 'Mexican man' in sáxai tòptcho 'lead' (example no. 18, above) and kóts 'tent, tepee' (no. 17). It is remarkable that so many basic words were replaced between Chowell's time and Hoijer's, and even moreso that the vocabularies from the 1870s and 1880s do not fall halfway between but rather seem to agree almost entirely with Hoijer's later materials. Yet the explanation for this, and the final piece of evidence for massive taboo replacement in Tonkawa, is not far to seek. On October 24, 1862, 167 Tonkawas were massacred by Northern Delawares, Shawnees, and some Wichitas and Caddos near present Anadarko,

Oklahoma (Wright 1951:251).

The existence of taboo replacement in basic vocabulary in a band-level culture can be paralleled elsewhere in the world. It is known, for example, from Australia (Dixon 1972:331) and East Greenland (Thalbitzer 1923:115). What is important for the study of the materials on the languages of South Texas is that the question is inevitably raised of how widespread this practice may have been among the other groups in the area. It is clear that if the practice was widespread and if, as in Australia, borrowing was an important source for the needed new words, isolated vocabulary resemblances among languages of this area, even in basic vocabulary, may well be due to diffusion.

Coahuilteco

Coahuilteco is the name that was given by Orozco y Berra (1864:63) to the language of the Manual of Bartolomé García (1760; Troike n.d.; Swanton 1940:10-54). The name may be taken to reflect the extension of Coahuila as far as the San Antonio River in the Spanish period, but the speakers of this language ranged principally in what is now Texas, between the Guadalupe River east of San Antonio and the middle course of the Lower Rio Grande in the area of present-day Laredo, with apparently only a slight extension into present Mexico.

García's title page identifies the Manual as for administering the holy sacraments to the Indians of the following nations (naciones): "Pajalates, Orejones, Pacaos, Pacóas, Tilijayas, Alasapas, Pausanes, and many other different ones that are in the missions of the Rio de San Antonio and Rio Grande that belong to the Colegio de la Santísima Cruz of the city of Querétaro, as are the Pacuâches, Mescâles, Pampôpas, Tâcames, Chayopînes, Venados, Pamâques, and all the young people of the Pihuisques, Borrados, Sanípaos, and Manos de Perro." This list does not include all of the bands that seem likely on ethnohistorical grounds to have spoken Coahuilteco and seems to include some that spoke Coahuilteco as a second language, either because it was a lingua franca in the area or because it had become one in the missions (cf. Troike 1967: 78-79). The fact that only the young people of the last four groups listed knew Coahuilteco is significant in this regard. Of the others, those least likely to have been originally Coahuilteco speaking are the Orejones, Pamâques, and Alasapas (see below).⁹ T.N. Campbell (personal communication 1978) has identified García's missions of the Rio Grande as San Juan Bautista and San Bernardo, near Guerrero, Coahuila, which had Indians from several Coahuilteco bands in 1734 and 1772. Coahuiltecos were apparently absent from the missions at Camargo and Reynosa, Tamaulipas, and it is unlikely that the Christian

Indians at Camargo in 1828, from whom Berlandier was unable to obtain a vocabulary because they were preparing for a fiesta (Berlandier and Chowell 1850:146), were Coahuilteco speakers.

The text of García indicates a number of lexical differences between the San Antonio and Rio Grande dialects, probably the major dialects in the respective areas, and there are a few other remarks on dialect differences. Some earlier materials attest additional dialect diversity. Most remarkable is a notebook by Gabriel Vergara dated 1732 and entitled "El Cuadernillo de la lengua de los indios Pajalates de la Misión de la Purísima Concepción," which was preserved only by having been used to make a binding for an early version of parts of García's Manual (del Hoyo 1965; Troike 1967). As documented in the "Cuadernillo" the dialect of the Pajalates, who are listed first on García's title page, is different from both the San Antonio and Rio Grande dialects of the Manual, though clearly very similar. An earlier source, again showing dialect differences from the other materials, is the 1691 diary of Damián Mazanet (Canedo 1968:225-254).¹⁰ Mazanet states (Canedo 1968: 240) that a single language was spoken from the San Salvador Mission (at the site of present Santiago de Valladares, Coahuila, near Candela and the Nuevo León border)¹¹ to the Guadalupe River east of San Antonio, other languages being spoken from there to the Techas (Hasinai). He gives the names of

numerous bands encountered along his route and records a number of place names with their translations. These are listed here, together with the variant readings of Bolton (in Hatcher 1932:48-67; see p. 48, note 10) in parentheses and Mazanet's translations; the Spanish is given here in parentheses when it seems to be a description of the place, or a Spanish designation, rather than a translation. All page numbers refer to the edition of Canedo (1968):¹²

(p. 230) Guansan 'río chico'

(p. 231) Chacalep (charco del pescado)

(p. 232) Asanquan 'corazón' (Charcos de Agua Verde)

(p. 232) Guagual (arroyo de agua salobre)

(p. 232) Pulapacxam (Pulapexam) 'en donde se crían gallinas'

(p. 233) Guanapetnan 'agua grande' [the Río Grande]

(p. 234) Guanpaclec (Guanpache) 'agua de lodo'

(p. 234) Samenpajo

(p. 235) Guanapacti 'arroyo de Dos Aguas'

(p. 235) Chottilapacqueen (Chotilapacquen?)¹³ [Nueces]

(p. 236) Guanapacavas (Guanapacaus) 'agua fría' [Frío]

(p. 236) Guanapajao (Jondo)

(p. 237) Potapana (Potapatana?) 'pozo'

(p. 237) Penapay (Panapay?)

(p. 238) Yanaguana [San Antonio River]

(p. 239) Imatiniguiapacomisen (Smatiniguiapacomisem) 'río en

donde hay colores para pintar las adarzas'

(p. 239) Papulacsap (Papulcasa?)

(p. 240) Xaloton 'nueces negras'

These names attest the word for 'water' and 'river' as guana or guan, found in the Pajalate "Cuadernillo" as guan. Several names show following attributives with the prefix (or prefix complex) ap-, including Guanapacti 'river of two waters' ('river which is two?'), to be compared with García's ajtê 'two'. asanquan 'heart' contrasts with García's -jasâl.

Karankawa

The earliest data on Karankawa are the 29 words recorded in 1688 from the Talon brothers, who had been captured by "Clamcoches" Indians living near Matagorda Bay (Villiers du Terrage and Rivet 1929:309-310). The subsequent vocabularies are those of Jean Béranger in 1720 (Villiers du Terrage and Rivet 1919), Chowell about 1829 (Berlandier and Chowell 1828-1829; Landar 1968), Gatschet's brief word lists obtained from two Tonkawas in 1884 (Gatschet 1884a), and a fairly lengthy one he obtained in 1888 from Mrs. Alice W. Oliver of Lynn, Massachusetts (Gatschet 1891; Swanton 1940:124-133). As in the case of the Tonkawa a number of groups named in the historical documents have been assumed to be Karankawan on the basis of **cultural and political affiliations** with the Karankawas, but

the only vocabularies extant are attributed to the Karankawas specifically. "Clamcoches" is merely a variant of their name, to be compared with Spanish Carancahuases, and other spellings listed in Hodge (1907-1910, 1:657-658). Bolton took the Coco and Tops (Tojo, Tups) to be Karankawan on the basis of their assignment together with the Karankawas to the Nuestra Señora de la Candelaria Mission in 1748 (in Hodge 1907-1910, 2:425, 437-438, 839-840). Other groups that he assumed to be Karankawan on similar evidence are the Copanes, Coapites, and Cujanes (in Hodge 1907-1910, 2:94-95).

The variations among the recorded Karankawa vocabularies may reflect dialect differences but are difficult to systematize. Swadesh even postulated a separate Clamcoche family for the Talon and Béranger vocabularies, with perhaps 36 minimum centuries of divergence from Karankawa as represented by Mrs. Oliver's vocabulary (Swadesh 1967:104),¹⁴ but the coming to light of the Chowell vocabulary has provided confirmation of a number of words from these sources. The following vocabulary will illustrate the available data:

	gloss	Oliver	Chowell	Béranger	Talon
1. dog		<u>kíss</u>	<u>qüeCHE</u> ¹⁵	<u>queche</u>	<u>quez</u>
2. man		<u>yámawe</u>	<u>saylá</u>	<u>ahax</u> or <u>alax</u>	<u>techoyou</u> ¹⁶
3. corn		<u>kwiám</u>	<u>cuayam</u>	<u>couejam</u>	'biscuit' --
4. boy		<u>glós'n</u>	<u>clox</u>	--	<u>colohs</u>

5. liquor	<u>labá-i</u>	<u>libán</u>	<u>clebeu</u>	[<u>cleben?</u>] ¹⁷	--
6. water	<u>gllé-i</u>	<u>clé</u>	<u>clay</u>		<u>comcom</u> ¹⁸
7. fish	<u>ám</u>	<u>am</u>	<u>quyles</u>		--
8. house	<u>bá-ak</u>	<u>caha</u>	--		<u>caham</u>
9. sun	<u>dóowal</u>	<u>clon</u>	<u>clos</u>		<u>colone(e)</u>
10. tobacco	<u>dé</u>	<u>caje</u>	<u>acanam</u>		<u>cahé</u>

Comecrudo

The vocabulary of 148 entries collected by Berlandier about 1829 and called by him "Mulato" is a major addition to our knowledge of the Comecrudo language, spoken near Reynosa, Tamaulipas (Berlandier and Chowell 1828-1829). A later but more extensive body of material was recorded by Gatschet in 1886 (Swanton 1940:55-118). Other sources are the words given by Uhde (1861:185-186) as "Carrizo" and some of the tribal names in a manuscript of about 1748 listing the tribes on the lower Rio Grande at the time of Escandón's pacification of Tamaulipas (Saldivar 1943). The latter include Sepinpacam 'los salineros' (cf. Comecrudo sepén 'salt' [Gatschet]); Perpepug 'cabesas blancas' (cf. Comecrudo iapel 'head', pela 'hair' [Berlandier] and pepók 'white' [Gatschet]); and Atanaguay-pacam, a tribe living at the mouth of the Rio Grande whose name was recorded by Berlandier as Comecrudo Atanaouajapaca 'Garzas', an apparent derivative of atanaouié (Berlandier),

atanawái (Gatschet), 'sea'.

Cotoname

Berlandier's 104-entry vocabulary of Cotoname, called by him "Carrizo de Camargo" (variously spelled)--ca. 1829 (Berlandier and Chowell 1828-1829), is a precious addition to our knowledge of this language, previously attested only in Gatschet's 1886 field notes from Indians whose native language was Comecrudo (Swanton 1940:118-121). In view of its source it is perhaps not surprising that there is more similarity between Comecrudo and Cotoname in Gatschet's materials than in Berlandier's. Two significant examples suggest that Gatschet's informants used original Cotoname words in both languages:

	Berlandier		Gatschet	
gloss	Cotoname	Comecrudo	Cotoname	Comecrudo
1. breast	<u>caneam</u>	<u>dom</u>	<u>knám</u> , <u>kěńám</u>	<u>kném</u>
2. water	<u>aje</u>	<u>apanecla</u>	<u>áx</u>	<u>áx</u>

Mamulique

Berlandier obtained a 22-entry vocabulary of the language of the "Carrizo" Indians living near Mamulique, Nuevo León (between Salinas Victoria and Palo Blanco, south of Villaldama), on January 26, 1828 (Berlandier and Chowell 1828-1829, 1850:68-71). This is the only known record of this language.

They were a group of 40 or 50 families living on fishing, hunting, and alms. All were Spanish-speaking Christians, and most of the women did not speak "their native language." There is also a second version of this vocabulary, with some differences.

Garza

Berlandier obtained a vocabulary of 21 words and two tribal names from the chief of the Garza ('heron') Indians, then living at Mier on the Rio Grande, on August 16, 1828 (Berlandier and Chowell 1828-1829, 1850:143-144). This is also a unique record. The Garzas had 89 men capable of bearing arms; they were largely acculturated and all spoke Spanish. Presumably they are the same as the Atanaguaypacam of 1748 (see above). Berlandier emphasized the differences among the languages of the Garzas and two groups of Carrizos, those of Camargo, whom the Garzas called Yué (the Cotoname), and those near Laredo, whom the Garzas called Yemé. The Garzas' name in Cotoname is recorded as Meacknan (Berlandier; first n uncertain) and Miákan (Gatschet 1886:54).

Solano

A single undated sheet in the manuscript of Swanton (1940) (NAA MS no. 2468) has a list of 21 words described as

follows: "Near the end of the original book of baptisms of the San Francisco Solano Mission, 1703-1708, is a brief vocabulary, presumably of the Indians of that mission." This sheet was evidently sent by H. E. Bolton from Querétaro about 1909, as it requests that information on the affinity of the language be added to the end of Bolton's "Terocodame" entry in Hodge (1907-1910, 2:733-734). No such information was added in the published version, but Bolton's request makes it clear that he had reached the conclusion that the Solano vocabulary represented the language of the Terocodame band cluster, a non-Coahuilteco group associated with the missions opposite present Eagle Pass, Texas, in the early years of the eighteenth century. The vocabulary was published by Swanton (1915: 34-35) essentially as received from Bolton, with the substitution of k for c, the addition of exclamation points to the imperatives, the bracketing in parentheses of a suspected prefix s on two kinship terms, and some changes in Bolton's marking of queries. Some additional changes, notably the omission of several accents, are found in Swanton (1940:54-55).

Aranama

In 1884 Gatschet recorded a two-word phrase from a Tonkawa man known as Old Simon (who had also provided a short vocabulary of Karankawa) in a language Simon identified as

Hanáma or Háname: himiyána 'water'; himiána tsáyi! 'give me water' (Gatschet 1884a). Other Tonkawas appear to have called this language (or its speakers) Chaimamé (a note seems to indicate that the Chai- is to be pronounced xai-) and Gatschet also refers to them as Charimames (Gatschet 1884:116-117; NAA MS no. 381). This was one of four tribes known to Old Simon that lived "near Matamoros" (clearly a vague location in the context) and wore no moccasins, the others being the Karankawa, the "Carrizos...now at Reynosa," and the "Minai" southeast of Austin (identified by Gatschet as Bidai). The only Indian group with a name similar to Háname (etc.) that survived in this area into the nineteenth century was the Aranama, also called Xaranames (Hodge 1907-1910, 1:72) and Jaranames (Berlandier 1969:165). The Aranama spoke the same language as the Tamique, and for these two tribes a separate mission, Espíritu Santo de Zúñiga, was founded in their territory on the lower Guadalupe River in 1726. When the Cujanes, Coapites, and Karankawas, who lived nearer the coast, were missionized in 1754, the difference in language between them and the Aranama-Tamique was given as an argument for founding for them the separate mission of Nuestra Señora del Rosario on the San Antonio River (Bolton in Hodge 1907-1910, 2:94-95, 682-683).

Undocumented Languages

There are several languages in the South Texas and Lower Rio Grande area that are known to have existed on the basis of historical evidence, but for which there is no direct attestation. The Orejón and Pamaque Indians, who lived on the Texas coast at the mouth of the Nueces, are listed on García's title page, but statements by the missionaries, including García himself, can be taken to imply that although they knew Coahuilteco they shared a separate language of their own (Bolton in Hodge 1907-1910, 2:147). The statement on García's title page that only the young people of the Pihuiques, Borrados,¹⁹ Sanipaos, and Manos de Perro knew Coahuilteco indicates the existence of at least one undocumented language among these groups, who lived on the coastal islands. The Pihuiques appear to have been closely associated with the Pamaques (Bolton in Hodge 1907-1910, 2:196). Other groups in the area were the Malaguitas (Maraquites), Pasnacanes, and Chayopines (on García's title page). The Alazapa (Alasapas on García's title page), or Pintos, appear to have been from south of the Rio Grande (del Hoyo 1972:2) and hence are likely not to have been originally Coahuilteco speakers. Gatschet heard of the existence of two Pinto speakers near Reynosa in 1886 but was unable to interview them (Powell 1891:68; cf. Bolton in Hodge 1907-1910, 2:257).

Classification

The languages surveyed in this paper were at one time all assumed to be related, although more recent scholarly opinion has tended to the belief that they represent three or four unrelatable families (or isolated languages). However, an examination of the earlier classifications, the data on which they were based, and the new data reviewed here suggests strongly that the languages of South Texas and the Lower Rio Grande represented many language families, which because of the sparseness of the extant data and the dissimilarities in what is available cannot be classified as related.

The classification of Powell (1891) grouped these languages into three units: Karankawan (attested by Gatschet's data from the Tonkawas), Tonkawan, and Coahuiltecan, the latter consisting of Coahuilteco (from García) and Comecrudo and Cotoname (as recorded by Gatschet). The classification of Comecrudo and Cotoname as Coahuiltecan appears to follow Orozco y Berrás use of the term Coahuilteco (see note 9) rather than to be based on a determination of close lexical similarities among the languages. The first published presentation of evidence for the relationships of the languages of the area was by Swanton (1915), who concluded that all of these languages, as well as Atakapa and Maratino, were related in a single Coahuiltecan stock. "There would appear to have

been two principal divisions of the Coahuiltecan stock: one including Coahuilteco, Comecrudo, and probably Karankawa, with which Atakapa was nearest related, or which had influenced Atakapa the most, and one represented by Cotoname and Tonkawa" (Swanton 1915:39). Swanton felt that there was "little doubt" of the relationship of Solano to Coahuilteco, and thought that Aranama was also related, principally because himiána 'water' "suggests the Coahuilteco awana" (Swanton 1915:35, 36), which he must have extracted from the placenames sent him by Bolton. A brief look at Swanton's lists of "lexical resemblances" shows that his criteria of similarity were extremely generous by present standards, and it is unlikely that any specialist today would consider his comparisons to be proof of genetic relationship. Sapir (1920) accepted Swanton's grouping and claimed to demonstrate a link with the then recently proposed Hokan stock, but his article is probably best taken today as an illustration of how easy it is to find lexical resemblances between groupings of large numbers of poorly recorded languages. Even if there were nothing new to be said about the putative Coahuiltecan group, its proposed relationship with Hokan would have to be reevaluated in the light of the vastly improved knowledge of the Hokan languages that has become available since Sapir wrote, and in the light of the ongoing reassessment of the validity of Hokan itself as a genetic

entity, discussed in other papers in this volume. Sapir reshuffled the subgroupings for his 1929 classification (Sapir 1949:173), which had a Coahuiltecan family consisting of Tonkawa, Karankawa, and "Coahuilteco," the latter now including "Coahuilteco proper," Comecrudo, and Cotoname (and silently also Solano and Aranama); the same classification had also appeared in Sapir (1925:525-526).

In recent years the trend has been to look with skepticism on the validity of Swanton and Sapir's Coahuiltecan group. Swanton himself expressed reservations, while affirming that he was "inclined to believe" that the languages were ultimately related (Swanton 1940:144-145). The 1964 "Consensus Classification," of a group of linguists who met at Bloomington, Indiana, in the summer of that year, separated Karankawa, Tonkawa, "the Coahuiltecan language isolate" (i.e. Coahuilteco), and "Comecrudan" (Comecrudo and Cotoname). Karankawa was taken to be an isolate, and Tonkawa was classified "dubiously" in the "Macro-Algonquian Phylum" (itself a construct of rather dubious status); "Comecrudan" and "Coahuiltecan" were linked only in that both were put in the Hokan Phylum "with reservations" (Voegelin and Voegelin 1965:139-145).²⁰ The only part of the original Coahuiltecan grouping that was retained was the linking of Comecrudo and Cotoname as Comecrudan. But as Swanton (1940:144) remarked: "The two lists of words that

present most analogies are, as might have been expected, Comecrudo and Cotoname, which were collected by the same linguist at the same time and place from Indians who had long been on terms of intimacy. For this reason the considerable differences between the two tongues are surprising. In some cases... one of them is nearer Karankawa than to the supposedly sister dialect."

The considerable differences between Cotoname and Comecrudo are particularly evident in the long parallel vocabularies of Berlandier, which show only the following resemblant sets:²¹

	gloss	Cotoname	Comecrudo
1.	bee	<u>sapa</u>	<u>sepiahouec</u>
2.	lion	<u>couba-ajâ</u>	<u>couepet</u>
3.	sun	<u>aaü</u>	<u>al</u>
4.	woman	<u>katema</u>	<u>kem</u>
5.	nose	<u>iae</u>	<u>ia</u>
6.	hill	<u>aoue</u>	<u>aoui</u>
7.	red	<u>msa-a</u>	<u>pam-set</u>
8.	uncle	<u>quiquaima</u>	<u>kekiam</u>

In comparison, it is possible to find five resemblant sets with two-consonant matches between Comecrudo and Proto-Algonquian, plus one whole-word monoconsonantal set:

gloss	Comecrudo	Proto-Algonquian
1. dog	<u>klaamp</u>	*aθemw-, *-a [?] θemw- (* [?] θ is from ** <u>kθ</u> or ** <u>pθ</u>)
2. louse	<u>ack</u>	*ehkw- (Fox <u>ahkw-</u>)
3. star(s)	<u>ketiecoui</u>	*aθankw-
4. arm	<u>pat</u>	*-xpetwin-
5. mountain	<u>pemaia</u>	*pematenw-
6. red	<u>pam-set</u>	*meçkw-

Neither of these sets of resemblant forms can be taken as better evidence of genetic relationship than the other, though the few words which Cotoname and Comecrudo appear to share in nearly identical form may be evidence for borrowing. The three components of Powell's Coahuiltecan--Coahuilteco, Comecrudo, and Cotoname--must all be considered independent isolated languages whose genetic relationships are at present unknown, and the fragments of Solano and Aranama cannot be put in any language grouping with any confidence.

The question remains of the relationship of the two new languages attested only in the Berlandier vocabularies, Garza and Mamulique. It is clear that they show strong resemblances to Comecrudo:

	Comecrudo			
	Mamulique	Garza	Berlandier	Gatschet
1. sun	<u>atl</u>	<u>ai</u>	<u>al</u>	<u>ál</u>
2. moon	<u>can</u>	<u>an</u>	<u>escan</u>	<u>kán</u>
3. water	<u>aha(?)</u>	<u>aje</u>	<u>apanecla</u>	<u>áx</u> ²²
4. road	--	<u>aie</u>	<u>aaul</u>	<u>ál</u>
5. man	(<u>quessem</u>)	<u>knarje</u>	<u>na</u>	<u>gnáx</u>
6. woman	<u>quem</u>	<u>kem</u>	<u>kem</u>	<u>kém</u>
7. sky	--	<u>apiero</u>	<u>apel</u>	<u>apél</u>

The case for relating Garza and Comecrudo seems strong; the agreement in the words for 'sun' and 'road' is particularly striking and shows a consistent phonological pattern suggestive of an historical sound law. The sparse Mamulique data compare well with Garza and Comecrudo as far as they go. There is a basis, then for postulating a Comecrudan family consisting of Comecrudo, Garza, and Mamulique (but, N.B., excluding Cotoname, which was considered Comecrudan in the 1964 classification).

Conclusion

The available data from South Texas and the Lower Rio Grande point to the existence of seven at present unrelatable languages or small families: Tonkawa, Coahuilteco, Karankawa, Comecrudan, Cotoname, Solano, and Aranama. It is also clear

that perhaps an equally large percentage of the area must be assigned to languages that are totally unknown and will never be classifiable by linguistic means.

Notes

1. Spelled Chovell on the title page of Berlandier and Chowell (1850), but Chowel on p. 79 and Chowell in his own hand in Berlandier and Chowell (1828-1829).
2. More research on the activities of Berlandier and Chowell may clear up a few minor uncertainties like this; I have not seen the unpublished parts of their journals.
3. CH transcribes the underlined ch of the manuscript, which is intended to signal the Spanish value [č] as opposed to the French value [š]. The distinction between ch and CH is not made consistently, however.
4. There is perhaps a trace of atche in Hoijer's materials in the forms ha'con?ok 'eyebrows' and ha'cm?e'm?et 'eyelashes'.
5. Mooney (in Gatschet 1889-1898) recorded an archaic word for 'bear' as ókchápó and Gatschet (1884:151) recorded okyákotam. Conceivably, the same word is concealed behind the three recordings.
6. The development of the meaning 'wagon' from the old word for 'gambling hoop, gaming wheel' is also found in the case of Arapaho hotíí 'wagon, wheel'; for the earlier meaning see

Mooney (1896:994-995, 1013).

7. This word, in a short list by Berlandier, might also be read nachan; the third letter has been overwritten. A connection with Hoijer's henca'n 'lake, pond' is possible. Hoijer's ?a*x 'water' may be a borrowing from Cotoname or Comecrudo (see below) or an independent baby-talk word (cf. Oswalt 1976). The apparent diffusion of words for 'water' further east in Texas has been pointed out by Troike (1964).

8. sajeu- must be a miscopying of *sajae-; cf. sajae in no. 2, above.

9. A great deal of work remains to be done in sorting out the small groups in the area. An important series of studies sifting and reevaluating the available data has been begun by T. N. Campbell (1975, 1977). Certainly, however, Orozco y Berra's extension of the name Coahuilteco over numerous bands on his map in South Texas and northeastern Mexico (which has generally been followed by more recent maps of the area) is without linguistic foundation.

10. Canedo signs his introduction as "Fray Lino G. Canedo. O.F.M." (p. xxxiii), but the Library of Congress gives his surname as Gómez Canedo.

11. Mazanet later writes that the first group of bands encountered ranged between the Sabinas and the Rio Grande (Canedo 1968:232). The aboriginality of Coahuilteco speakers in

this area is uncertain, since the Indians may have been drawn south to the Spanish settlements and missions.

12. Swanton (1915:35; 1940:55) cites from a communication of Bolton's two names on this list, attributing them to the first group of bands that met Mazanet and to the Payaya, who were met on the San Antonio River (but see now Campbell 1975).

Swanton's spelling Ganapetuan is that of the inferior copy used by Hatcher (for which see Canedo 1968:225); his asaguan is isolated.

13. This and the following three similarly queried spellings are those of Hatcher, but they are used without variants from Bolton being indicated and are therefore probably to be taken as the same as Bolton's readings from the manuscript he used.

14. Actually, it is not really clear to me just what Swadesh wished to claim about Karankawa and what he called "Klamkosh" or "Clamcoche" (Swadesh 1967:100, 103ff.).

15. CH is used to transcribe the starred ch used by Chowell to write [š]; contrast note three, above.

16. Cf. Chowell: teCHigua 'valiente'.

17. The translations are respectively 'whiskey', 'aguardiente', and 'wine'; presumably Béranger's cl is for [ɬ]. This is a loanword from the Apache (presumably Lipan) word for *tiswin*, literally 'that which is grey' (with both the -i and -n relativizers of Athapaskan); cf. Navajo tó-łbáí 'tiswin' (lit.

'grey water'). Tiswin was traded by the Apache to other tribes.

18. See Troike (1964).

19. These Borrados are presumably not the same as the Borrado or Quinigua Indians of Nuevo León (del Hoyo 1960, 1970:2).

20. Of more recent proposals, neither Swadesh's classification of what he calls Coahuilan (Swadesh 1967) nor Landar's hypothesis of a relationship between Karankawa and Cariban (Landar 1968) seem to have attracted a following.

21. To these may be added from Gatschet's material Comecrudo yemó and Cotoname yomó 'horn' and Comecrudo taweló and Cotoname tawaló 'corn', but these are apt to be loans one way or the other. For Gatschet's words for 'breast' and 'water' see above.

22. Mamulique aha appears in the sentence aha mojo cuejemad 'Donne moi de l'eau'. Although ax 'water' does not appear as such in Berlandier's Comecrudo, it may be present in his aapamesai 'pluie', which Gatschet has as áx pamesaí 'water falls'. See note 7, above.

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The Kiowa-Tanoan, Keresan, and Zuni Languages

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Pueblo people and their Anasazi ancestors have long been residents of the Southwest, and traces of their culture spanning the Christian era are to be found scattered over large areas of northern New Mexico and adjacent areas of Arizona, Utah, and Colorado. By the time of the first Spanish incursions into the region in the mid sixteenth century, Northern Tiwa, Southern Tiwa, Tewa, Towa, Eastern Keres, Western Keres, and Zuni villages existed in the general areas occupied by their present-day descendents, although in generally greater numbers and spread over somewhat larger expanses of territory. Farther to the west, linked by cultural traits but with different linguistic ties and thus outside of the scope of this paper, were the Hopis. And to the east, in a different environment and exhibiting a radically different culture but linked linguistically to the Tanoan Pueblos, were the Kiowas.

There were, in addition, Pueblo groups that have since disappeared from the scene--the Tanos of the Galisteo Basin, Pecos Pueblo east of present-day Santa Fe, the Piros of the middle Rio Grande Valley, and the Tompiros east of the Manzano Mountains. And peripheral to the Pueblos were other tribes--the Mansos to the south and the Jumanos to the east--

which have sometimes been linked culturally or linguistically to the Pueblos.

The purpose of this survey is to indicate what has been accomplished in historical-comparative and related studies involving the Kiowa-Tanoan, Keresan, and Zuni languages, and to suggest areas for further research.¹ This will be preceded by a brief inventory of available descriptive materials, as such materials are a prerequisite to comparative and historical studies.

Descriptive Resources

The early mission records and religious literature that have been invaluable in the study of native languages of the period following European contact in other parts of the hemisphere seem to be completely lacking in the Pueblo area. There is mention of an early Jemez catechism (Voegelin, Voegelin, and Schutz 1967), but, apart from occasional proper names, no linguistic data seem to have been preserved from the early Spanish period. Some authors (Dozier 1964, Voegelin, Voegelin, and Schutz 1967) attribute the lack of such materials to a basic difference in language policy on the part of the Franciscans of the Southwest as compared with the Jesuits elsewhere.

The earliest extant linguistic data from this area con-

sist of vocabularies gathered by nineteenth century travelers and explorers (Schoolcraft 1851-57, Simpson 1852, U.S. War Department 1856, Buschmann 1858, Gatschet 1876, 1879, Bartlett 1909). These word lists served their purpose in early attempts to sort out linguistic groupings and made possible Powell's monumental classification of the American Indian languages (Powell 1891). However, except for the Piro data, this material is of limited interest to present-day comparative linguists, since more complete and reliable data are now available.

About the turn of the century, the Boasian era brought with it a new interest in native American languages. Studies of a more substantial nature began to appear, and vocabularies, texts, grammatical sketches, and similar material accumulated in archives and in published reports. Since the late thirties, linguists of the American structuralist tradition have made significant contributions to the study of Pueblo languages, while a succession of linguistically oriented ethnographers have provided us with additional data. Recent years have seen a resurgence of activity in the area of native American languages as the result of federal, state, and local funding of various applied linguistic projects, and this is resulting in the production of dictionaries and other vernacular language materials.

Considerable data is now available for all of the extant languages considered in this paper. Much of the early material is archived at the Smithsonian Institution and data from Boas and others are to be found in the library of the American Philosophical Society (see Freeman 1966). Tape recorded data from Isleta, Santa Clara Tewa, Laguna, and Zuni are included in the Archives of Languages of the World (see International Journal of Linguistics 20.241-47, 1954). Other available data for Kiowa, Tiwa, Tewa, Towa, Keresan, and Zuni will be indicated briefly below.

Kiowa

The first published study of Kiowa apart from the early vocabularies seems to be Gatschet's (1882) note on Kiowa phonetics. Mooney's (1895-96) Calendar History of the Kiowa Indians contains a lengthy Kiowa-English vocabulary which was used by Harrington in first suggesting a relationship between Kiowa and Tanoan. Harrington himself later gathered extensive Kiowa data, and his dictionary (1928) remains the most important source of Kiowa lexical data. Its high degree of accuracy has made it useful as a basis for modern comparative studies (Hale 1962, 1967). Harrington's dictionary and later publications (Harrington 1946, McKenzie and Harrington 1948) also contain phonological, grammatical, and text material.

In the 1940's native speakers of Kiowa began to be employed at the Summer Institute of Linguistics in Norman, Oklahoma to provide a source of live language data for linguistic students in training. This provided the basis for a number of published articles (Crowell 1949, Sivertsen 1956, Wonderly, Gibson, and Kirk 1954, Merrifield 1959a, 1959b), and a considerable amount of unpublished data has been collected over the years. Crowell later, under her married name, produced a substantial grammar of the languages as a doctoral dissertation (E. Trager 1960). More recently, Laurel Watkins at the University of Kansas has undertaken a study of this language.

Tiwa

In the early 1900's the first of Harrington's many contributions to Southwestern linguistics began to appear in print. His Tiwa study (1910a) contains notes on the phonology and morphology, as well as a text and vocabulary. Later he published on Taos personal pronouns (1916b) and, in collaboration with Roberts produced a collection of Picuris children's stories and songs which includes native texts (Harrington and Roberts 1928).

Early linguistic data from Isleta were collected by Lummis, and a native text is included in his collection of Pueblo folk stories (Lummis 1910). Harrington includes data from

Taos, Isleta, and Isleta del Sur in his Notes on the Piro Language (1909) and indicates the extent of known data for Piro, which he considered to be a Tiwa dialect.

George Trager began his work in Taos in the 1930's, and his Outline of Taos Grammar (1946) represents his major contribution from that early period of field work. A series of articles identified as Taos I, II, III, and IV resulted from later field work (G. Trager 1948, 1954, 1960, 1961) and contain descriptions of the phonology, morphemics, syntax, semology, and paralanguage. Numerous other articles of Trager deal with special topics in Taos linguistics and ethnolinguistics. Much of his unpublished data is archived at the University of California at Irvine.

Students of Trager have also contributed significantly to Tiwa linguistics. Felicia Harben Trager wrote a doctoral dissertation on the Picuris language (1968), and a description of the phonology based on this dissertation has been published (1971). Leap's dissertation on Isleta (1970a) contains a comprehensive treatment of the language, and subsequent published and unpublished studies deal with specific grammatical and ethnolinguistic topics (Leap 1970b, 1971, 1975).

Other recent work dealing with Tiwa includes Brandt's dissertation on Sandia and several published and unpublished papers on the same language (Brandt 1970, 1975), a disserta-

tion by Zaharlick describing Picuris syntax, and Taos and Isleta data gathered by members of the Summer Institute of Linguistics. Hull (1973) has a description of Taos phonology that differs in a few points from that of Trager.

Tewa

Harrington's early work included notes on Tewa phonology and grammar (1910b), and he later compiled an ethnogeography (1916) and contributed to compilations of ethnobotany and ethnozoology (Robbins, Harrington, and Freire-Marreco 1916; Henderson and Harrington 1914). In 1947 several Tewa texts collected by Harrington were published.

In the late 1940's, Dozier, a native speaker of Tewa studying under Hoijer, collaborated in the publication of a phonemic analysis (Hoijer and Dozier 1949) and later wrote a masters thesis on Tewa verb structure which has been published in abridged form (Dozier 1953). A short time later, Yegerlehner produced a dissertation dealing with Hopi-Tewa phonology and morphology, and much of this has been published (1957, 1959).

Randall and Anne Speirs have for the past two decades been involved in various Tewa language projects under the auspices of the Summer Institute of Linguistics. R. Speirs' doctoral dissertation (1966) deals with Tewa phonology and morphology, and a published paper based on this analysis describes

the system of number categories in Tewa (1973). Other published material includes an analysis of Tewa classificatory verbs by A. Speirs (1974) and a good number of vernacular publications in the Tewa language.

Recent work with Rio Grande Tewa has been undertaken by Rose from Washington State University, and Kroskirty from Indiana University has been involved with Hopi-Tewa.

A critical review of Tewa linguistic sources, published and unpublished, is included in Speirs' dissertation, together with a more complete bibliography than is given here.

Towa

Of the Tanoan languages, Towa is the most poorly represented in published and unpublished sources. Harrington, along with his work with the other Tanoan languages, gathered Towa data and cites forms in his article on Piro (1909). Harper (1929) and Martin (1964) include Towa data in their unpublished masters theses. Field work under the auspices of the Summer Institute of Linguistics has resulted in a considerable amount of unpublished data. The best source of published Towa data is found in Hale's (1962, 1967) comparative studies, although the scope is limited.

Keresan

The earliest major attempt to record Keresan language data was that of Boas in the 1920's. His annotated texts (1923, 1925-28) and unpublished data in the library of the American Philosophical Association represent a vast amount of material.

Later work in Keresan includes Spencer's masters thesis (1940) and his analysis of the phonology (1946), as well as Fox's sketch of the Cochiti language (1959). My analysis of Santa Ana Keresan done as masters and doctoral theses was published in slightly revised form (Davis 1964). Miller's *Acoma Grammar and Texts* (1965) appeared shortly after my work and contains a comprehensive treatment of the language. More recently, a dissertation on Acoma grammar has been written by Maring (1967) and some of his analysis appears in materials prepared for the Acoma bilingual education program (1972).

A more complete listing of Keresan linguistic sources is to be found in my published bibliography (Davis 1963). With the addition of Maring's work, it is still useful as a guide to what is available for Keresan.

Zuni

In 1933 Bunzel published a collection of Zuni texts, and her grammar (1935) represents the first major grammar of a

Pueblo language.

Newman has contributed greatly to our knowledge of the Zuni language over the past two decades or more, starting with his description of the phonology (1954a) and including his Zuni dictionary (1958)--one of the very few available for languages dealt with in this paper--and his concise and well-written grammar (1965).

Other recent work on the Zuni language includes dissertations by Granberry (1967), Walker (1964), and Stout (1972). Some of the material covered in Walker's dissertation is in print (1966), and an excellent discussion of problems relating to Zuni phonology has been written by the same author (1972). Some of Stout's material is likewise in print (1973), and Tedlock's work on Zuni poetry contains some linguistic data (1972).

Cook of the Summer Institute of Linguistics has written a practical manual of the Zuni language (1974) and a tagmemic description of Zuni clauses (1975). Vernacular materials are also being produced for local use.

More critical evaluations of available Zuni linguistic data are to be found in the preface to Newman's grammar and in Walker (1972).

Language Classification and Historical Reconstruction

The grouping of North American Indian languages into lan-

guage families has been a concern of linguists and ethnologists at least since the mid nineteenth century. Early efforts in this direction, even though based on a comparison of fragmentary vocabularies, resulted in a recognition of the "Tewan" language family composed of what are now known as the Tanoan languages (Gatschet 1879, Powell 1880). Powell in his later, more comprehensive classification (1891) used the term "Tañoan" for this family. He set up Kiowa as a separate family, attributing the similarities to Comanche noted by previous authors as due to contact rather than genetic relationship. Zuni and Keres were likewise set up as separate families after a comparison by Turner failed to relate the one to the other.

Kiowa-Tanoan

The first serious attempt to link Kiowa and Tanoan was that of Harrington (1910c) who found what appeared to be cognates in comparing his Tanoan data with Mooney's (1895-96) Kiowa vocabulary. He later came to espouse the close relationship of these languages (Harrington 1928, McKenzie and Harrington 1948). Sapir (1929) accepted this relationship and proposed Kiowa-Tanoan as a subdivision of his Aztec-Tanoan phylum. Whorf and Trager (1937) recognized a remote relationship between Kiowa and Tanoan, and it was only later that Trager (1951, 1967) came to accept a closer relationship of the Tanoan

languages to Kiowa than to Uto-Aztecan.

As late as 1954 Newman was forced to conclude that the relationship between Kiowa and Tanoan "still awaits systematic demonstration". A few years later, Miller (1959) published a brief paper listing some probable Kiowa-Tanoan cognates, and this was followed by the Tragers' article giving additional evidence (Trager and Trager 1959). Hale's (1962, 1967) later comparative work has placed evidence for the relationship on a solid basis. Sound correspondences have been outlined and reconstructions of stem-initial consonants suggested. In addition, it has been shown that Kiowa and the Tanoan languages exhibit parallel kinds of morphophonemic alternations--an especially convincing type of evidence for a relatively close relationship. That Kiowa-Tanoan constitutes a valid linguistic grouping, with no external relationships of the same order as its internal relationships, has now been demonstrated beyond any reasonable doubt.

The question remains of how Tiwa, Tewa, Towa, and Kiowa can be classified in terms of degrees of relatedness. That Tewa and Tiwa are more closely related to one another than either is to Kiowa or Towa is supported by lexicostatistics (Davis 1959) and by comparative phonology (Trager 1967). At the same time, Kiowa has often been regarded as the most divergent of the Kiowa-Tanoan languages (Trager 1951, Davis 1959),

although in a more recent article, Trager is of the opinion that from a phonological perspective "it seems possible to say that Tiwa and Tewa are closer to each other than is Jemez to either, and that Jemez and Kiowa may be about equally different from Tiwa and Tewa, though not in the same way" (Trager 1967:341).

Hale is quoted as holding to the position that the Kiowa-Tanoan family could have split almost simultaneously into its four major branches (Ford, et al 1972). Ford then suggests that the seeming divergence of Kiowa might be attributed to the "radical adaptive shift" that the Kiowas presumably underwent in their move to the plains, a shift that could have affected all aspects of their culture, including language.

The evidence from shared phonological innovations as seen in Hale's reconstructions is not conclusive in resolving this question. Some phonological developments do set the Tanoan languages apart from Kiowa. The former languages, for example, all show nasal reflexes of *b and *d, while Kiowa does not. And the Tanoan languages, in contrast to Kiowa, show in varying degrees a development of fricatives from the aspirated stop series. On the other hand, Kiowa and Towa, in contrast to the other Tanoan language share in varying degrees the feature of a merging of affricates and apical stops. Further Kiowa-Tanoan work may clarify the picture, although the possi-

bility remains that the relationships among the languages are of the nature that one would expect from slow differentiation in a context of incomplete isolation rather than clean breaks.

In summary, it appears that classifications (1) placing all four branches of Kiowa-Tanoan on par, or (2) pairing Tiwa and Tewa and/or Kiowa and Towa (with perhaps stronger evidence for the former pairing) would be compatible with presently available data. On the other hand, pairing either Tewa or Tiwa with either Kiowa or Towa would seem unrealistic.

Piro, a language now extinct but for which some data survives, is usually regarded as a Tanoan language. Harrington (1909) considered it to be a Tiwa dialect. My lexicostatistic study (Davis 1959) suggests that Piro was a separate Tanoan language, but more closely related to Tiwa than to the others. Trager (1967) also considers Piro to be a separate Tanoan language. Leap (1971) on the basis of phonological, lexical, and grammatical evidence, makes the interesting suggestion that Piro may not have been a Tanoan language at all. He points out striking dissimilarities between Tanoan and Piro phonology as deduced from Bartlett's data. However, the force of this argument depends on the accuracy of Bartlett's transcription (and not on Harrington's accuracy as Leap seems to imply), a consideration that leaves some of the data suspect, as Harrington himself recognized. Furthermore, Leap's claim that 33%

of the vocabulary is noncognate with Tanoan differs widely from Harrington's figure of 7%. Which figure is nearer the truth, and the validity of Leap's grammatical arguments, will need to be judged by Tanoan specialists.

Two extant branches of the Kiowa-Tanoan family, Tiwa and Tewa, include dialect subdivisions, while Kiowa and Towa represent undifferentiated languages. A classification of the Tiwa language group based primarily on impressionistic judgements of mutual intelligibility but supported in part by comparative phonology takes the form:

A. Northern Tiwa

1. Taos

2. Picuris

B. Southern Tiwa

a. Isleta

b. Sandia

This follows, for example, Trager's (1967) observation that Taos and Picuris are separate languages, each distinct from Southern Tiwa, while Isleta and Sandia are dialects of the same language.

The historical phonology of Tiwa is understood in its major features through the work of Trager (1942) and subsequent investigators. While phonological changes are relatively minor, there are a number of shared innovations that support

the pairing of Taos and Picuris as against Sandia and Isleta. The former, for example, share the development of l from *d, n from *r, and, in some positions, m from *b, while the latter share the development of š from *c, r from *l, and h^w from *x^w. Only minor phonological differences distinguish Taos from Picuris and Isleta from Sandia.

There seems to be perfect mutual intelligibility among all of the Rio Grande Tewa Pueblos, but some minor dialect differences do exist. Santa Clara has a /j/ phoneme lacking elsewhere, San Juan has more nasalized vowel distinctions than the other dialects, and other features split the dialects in different ways (Speirs 1966 and personal communication). There is no strong evidence in support of Trager's suggested Santa Clara versus "Central Tewa" dichotomy (Trager 1967).

Hopi-Tewa, on the other hand, shows rather marked differences as compared with Rio Grande Tewa in areas of vocabulary, phonology, and grammar, although a degree of mutual intelligibility is retained. Hopi-Tewa (Yegerlehner 1959) has an /l/ phoneme lacking in Rio Grande Tewa, has a five-vowel rather than a six-vowel system, and lacks the v/b and r/d contrasts. The latter contrasts, incidentally, are not regarded by Speirs as reconstructable for Proto-Tewa on the basis of preliminary unpublished comparative studies. Apart from these preliminary studies and scattered observations on Tewa dialect differences

in published articles (Hale 1967) there is no comprehensive treatment of comparative Tewa.

Tanoan comparative studies have just begun to progress beyond the stage of routine lexical comparisons and phonological reconstructions. Some recent studies, for example, have called in question certain basic assumptions regarding sound changes on which traditional comparative studies are based. Fricative versus stop reflexes of the aspirated stop series in Tanoan languages present a complex picture, in which there is variation even within a single speech community. Brandt (1970) observed this in Sandia and attributed the phenomenon to progressive change from one generation to the next. However, an examination of old Sandia data has led to the proposal that language change can be cyclical in nature rather than unidirectional (Brandt 1975).

The comparison of grammatical and semological features in the Tanoan languages is beginning to receive some attention. Brandt and Leap (1973) have compared Sandia and Isleta with respect to sentence formation, word structure, and other features. In another paper, Leap (1970b) examines the Tiwa system of morphologically marked noun classes from a historical perspective and draws conclusions regarding linguistic changes correlated with general cultural differences.

Keresan

Keresan is generally regarded as including two major divisions, Western Keresan and Eastern Keresan, with subdivisions within each. On the basis of lexicostatistics (Davis 1959), I have suggested the following classification:

A. Western Keresan

- a. Acoma
- b. Laguna

B. Eastern Keresan

- a. Zia and Santa Ana
- b. San Felipe and Santo Domingo
- c. Cochiti

This classification, however, is misleading in at least one important respect: it does not reflect the fact that lexical difference parallels geographical distance very closely. Acoma, for example, is more similar to Santa Ana than it is to Cochiti. This has been pointed out by Mackey (1976) who contrasts the Keresan configuration with that of Tiwa, where a clean break between the north and south is postulated.

Keresan comparative phonology has not been completely described. The one published study (Miller and Davis 1963) indicates relatively minor phonological differences among the dialects, although enough to support the division between the eastern and western dialects. Acoma and Laguna, for example,

share the reflection of *r as a stop in some positions and the merging of alveolar and alveopalatal stops before front vowels.

Remote Relationships

The possibility of more remote relationships for Kiowa-Tanoan, Keresan, and Zuni have been suggested from time to time, and for some of these proposals substantiating evidence has been published.

While early writers sometimes noted similarities between Kiowa and certain Uto-Aztecan languages, it was Sapir (1929) who first proposed a classification that linked Kiowa-Tanoan with Uto-Aztecan (and, incidentally, Zuni) in the same phylum. The validity of this relationship is supported by Whorf and Trager (1937) who list 102 reconstructed Aztec-Tanoan forms, many of which are attested by Uto-Aztecan and Proto-Tanoan reconstructions and forms from individual languages. In light of this evidence, the relationship has been generally accepted, and the term Aztec-Tanoan or Azteco-Tanoan is well established.

A critical examination of Whorf and Trager's evidence leaves one with the impression that there must be a relationship between Uto-Aztecan and Tanoan, but that the relationship is not so close nor as transparently evident as a cursory reading of the article might suggest. Newman (1954b) considered Whorf and Trager's evidence to be "sound but not entirely con-

clusive". Miller (1959), while accepting the relationship, pointed out that a number of the reconstructed forms are dubious at best. Supporting evidence for the Uto-Aztecan and Proto-Tanoan reconstructions is in many cases quite meager, and few items attest regular correspondences in more than a single consonant and vowel. At the same time, the differences between Uto-Aztecan and Kiowa-Tanoan both in phonology--the former with a single stop series in contrast to the four-way contrast in Kiowa-Tanoan stops--and grammar are striking. Whatever relationship exists between the two language groups is certainly remote, and the validity of Aztec-Tanoan as a discrete entity might be questioned.

Considering the possibility of even more remote relationships, some comparativists have included the Aztec-Tanoan languages in a Macro-Penutian phylum together with Penutian, Sahaptian, Mayan, and others. This proposal was apparently first made by Whorf (Swadesh 1967:284) and was later incorporated into various published classifications (e.g., Trager and Harben 1958). Apart from Swadesh's work, published evidence in support of such a grouping is lacking. Swadesh himself espouses "bold new groupings" that go far beyond previous Macro-Penutian hypotheses in linking New World languages in vast networks of interrelated languages and language families (Swadesh 1967). While his methodology has been severely criti-

cized by other linguists, Swadesh has published comparative data in support of his proposals which may suggest directions for further research.

The possible relationship of Zuni to other languages has long been a matter of speculation. Early attempts to relate Zuni and Keresan produced negative results (Powell 1891). Sapir included Zuni in his Aztec-Tanoan phylum, first with a query and later without. Trager at one time proposed a rather close relationship between Zuni and the Kiowa-Tanoan languages and suggested a Tano-Zunian branch of Azteco-Tanoan parallel to the Uto-Aztecan branch (Trager 1951). However, he later rejected the idea of such a close relationship, suggesting instead that Zuni is related to Tanoan even more remotely than it is to Penutian (Trager 1967). Newman's (1964) comparison of Zuni and California Penutian represents the first solid evidence for relating Zuni linguistically to any other language family. By drawing examples from one or more of the California Penutian languages, Newman is able to list 123 primary cognates with Zuni plus other problematic cognates. While the evidence is often thin, the work is painstaking and thorough, and has been accepted widely, but not universally, as evidence for a remote relationship. Hamp (1975) has suggested some modifications in Newman's reconstructions and has noted a similarity to phonological features found further to the northwest, where

he suggests further comparisons might be sought.

In his 1967 article, Swadesh devotes considerable space to a discussion of Zuni relationships and attempts among other things to relate Zuni \pm to Mixean h. Whether or not Swadesh's observations hold any validity will have to await the judgment of those who can undertake in-depth studies of the languages involved.

Keresan, like Zuni, lacks any close linguistic relatives. Mention has already been made of attempts to relate Keresan to Zuni. Interestingly, Swadesh at one time proposed a fairly close link between the two languages, but later found that many of his provisional cognates had to be rejected (1967).

Harrington (1945) claimed to have had evidence for relating both Keresan and Zuni to Aztec-Tanoan. His brief published data is fragmentary and unconvincing.

Sapir's inclusion of Keresan in his Hokan-Siouan phylum has never been substantiated by hard evidence--in fact, the validity of the Hokan-Siouan phylum itself is rejected by most comparative linguists.

Swadesh (1967), acting on a suggestion made by Miller, has attempted to relate Keresan and Caddoan, and claims to have identified 32 Keres-Caddo cognates in his 100-word list. Although the data does contain some possible cognates, much of the purported evidence has to be rejected (Rood 1973, Davis

1974). My own hunch is that the most fruitful search for Keresan relationships might be in the direction of Uto-Aztecan. As an example of the kind of evidence that it is possible to muster, I cite the following tentative cognates which seem to point to a correspondence between Uto-Aztecan *k and Keresan alveopalatal stops or affricates before front vowels and velar stops elsewhere:²

UA *ko 'chew', *ko, ku 'eat' : PK *-gU 'bite'

UA *muk, muki 'die' : PK *-mɨd^yIzA 'kill'

UA *kusi 'wood' : PK *gù·cI 'wood'

UA *ka 'hear' : PK *-ká· 'hear'

UA *ki 'house' : SA ʔačínI 'house'

UA *ʔaki 'river' : SA čí·ná 'river'

UA *kawa 'rat' : SA sgâ·wašI 'rat'

With respect to remote relationships, it is probably true that recognized relationships are often the result, as much as anything, of the "accident" of abundant data combined with an individual linguist who has special interest in that data. If we accept the thesis that all New World languages are ultimately related (or even if large blocks of languages on the order of Swadesh's phyla are related), it is likely that with sufficient data cognates can be found in the comparison of almost any two languages. However, the task of recognizing relationships at various levels of relatedness remains a formi-

dable one. The fact that a relationship between Uto-Aztecan and Kiowa-Tanoan, and between Zuni and Penutian is recognized is of little help in reconstructing the overall linguistic history of the Southwest unless we know whether or not other languages or language families might not also enter into the picture--and at what horizon they enter in.

Correlation of Archaeological, Ethnohistorical,
and Linguistic Data

The Southwest constitutes one of the most intensively studied areas in North America from the standpoint of archaeological investigation, and there exist abundant data on Anasazi prehistory, coupled with accurate dating of sites by dendochronology and other techniques. Considerable progress has been made in tracing the movements of these people and correlating them with known linguistic groups, although many questions remain. A study of the more important attempts at a general synthesis (Wendorf and Reed 1955, Ellis 1967, Ford, Schroeder, and Peckham 1972) reveals a variety of alternative correlations, each with supporting evidence but irreconcilable in some details.

Beyond establishing a broad frame of reference within which to work, the contribution of linguistics in resolving these questions has not been great. Unfortunately, glotto-

chronology, which at one time was regarded by some as an exciting new tool for arriving at prehistoric dates, has failed to meet expectations. The dates in my study (Davis 1969) should not be taken seriously, although they may have some validity as an indication of relative lexical relatedness. Trager (1951, 1967) has suggested some dates based on "hunches" which are probably more realistic than mine.

The remote nature of any external relationships of Kiowa-Tanoan, Keresan, and Zuni suggests that by the time of the beginnings of Pueblo culture in the early centuries of the Christian era, these language groups were already distinct entities. Whatever conclusions one attempts to draw from the relationship of Kiowa-Tanoan to Uto-Aztecan, for example, must be tempered by the recognition that one is dealing with a time depth of sufficient duration and indeterminateness as to allow any number of alternative hypotheses. This would be even more true of Zuni in relation to Penutian.

Whatever their prior migration routes, Tanoan or Kiowa-Tanoan people are generally regarded as having been located in the San Juan basin during Basket Maker times. Ford and his coauthors (1972) agree in relating Towa to the Gallina culture and ultimately back to the Los Pinos Phase in the upper San Juan River at about 1 A.D. They also concur in seeing the Tiwa developing in situ in the Rio Grande valley at a some-

what later date, presumably from people who had split off from the ancestral Tanoans of the San Juan area. Trager's (1967) suggestion that this split took place between 500 and 750 A.D. seems compatible with the archaeological evidence as outlined by Ford et al., although an earlier date might be indicated.

Ford, Schroeder, and Peckham disagree among themselves on the prehistory of the Tewa. Schroeder sees the Tewa as sharing a common history with the Towa in the upper San Juan until about 700 A.D. This, however, suggests, contrary to linguistic evidence, that Tewa and Towa should be more closely related than either is to Tiwa. That the closer linguistic relationship of Tewa to Tiwa might be attributed to contact after the Tewa moved into the Rio Grande area is an explanation worthy of consideration. In this connection, Trager is reported to have seen evidence that Tewa might have arisen through a process of creolization (Brandt, personal communication). Peckham's suggestion that both Tewa and Tiwa developed in situ in the Rio Grande is difficult to reconcile with linguistic facts. An explanation of the present and the historically verifiable configurations of Tewa and Tiwa groups almost certainly requires postulated migrations of peoples speaking already differentiated languages--either the movement of Tewa speakers into Tiwa territory to split the latter into northern and southern groups, or the migration of northern and/or south-

ern Tiwas into their present locations from a common homeland. Ford's dating of the Tiwa split at about 1000 A.D. seems a bit early if one accepts Trager's dates as realistic.

Kiowa prehistory has been a puzzle ever since its close relationship to Tanoan was established. The picture is complicated by the seemingly well-attested evidence of a northern plains homeland for the Kiowas prior to their move into what is now western Oklahoma (Mooney 1895-96). Trager's suggestion that the Kiowa-Tanoans as a whole moved down from the northern plains and that part of this group moved westward across the mountains to become the ancestral Tanoans does not seem to be supported by archaeological evidence and seems linguistically less tenable than that the Kiowa-Tanoans migrated directly from a common homeland with the Uto-Aztecs somewhere in the Southwest. Ford suggests that the archaeological sites along the middle Pecos River described by Jelinek as showing a shift from an agricultural to a hunting economy may represent the source of the Kiowas. If this is the case, he claims that Trager's date of A.D. 1-500 for the differentiation of Kiowa and Tanoan is "minimally six centuries too early". However, pushing the date up that far may begin to strain the linguistic evidence, even admitting the possibility of considerable language change triggered by the radical shift in the culture.

Few conclusions can be drawn from linguistic data regard-

ing Keresan prehistory. Mackey's (1976) observation that present Keresan dialect differences can be correlated closely with geographical distance suggests that differentiation took place in situ and that any prior dialect differences were relatively minor. Laguna Pueblo has commonly been supposed to have been established by eastern Keresan speakers within historic times. To account for the fact that Laguna speaks a western Keresan dialect one must either (1) postulate a process of linguistic acculturation that has obliterated over a period of nearly three centuries any previous eastern Keresan characteristics, or (2) consider the commonly held notion that Laguna was established in historical times as false. Ellis (1959) gives evidence in support of the latter.

Zuni linguistic data likewise offer few clues to Pueblo prehistory apart from the conclusion that the nucleus of Zuni people have had a history that is separate in at least some respects from other Pueblo people throughout the past two millenia or more, and that the most likely pre-Zuni connections lie to the west.

Certain questions remain with respect to the identity and linguistic affiliation of some of the Pueblos of the early historical period.

The Galisteo Basin was abandoned during the time of the Pueblo Revolt, and Tano people took up residence in Santa Fe

and in the Tewa area to the north. Around 1700, after further conflict with the Spanish, a large group fled to Hopi country where their descendents today maintain a dialect of the Tewa language. Other Tanos were returned to the Galisteo Basin by Spanish authorities following the reconquest, and the Pueblo of Galisteo was in existence until the late eighteenth century when it was finally abandoned and survivors joined Santo Domingo Pueblo. Survivors maintained their language and identity at least into the early twentieth century (Hodge 1910), and in 1908 Harrington was able to secure a Tano word list from an old woman who stated that her parents were born at Galisteo. This data differed only slightly from Rio Grande Tewa (Harrington 1916a).

Pecos, although once one of the most populous and important of the pueblos, declined steadily in population after the period of the revolt because of epidemics, enemy raids, and internal dissention. Finally in 1838, seventeen survivors abandoned Pecos and joined Jemez Pueblo. As late as 1910, Harrington reported that a few aged individuals retained a knowledge of the Pecos language, and Hodge (1910) reported twenty-five people of Pecos descent living at Jemez, only one of whom had lived in the mother pueblo. Voegelin et al. (1967) report that today descendents of the Pecos fugitives maintain their identity and constitute one-third of the Jemez

population. The inhabitants of Pecos Pueblo are generally assumed to have spoken a dialect of Towa, but it is not clear on what evidence this assumption has been based. Some modern authors (Trager 1967) have questioned the assumption that the language of Pecos was Towa, or even Tanoan for that matter.

The Tompiro or Saline Pueblos were inhabited up until the late 1600's, and survivors and their descendents were no doubt living among the Piros for a good time after that. To our knowledge, no linguistic data exist that can be traced to the Tompiros. They have generally been linked linguistically to either the Tiwas or the Piros, or have been considered to have been partly Tiwa and partly Piro speaking. Schroeder (1964) has examined this question on the basis of historical records and has concluded that all of the Saline Pueblos spoke the same language and that the language was Piro.

At the time of the Pueblo Revolt in 1680, a good number of southern Tiwas and Piros (including, probably, Tompiros) accompanied the Spanish in their flight southward to the El Paso area where a number of communities of relocated Indian people were established (Fewkes 1902). Tiwa speakers were settled at Ysleta del Sur, now a suburb of El Paso. Fewkes reported that when he visited there in 1901 the old men conversed in the native language when they were together, and even today some knowledge of the language seems to be retained

(Leap 1970a:26).

The Piros established the villages of Socorro and Senecu, named after their abandoned pueblos to the north, and the language survived there into the late nineteenth century. Bartlett recorded a vocabulary in 1850 (Bartlett 1909, Harrington 1909) and Mooney obtained a similar one in 1897 from a woman who was said to have been the last survivor with a knowledge of the language. Fewkes (1902) found Piro descendents who still remembered many words of the language, but no fluent speakers. When Harrington (1909) visited the area a few years later, he was unable to find any Piro speakers, although he felt that with careful search some might be located.

On the periphery of the Pueblo area, the Mansos occupied the Rio Grande Valley south of the Piros. They are said to have been relocated to the El Paso area in 1659 and apparently maintained their identity until the early twentieth century (Fewkes 1902). Their language has variously been classified as Tanoan (Swanton 1952) or Athapaskan (Forbes 1957), although no language data seem to have survived.

Jumano may have been a term applied to more than one linguistic group. They enter the Pueblo picture by virtue of the fact that some of the villages of the Saline area were called "pueblos of the Jumanos". Other Jumanos were reported occupying the plains area to the east. Some authors have

classified the Jumanos as Uto-Aztecan, although there is no direct linguistic evidence. Scholes and Mera (1940) have examined the evidence relating to Jumanos in the Saline Pueblos and suggest that they were linguistically related to the Piros. It is not at all clear whether or not there was a Jumano element in these pueblos that was ethnically distinct from the Tompiros themselves.

Language Contact

Speakers of different languages and dialects have been brought into close association in the Southwest all through historic times, and there is every reason to believe that this was true in prehistoric times as well. Few places in North America offer equal opportunities for the study of language contact, borrowing, acculturation, bilingualism, and language maintenance.

I know of no studies directed specifically to the problem of prehistoric linguistic borrowing, although there are occasional observations regarding borrowing from one native southwestern language to another. In my Santa Ana data (1964) I have noted some borrowings from Zuni and from Nahuatl--the latter no doubt attributable to the fact that Nahuatl speakers accompanied the Spanish into New Mexico. Walker (1967) in his review of Miller's Acoma grammar comments on evidence of lin-

guistic borrowing between Acoma and Zuni.

Most studies of linguistic borrowing in the Pueblo languages have dealt with the introduction of Spanish (and sometime English) vocabulary items. One of Trager's early papers (1944) classified loanwords in Taos on the basis of the degree to which they are assimilated to Taos phonology. Spencer (1947) described loanwords in Keresan, and a later study by Miller (1959, 1960) focused specifically on Acoma and treated the subject in more depth.

A comparison by Dozier (1956) of Spanish borrowings in Yaqui and in Tewa suggests that the superficial borrowing in the latter (i.e., confined almost exclusively to nouns that are recognized as Spanish) can be correlated with attitudes of resistance to Spanish influence arising from early repression. In another study, Dozier (1955) describes the Hopi-Tewa kinship system, in which Tewa forms have been retained but meanings have been changed to conform to Hopi kinship usage.

An excellent summary and critique of linguistic acculturation studies in the Southwest has been written by Dozier (1967). In this paper the author comments further on the resistance of the Pueblos to Spanish influence and notes the tendency of Taos and Tewa speakers to coin new words or extend the meaning of words already in use rather than to borrow. He also makes reference to Spencer's (1947) claim that Keresan

has "virtually no mechanism by which to form new words" (a claim that, incidentally, is not true--nominalized verbal forms are used quite extensively for this purpose). As a whole, Dozier's review indicates a considerable paucity of linguistic acculturation studies dealing with the Pueblo languages--an area of study that offers rich possibilities for historical and sociolinguistic investigation having to do with language contact.

A number of recent authors have investigated the relative roles of different languages within bilingual and multilingual communities in the Southwest. Miller (forthcoming) observes that it is difficult to assess the degree of bilingualism in Pre-Columbian times, but cites two examples of recent bilingualism involving native American languages--the learning of Hopi by Tewa speakers of Hano and of Navajo by members of some of the western Pueblos. The case of the Lagunas living at Isleta might be cited as another example. More commonly, bilingualism involving native American languages is an individual matter resulting from factors such as mixed marriages.

Much more pervasive is the impact of Spanish and English on Pueblo communities. In the past, bilingualism involving Spanish was widespread and is still common among members of the older generations. Apparently most Pueblo communities were able to maintain their own language while restricting

Spanish to specific contexts. However, a number of Pueblo communities in historical times--including the original Pojoaque residents and the transplanted Tiwa and Piro groups in the El Paso area--have evidently made a complete transition to Spanish.

Fasold (n.d.) traces the decline of Spanish and the rise of English as the second language in Taos Pueblo, and notes that the Taos language itself, although weakening among the younger members of the community, is likely to survive as long as there are specific contexts in which it is demanded.

Bodine (1968) also documents the decline of Spanish and rise of English as reflected in the choice of given names of Taos individuals.

The degree to which English has replaced the native languages varies greatly among the language groups under study here. Kiowa is now considered to be an "endangered" language. In some of the Pueblos--Nambe (Speirs, forthcoming), Sandia (Brandt 1970), Laguna (Taylor and O'Conner 1969)--few if any-one younger than twenty years of age speaks the language. At other places, such as Acoma (Taylor and O'Conner 1969, Maring 1975), the language is somewhat more viable but definitely on the decline. At Isleta, pre-school children are still often more fluent in Isleta than in English (Leap 1970). The language is most viable, of course, in the more conservative

Pueblos such as Santo Domingo, although we are lacking documentation on this point.

Another whole area of investigation which has only recently been brought into focus is that of the effect of the native languages on the English spoken by members of Pueblo communities. Leap has been involved in this kind of study, and some of his observations appear in print (Leap 1973).

Summary Comments

While it is probable--and desirable--that the kinds of linguistic and ethnolinguistic studies that are to appear in the future will be increasingly determined by the needs and desires of members of the speech communities involved, there are certain kinds of investigations that would be especially helpful in gaining a more complete understanding of the diachronic aspects of the Kiowa-Tanoan, Keresan, and Zuni languages and the communities that speak those languages.

In spite of the fact that a large amount of lexical data have been collected, and some published, there is yet no comprehensive dictionary for any of the Tanoan or Keresan languages. If progress is to be made in comparative work, more complete and accurate lexical data is a high priority prerequisite.

The fact that in the last two or three decades a good

number of contributions have been made in the area of descriptive phonological and grammatical studies should not be taken as an indication that our knowledge in this area is adequate. Basic descriptions for Towa and some of the Keresan dialects are needed, and in-depth analyses of specific features of the other languages. Only as descriptive and comparative studies keep pace one with another will progress be made in resolving some of the questions that still remain with respect to the linguistic relationships within the constituent languages and language families and in tracing wider relationships.

Much still remains to be done in Kiowa-Tanoan reconstructions, both in phonology and especially in grammar. With a solid base of reconstructed Kiowa-Tanoan, the relationship to Uto-Aztecan needs to be re-examined and possibly re-interpreted. The possible relationship of Keresan to Uto-Aztecan (and, therefore, presumably to Kiowa-Tanoan) needs to be thoroughly checked.

The correlation of archaeological, ethnohistorical, and linguistic data will continue to occupy the attention of specialists in various fields, and hopefully, little by little, the picture will be clarified. The full contribution of linguistics in this respect is still to be seen. The working out of Kiowa-Tanoan interrelationships in more detail may shed light on Tewa prehistory and the origin of the Kiowas,

among other questions. Studies involving the examination of reconstructable words relating to the culture or environment for clues to the common homeland of related languages have not been attempted for the Pueblo languages. A systematic follow-up of Sapir's (1916) suggestions made over sixty years ago would still be relevant with respect to fully exploiting linguistic clues to prehistory.

For languages, such as Keresan and Zuni, with no close relatives, techniques of internal reconstruction might yield valuable insights to linguistic prehistory. Beginnings have been made in this direction by Miller (1965) with respect to Acoma, and by Newman (1965:18-19) and Swadesh (1967:300-301) for Zuni. Further work in this direction might help to fill the gap between these languages and any remote relatives.

In our search for linguistic clues to the prehistory of the Southwest, we cannot afford to assume that we necessarily have a complete or correct model of how languages change or of what is meant by linguistic relationships. Some comparativists have called in question the "family tree" model of language relationships (Swadesh 1967). In the Southwest, Trager (1969) and Brandt (1975) have observed linguistic phenomena that are hard to reconcile with commonly held notions concerning how languages change. It is hoped that increased attention will be given to theoretical aspects of language

change and language contact in the Pueblo area where the possibilities of research are so promising. Not only will light be shed on how the past is to be interpreted, but wisdom will be given in dealing with the present and future of those who find themselves caught up, as many of their ancestors probably were, in the clash of competing languages and cultures.

Notes

1. I am grateful for the helpful comments received from Elizabeth Brandt, William Leap, Randall Speirs, and other colleagues both in and out of the Summer Institute of Linguistics.
2. Uto-Aztecan (UA) forms are from Miller (1967); Proto-Keresan (PK) forms are from Miller and Davis (1963); and Santa Ana (SA) forms are from my own notes.

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Uto-Aztecan: An Assessment for Historical and Comparative Linguistics

Susan Steele

0. Introduction.

Uto-Aztecanists with a historical bent are in an enviable position among similarly inclined Americanists. Most languages in the Uto-Aztecan language family have received some attention; a fair number have relatively comprehensive descriptions--descriptions of varying quality to be sure, but seldom inaccessible. Thus, it is not surprising that recent research in the language family is characterized by fairly successful efforts to reconstruct aspects of the syntax of the proto-language. This paper is an examination of a number of these reconstructions in conjunction; the structures which are hypothesized to the proto-language are reflected in dramatically different ways in the daughters. This fact raises issues important to theories of diachrony and it is ultimately these which I want to explore.¹

I will concentrate on three structures which have been reconstructed to the proto-language--the absolute, the AUX, and reflexive marking.² First, it has been hypothesized that virtually all (common) nouns in the proto-language had what Uto-Aztecanists commonly call an "absolute" suffix. This suffix, posited to be of the shape *-ti, was in complementary

distribution with possessive pronominal and postpositional suffixes.

1. N-Absolutive
2. Possessive-N- \emptyset
3. N- \emptyset -Postposition

Relatively straightforward reflexes of the form of the proto absolutive are found in Tubatulabal and Classical Aztec. Tubatulabal has two absolutives-- -l and -t --both of which are descended from the proto form.³

- TU 4. hani^hi-l 'house' šulun-t 'fingernail'
 tabaaya-l 'chipmunk' ka^h?aw^hi-t 'grasshopper' (TU-V-G)

Classical Aztec has three surface absolutives-- -L, -Li, and -l(i); the last segment of the stem predicts which absolutive form a stem will take. Again, these are all descended from the proto form.

- AZ 5. koyoo-L 'coyote' tilma^h-Li 'blanket'
 siwaa-L 'woman' okič-Li 'man'
 tepee-L 'mountain' wis-Li 'thorn'
 yawal-li 'circle' (AZ-M-A)

As hypothesized for the proto-language, the absolutive in both the languages disappears when the noun has a possessive affix.

- TU 6. hani^hi-n 'his house'
 house-his

šulu-nini-p 'their fingernails (object)'
 fingernail-object-their (TU-V-G)

AZ 7. no-tilma? 'my blanket'
 my-blanket (AZ-A-RL-63)

In Classical Aztec, the absolutive disappears as well when the noun has a postpositional suffix.

AZ 8. tepee-k 'on the mountain'
 mountain-on (AS-L-IN)

Second, proto Uto-Aztecan has been hypothesized to have had an AUX which, except under special conditions, occurred in sentential second position.

9. # X AUX...

(where X indicates the first element in a clause)

The AUX of proto Uto-Aztecan contained elements marking the notional categories of Modality (modal particles), Tense (tense clitics), and the number and person of the subject of the sentence (clitic pronouns). The clitic pronouns preceded the tense clitics; modal particles were initial to the AUX. The following represents the relative position of these elements.

10. modal particle-clitic pronoun-tense clitic

A relatively straightforward reflex of the hypothesized proto system is found in Luiseño.

LS 11. noo n-il xwaani ?ariquš
 I CP-Tense John:object was:kicking
 AUX
 'I was kicking John.' (LS-S-FN)

- LS 12. noo xu-n-po xwaani ?ari
 I Modality-CP-Tense John:object kick
 AUX
 'I should kick John.' (LS-S-FN)

Third, verbs in the proto-language have been hypothesized to have had a series of pronominal prefixes varying for number and person which marked a reflexive object.

13. Reflexive-Verb

The hypothesized proto forms are given in (14).

- | | |
|-----------------------|------|
| 14. *n _i - | *ta- |
| *? _i - | *mo- |
| *mo- | *mo- |

A fairly straightforward reflex of this proto system is found in Classical Aztec. The reflexive forms of Classical Aztec are given in (15) and an example in (16).

- | | | |
|------------|-----|--------------|
| AZ 15. no- | to- | |
| mo- | mo- | |
| mo- | mo- | (AZ-A-RL-21) |

- AZ 16. ni-no-tta
 I-Reflexive-see
 'I see myself.' (AZ-A-I-46)

The reflections in the daughter languages of these three reconstructed structures, viewed comparatively as well as independently, exemplify certain issues important to diachronic theory. First, the AUX and the reflexive marking of the proto-language have quite different fates in the daughter

languages than its absolute. All languages in the language family have an AUX and all have some way of indicating a reflexive object. Many fewer daughter languages in the language family maintain an absolute suffix, even one which has a different form from that of the proto language. The problem, then, for diachronic theory is whether this difference can be explained, that is, predicted a priori. Second, although all daughter languages have an AUX and a reflexive marking, this is not to say that the synchronic reflexes obviously resemble the proto-language. The synchronic reflexes of AUX differ from language to language; the synchronic reflexes of the reflexive are slightly less divergent, but still differ in a number of respects. The problem for diachronic theory is whether this diversity can be explained. Third, even if the synchronic diversity can be explained, the fact remains that the AUX's of the daughter languages are different. The problem is whether the reconstruction itself can be justified.

By appealing in large part to theories of linguistic universals and language universals, this paper formulates the solution to these three problems.⁴ That is, this paper will suggest, from viewing Uto-Aztecan within a broader language framework, certain constraints on change and certain

constraints on hypotheses about reconstructed language states.

Before taking up that argument, let me introduce the language family, with an outline of its internal and external relationships and a sketch of other hypotheses about the proto-language.

1. Classification.

Uto-Aztecan was established as a genetic unit in the first two decades of this century by Kroeber (SHN-K-DC) and Sapir (UA-S-SPN) and has enjoyed wide acceptance since. (Lamb (UA-L-C) has written the history of the establishment of the stock; I refer the interested reader to his paper.)

Nine subfamilies have been hypothesized, eight of which are well established; the status of Giamina as an independent language is dubious and, since it is extinct and known only through very scanty data, will so remain.

- A. 1. Numic (=Plateau Shoshonean)
2. Tubatulabal
3. Takic (=So. California Shoshonean)
4. Hopi
5. Pimic (=Tepiman)
6. Taracahitic
7. Corachol (=Coric)

8. Aztecic
9. Giamina (?)

The independent status of Hopi and Tubatulabal remains a point of some discussion, some suggesting that the former is more closely related to Takic and the latter to Numic than to other branches of the language family.

Subdivisions of the eight subfamilies are given below in B.; language names are underlined.

B. 1. Numic

Western Numic

Northern Paiute (=Paviotso; possible dialect Bannock)

Mono (=Monachi)

Central Numic

Shoshone (=Shoshoni)

Comanche

Southern Numic

Southern Paiute

Chemehuevi

Kawaiisu

2. Tubatulabal
- Tubatulabal

3. Takic

Serranan

*Serrano

*Kitanemuk

Cupan

Cahuilla-Cupeño

Cahuilla

Cupeño

Luiseno (probable dialect *Juaneño)

*Gabrielino (probable dialect *Fernandeño)

4. Hopi
Hopi
5. Pimic
Papago-Pima
Pima Bajo
Northern Tepehuan
Southern Tepehuan (dialect? *Tepecano)
6. Taracahitic⁵
Tarahumara
Yaqui
*Opata
Varohio
7. Corachol
Cora
Huichol
8. Aztecic
*Pochutla (= *Pochutec)
Pipil
Aztec (including a number of dialects:
Classical Aztec (=Classical Nahuatl),
Milpa Alta, Tetelcingo, Matlapa,
Isthmus Nahuatl and many others)

(B) is not to be taken as representing a general consensus; discussion and controversy continue both over the subgroupings and, inevitably, over what constitutes a separate language and what a dialect. In B, Numic has three parallel branches; but it has been hypothesized that Southern Numic and Central Numic are more closely related to one another than either is to Western Numic. (See Freeze and Iannucci (NUM-FI-IC).) In B, Cupan has three branches--Cahuilla-Cupeño, Luisiño, and Gabrielino--as suggested in Bright (TAK-B-TNC), but the position of Gabrielino relative to the other Takic

languages is the least secure. (Kroeber (SHN-K-HIC), on minimal data, assigned it to an independent branch of Takic.) Finally, Campbell and Langacker have recently argued for the following internal relationships in Aztecic:



although they are less than adamant about anything other than the separate status of Pochutla. "We are quite certain that Pochutec was a separate language, quite different from the others. It also seems that Pipil is a separate language, though rather closely related to the rest of [General Aztec]. We venture no guesses as to the status of the other members of [General Aztec], though in any event they are not different from one another. As for Pipil, though it is quite similar lexically and phonologically to other [General Aztec], there are grammatical differences of some significance."

(UA-CL-PV-86-7) Voegelin and Voegelin (UA-VV-SWGBL) discuss the problems involved in such decisions, specific to Uto-Aztecan and more generally.

At the other classificatory extreme, the hypothesis, first made by Sapir (1929), that Uto-Aztecan is to be grouped with Kiowa-Tanoan into the Azteco-Tanoan macro-phylum has received support from various quarters and has fairly uniform

acceptance. (See, for example, Whorf and Trager (ATN-WT-R).) Such doubts as exist over this hypothesis are probably endemic to hypotheses about such distant relationships.

The major controversy in the classification of Uto-Aztecan languages pertains to the relationships among the eight subfamilies listed in A. Three classifications have been proposed. The first of these, the most conservative, was suggested by Whorf (UA-W-CL) and continued by Lamb (UA-L-C); it argues that no larger groupings intercede between proto Uto-Aztecan and the various subfamilies, that is, that A is a fair representation of the internal relationships among the eight subfamilies. The second posits three intermediate groups--Shoshonean, which includes the first four groups in A; Sonoran, which includes the second three; and Aztecan. These two classifications agree, then, on Aztecan as a separate branch; the Shoshonean and Sonoran groups spark the controversy. Voegelin, Voegelin and Hale's reconstruction of the phonological system of the proto language was done in the framework of offering extensive support for this classification. (UA-VVH-TCG) The third hypothesis about the classification of Uto-Aztecan languages, suggested by Heath (UA-H-MS), argues that Sonoran and Aztecan are to be subsumed under one group--Southern Uto-Aztecan. Shoshonean is re-named Northern Uto-Aztecan.

Each of these proposed classifications captures a certain set of facts about the language family. The first makes explicit the diversity among the subfamilies; the Takic languages, for example, are very different in essential respects from the Numic languages. The second classification makes explicit the relative similarity between Numic and Takic as opposed to their lack of similarity to the Sonoran languages. The third classification captures the obvious similarity between the Aztec languages and, at least some of, the Sonoran languages--Huichol most obviously. These patterns of similarities and differences will become evident in the discussion of Sections 2, 3, and 4.

2. Other Reconstructions.

2.1 Phonology

The following phonemic inventory for proto Uto-Aztecan is generally agreed on:

D.	*p	*t	*c	*k	*k ^w	*ʔ	*i	*ɨ	*u
			*s			*h			
	*m	*n							*o
		*l						*a	
	*w		*y						

*length

Voegelin, Voegelin, and Hale (UA-VVH-TCG) reconstruct *r and *ŋ but both have been questioned. (See UA-L-NCG and

UA-L-OG.) A main point of controversy has been the vowel *ɛ̄. Miller (UA-M-CS) reconstructs *e, but subsequent work has argued much more strongly for *ɛ̄. In four of the eight major subfamilies (Numic, Tubatulabal, Pimic, and Hopi) ɛ̄ is the reflex of the fifth proto Uto-Aztecan vowel; in three (Tarahitic, Corachol, and Aztecan) e is the reflex; and in Takic, there are a variety of reflexes. Langacker (UA-L-VP) argues that *ɛ̄ must be reconstructed for Takic, largely on the grounds that the developments in each of the Takic languages are more plausible with this hypothesis than with another. Campbell and Langacker (UA-CL-PV) argue that *ɛ̄ must be reconstructed to proto Aztecic. Hence, "Six of the eight subfamilies now provide evidence that e was not the primitive quality of the fifth PUA vowel, including the southernmost as well as the five northern subfamilies." (UA-CL-PV-101)⁶

Two other important aspects of the phonology of the proto-language have received at least preliminary formulation--stress and consonant gradation. As to the former, Sapir (UA-S-SPN) suggests that the proto-language had alternating stress, and Munro (UA-M-RS) hypothesizes that primary stress in the proto-language was on the second mora. The major piece of evidence for Munro's hypothesis is the contrast between the relative infrequency of second syllable or second mora stress cross-linguistically and the relative frequency

of this stress pattern in the Uto-Aztecan daughters. Consonant gradation is the process by which consonants are altered word internally based on the immediately preceding morpheme; e.g. in Shoshone a morpheme initial, word-internal p can occur geminated (pp), spirantized (β), prenasalized (^mp) or pre-aspirated (p̣) depending on the stem to which it attaches. Regular processes of consonant gradation exist only in Numic; however, remnants of the process have been argued to exist in other branches of the language family. (See e.g. UA-L-NCG.)

2.2 Syntax

Proto Uto-Aztecan has been reconstructed as a verb final language with relatively free word order. (UA-S-AHS) The language had postpositions, and postpositional constructions are hypothesized to have had a number of possible forms.

(UA-L-SP) Postpositions could be attached to a pronominal base:

17. Pronoun-Postposition

or directly to a non-human or an inanimate noun.

18. Noun-Postposition

With human or animate nouns, the postposition was attached to a pronoun copy of the noun.

19. Noun Pronoun-Postposition

The elements in the construction in (19) could occur as well in an inverted order:

20. Pronoun-Postposition Noun

or discontinuously.

21. Pronoun-Postposition...Noun

Prefixed to the verb were bound pronominal forms indicating the number and person of the object (UA-G-PSP), as well as a prefix *t±- 'unspecified subject', a prefix *ta- 'unspecified object', and a prefix *n±- 'unspecified human subject coreferential to the object' (UA-L-NA). Suffixed to the verb were tense elements--at least a future tense suffix (UA-S-AHS); the verb could also take a complex suffix *-t±wa which indicated passive, a suffix which preceded the tense suffix (UA-L-NA).

$$22. \left. \begin{array}{l} *t\pm- \\ n\pm- \end{array} \left\{ \begin{array}{l} \text{object} \\ ta \end{array} \right\} \right\} V - \text{passive} - \text{future:tense}$$

Possessed nouns had possessive prefixes.

23. Possessive-Noun

A noun possessor occurred in addition to the possessive prefix on the possessed noun.

24. Noun Possessive-Noun

At least animate nouns were marked for object, by a suffix *-a. The object suffix in the proto-language followed the absolutive ending.

25. Noun-Absolutive-Object

Nominal objects of verbs, nominal objects of postpositions in constructions like (19), and nominal possessors in constructions like (24) took both absolutive and objective endings. (UA-L-AS)

The evidence for these reconstructions and the reconstructions with which we are to be primarily concerned can be found in the works cited in the bibliography. I have presented them here as facts; they are of course simply hypotheses. However, there is evidence for some of them beyond the type of evidence generally adduced in their support in the works which proposed them. The reconstructions are internally consistent, by and large, with one another. The notion--and examination of the manifestation--of typological consistency is to be ascribed mainly to the work of Greenberg; although his conclusions along this line are open to considerable debate, Lehmann (especially Lehmann (1973)) has presented a case for the application of the concept of typological consistency to historical reconstruction. The reconstructions discussed above were done by more than a single person; with few exceptions none of them have considered whether their reconstructions were consistent with the reconstructions of others. Yet, the results of these efforts are in the main internally and typologically consistent.

As Greenberg (1966) argues, postpositional languages are regularly also verb final languages; proto Uto-Aztecan has been hypothesized to be both, independently. Furthermore, while it has not been studied in any detail, it appears that languages with relative freedom of word order within constituents will also have relatively free word order within the sentence. Thus, the relative freedom of subject, object, and verb relative to one another hypothesized for the proto-language is consonant with the reconstruction of possible reordering in postpositional phrases. The hypothesis that the proto-language had modality elements at the beginning of the clause--in sentential second position--does not contradict the hypothesized word order type of the proto-language; in Steele (1975) it is shown that modality elements in verb final languages can occur either at the beginning or at the end of the clause. And the presence of subject clitic pronouns is to be expected in a language with relatively free word order, as shown in Steele (1978b). Finally, the hypothesis that the proto-language had object prefixes on the verb as well as reflexive prefixes are mutually supportive. While again the phenomenon hasn't been studied in any detail, a language which has bound pronominal reflexive objects will generally, if not always, also have bound object pronouns and the reflexive

object pronouns will occur in the same position as the most bound object pronouns.

2.3. Other

Other reconstructions, which could be labelled somewhat inadequately semantic, have been proposed for Uto-Aztecan. Of course, there are the usual lists of cognate sets; see primarily Voegelin, Voegelin, and Hale (UA-VVH-HCG) and Miller (UA-M-CS). But there have also been attempts to trace changes in the meanings of various grammatical elements. In Heath (UA-H-NCV) is reconstructed a class of verbs, the *na class. "The core of this domain was formed by verbs denoting simple physical events, especially those which leave an imprint on a surface or object..." (2) He traces the changes in the morphology of this verb class in the daughter languages and the extension or reduction of this class to various semantic domains. Other attempts of a different sort are to be found in UA-S-FIP (revised in UA-S-ME), UA-S-PI, and UA-L-NA. All three are concerned with the semantic changes in various grammatical elements--the first two explicitly so, the last as a corollary to certain syntactic and morphological changes. The first relates synchronic elements which mark futurity, intention, or possibility; the second, elements which mark past tense or irrealis; the third, elements which mark passive, impersonal,

reflexive, or reciprocal constructions. To relate the elements, all three draw on hypotheses which are not specific to Uto-Aztecan. Futurity, intention, and possibility, and past and irrealis are claimed to be related through a semantic primitive; passive, impersonal, reflexive, and reciprocal constructions are claimed to be related through the notion of non-distinct arguments. All three papers are subject to some debate among Uto-Aztecanists--and to language-family-external confirmation.

2.4 Conclusion

These remarks on the state of reconstruction in Uto-Aztecan have been necessarily brief, but they give a good idea of the amount of work that has been done--and of the amount which awaits us. Specifically, in regard to phonology, the fine details of the phonological development of the synchronic phonological inventories from the posited proto system has yet to be explored in anything near comprehension. Specifically, in regard to syntax, we know little about agreement phenomena; the structure of non-declarative sentences has received only passing consideration; the syntax of subordinate clauses remains a vast, uncharted area. (Heath (UA-H-RC), however, has surveyed the relative clause types in Uto-

Aztecán.) Specifically, in regard to semantics and the lexicon, we've only just begun.

I turn now to a consideration of the synchronic reflexes of the three reconstructions with which we are to be concerned in this paper and the changes which produced them.

3. Synchronic Diversity.

3.0 Introduction

This section considers how each of the reconstructions fares in the daughter languages, that is, how the daughter languages diverge from the proto-language in terms of an absolutive, an AUX, and reflexive marking.

3.1 The Absolutive

Assuming that the proto-language had an absolutive of the form noted above, in complementary distribution with at least those elements discussed above, a number of differences from the proto-language are attested. Some daughter languages have maintained the form of the proto absolutive but reanalyzed its function; some daughter languages have some morpheme which acts like the proto absolutive but which is obviously not descended from it; some daughter languages have lost the proto absolutive form and do not exhibit anything which

patterns remotely like it. Although all three possibilities are not equally attested, the number of daughter languages evidencing such changes from the proto-language are more numerous than those daughter languages which more nearly resemble the proto-language. But, no daughter language mirrors the hypothesized proto-language precisely.

Before discussing those languages which diverge dramatically from the proto system, let me consider the more subtle differences from the proto-language exhibited by those languages which have the old absolutive, acting like the old absolutive. First, there are languages like Luisẽño, languages for which the statement of the form of the absolutive is more complicated than that hypothesized for the proto-language. The Luisẽño absolutives are in complementary distribution with possessive prefixes and postpositional suffixes.

- | | | | | | |
|--------|------------|-----------------|------------|----------------|-----------|
| LS 26. | ki-č̣a | 'house' | wiirula-ṣ̌ | 'flute' | |
| | huu-la | 'arrow' | tukma-l | 'baby wildcat' | |
| | muu-ta | 'owl' | hunwu-t | 'bear' | (LS-S-FN) |
| LS 27. | no-huu | 'my arrow' | | | |
| | my-arrow | | | | (LS-S-FN) |
| LS 28. | huu-tal | 'with an arrow' | | | |
| | arrow-with | | | | (LS-S-FN) |

In form, however, the Luisẽño absolutive is to be distinguished from that of the proto-language. The consonants of

the absolutes in (26) are descended from the consonant of the old absolute /t/; the vowel /a/ is hypothesized to be an old object suffix. So, the longer forms are diachronically complex and do not in entirety reflect the form of the old absolute. More importantly, the absolute form which a particular noun takes is only partly predictable; hence in Luisiño, it appears necessary to posit more than one underlying absolute. Given that there is a regular rule by which /č/ becomes /š/ word finally (see LS-MB-RRO), (26) suggests that there are three pairs of absolutes-- -ča and -š, -la and -l, and -ta and -t -- the first member of which occurs on monosyllabic stems. But a few monosyllabic stems take the shorter absolute-- pe-t 'road, path', for example--and a number of longer stems take the longer absolute--wanii-ča 'river' and qaši-la 'lizard', for example. It might be possible to explain some of these apparent exceptions; a long vowel in the syllable immediately preceding the absolute appears to condition the appearance of the longer absolute in polysyllabic stems and the word for lizard is part of a set of animal and plant names that apparently condition the absolute -la. But even if the exceptions to what conditions the long or short form of the absolute can be explained, predicting which of the three remaining absolutes a particular noun stem will take remains problematic.

Thus, it appears to be necessary to analyze Luiseño as having more than a single absolutive; even though these absolutive patterns, by and large, as hypothesized for the proto-language, Luiseño diverges somewhat from it.

A second divergence from the proto language among those languages which most nearly resemble it is in the patterning of the absolutive. The reconstruction of the proto absolutive has gone only as far as claiming that the absolutive was in complementary distribution with possessive affixes and postpositional suffixes. In at least one daughter language, Tubatulabal, the absolutive alternates only with possessive affixes; there are no postpositional suffixes, only independent adpositional elements. In more daughter languages, the absolutive has a slightly more extended alternation than the two argued for the proto-language.

Classical Aztec and Serrano are the strongholds of the extended absolutive. In these languages virtually all nouns end in an absolutive suffix, which descends from the proto absolutive.⁷ In Classical Aztec, as was seen in Section 0, it is $-L(i)$, where L is a regular reflex of $*t$. In Serrano, there are three absolutives-- $-t$, $-č$, and $-ç$.

SR 29. wici-t 'bird'
 kii-č 'house'
 muuča-ç 'worm'

All of the three are regular reflexes of */t/, but the factors which condition the variation have been in part obscured, so the form of the absolutive in Serrano, like that of Luiseño, is no longer always synchronically predictable. In these two languages, not only does the absolutive vary with a possessive affix:

AZ 30. no-tilma? 'my blanket'
my-blanket (AZ-A-RL-63)

SR 31. m̄i-ki 'your house'
your-house (SR-C-SSPP)

and with a postpositional suffix:

AZ 32. tepee-k 'on the mountain'
mountain-on (AZ-L-IN)

SR 33. kii-ka? 'to the house'
house-to (SR-C-SSPP)

but also with a plural suffix on the noun.

AZ 34. okič-t̄in 'men'
man-pl (AZ-A-I-145)

SR 35. muuča-m 'worms'
worm-pl (SR-C-BIE)

Since the full reconstruction of the absolutive awaits us, the exact environments for the alternation of the proto absolutive remain to be elucidated; however, the arguments later in this paper will suggest that this last was an extension of the old absolutive pattern.⁸

Now let's return to those languages which are more dramatically different from the proto language. The first

possibility mentioned above was that the form of the absolute be maintained but pattern differently. In Yaqui, for example, there is no element which patterns like that hypothesized for the proto-language, but any non-subject noun, that is, any noun which is a direct or indirect object, an object of a postposition, or a possessor, takes the suffix -ta.

- YA 36. hunume oowim itom ču[?]u-ta me[?]ak
 this:pl men our dog-TA killed
 'The men killed our dog.' (YA-L-S)
- YA 37. sawa-ta betuk 'under a tree'
 tree-TA under (YA-L-S)
- YA 38. hoan-ta kari 'John's house'
 John-TA house (YA-L-S)

At least the /t/ of this suffix is descended from the proto absolute; the /a/ is hypothesized to have descended from the old object marker. In Hopi, similarly lacking an element, which patterns like the old absolute,⁹ any non-possessed noun which is not a subject takes the suffix -t.

- HO 39. ni[?] tiyo[?]ya-t paklawna
 I boy-T made:cry
 'I made the boy cry.' (HO-MH-CN)
- HO 40. mi-t tiyo[?]a-t po[?]ko[?]at warikiwta
 that-T boy-T dog:his is:running
 'The boy's dog is running.' (HO-MH-CN)
- HO 41. ni[?] taqa-t [?]a[?]pa coqa-t lelwi
 I Taqa-T on mud-T smeared
 'I smeared mud on Taqa.' (HO-MH-CN)

In addition, a non-singular subject noun takes -t.

- HO 42. a. ?i? tiyo paklawɨ
 this boy cried
 'This boy cried.' (HO-MH-CN)
- b. ?ima tiyo-t paklawɨ
 these boy-T cried
 'These boys (dual) cried.' (HO-MH-CN)

Again, the -t is descended from the proto absolutive.

The second difference suggested above is the loss of the absolutive form found in the proto-language but the maintenance of something which patterns, at least roughly, like it. In Southern Paiute, there are a number of suffixes to nouns which Sapir says may "suggest classification of the noun under a general category" or which have "little assignable significance". (SP-S-G-111) So, -pi is found on nouns "referring chiefly to animals, topographical features, and objects..." (SP-S-G-113) and -pɨ, on nouns which are the names of plants.

- SP 43. po?a-pi 'louse'
 kɨɨ-pi 'locust'
 wa?a-pɨ 'cedar'
 soopi-pɨ 'cottonwood' (SP-S-G)

Although these suffixes may disappear when the noun is possessed, there does not appear to be the regularity to this alternation that is attested in e.g. Luiseno.

- SP 44. poʔa=ni 'my louse'
 louse=my
- kiɪ -pi=ni 'my locust'
 locust-absolutive-my (SP-S-G)

As Sapir says, "Some of these elements disappear...when the noun is used with a possessive pronominal enclitic, others may or may not. Some nouns appear with or without an absolutive suffix, e.g. nɪŋwɪ and nɪŋwɪ-ci 'person'." (SP-S-G-111) There are a number of such elements in Southern Paiute, none of which are obviously descended from the proto absolutive but each of which patterns, at least in possessive constructions, roughly analogously.

The final difference suggested above is the loss of both the form of the old absolutive and anything which resembles its patterning. Papago has nothing which patterns like the old absolutive and except for a tiny corner of the grammar no remnants of its form either. The pair in (45) is meant to suggest that nothing alternates with the possessive affixes of Papago:

- PA 45. a. ki 'house'
 b. ʔɪm-ki 'your house' (PA-L-SS)

and many postpositions are independent elements, thus not providing the trigger for the alternation.

- PA 46. ʧukʌn wui 'to Tucson'
 Tucson to (PA-SS-D)

However, between certain postpositions and the noun to which they attach is a -t or -č, remnants of the old absolutive.

PA 47.	haiwan-t- [?] amj _i d	'from the cow'	
	cow-T-from		
	kolai-č- [?] id	'in the corral'	
	corral-č-in		(PA-L-SS-18)

I have discussed these four synchronic states as if they were absolutely distinct from one another. They are not. In Papago, the only remnant of the absolutive occurs where the reanalyzed absolutive of Hopi and Yaqui occurs. Pochutla is close to having lost the old absolutive, although it still patterns, if sporadically, like the proto absolutive. In Pochutla, many nouns end in -t or -l, the first of which is undoubtedly descended from the proto absolutive.¹⁰

PO 48.	at	'water'	
	tot	'rock'	
	teyul	'cord'	
	nenepil	'language'	(PO-B-DM-14)

But many nouns end in neither of these.

PO 49.	aten	'road'	
	kwisom	'iguana'	(PO-B-DM-14)

In possessives, at least the old absolutive appears to disappear.

PO 50.	at [?] bet	'pueblo'	
	no-at [?] bew	'my pueblo'	(PO-B-DM-16)

But since many nouns don't end in something which descends from the old absolutive, there is considerable irregularity. Finally, one detail that was omitted from the discussion of Serrano suggests an overlap between this language with an absolutive much like the proto-language and languages like Hopi and Yaqui. In Serrano, nouns which do not regularly take an absolutive, like proper nouns, have an absolutive suffix when they function as possessors, objects of postpositions, or subject of subordinate verbs. An example of the first is given in (52) below.¹¹

SR 52. h^waan-t ?ana? 'John's father'
 John-T his:father (SR-C-AMMM-4)

Regardless of such overlaps and their implications for the discreteness of the categories of language types discussed, it is quite clear that the absolutive has undergone substantial modification. No daughter language reflects the proto-language precisely. Most daughter languages in fact exhibit dramatic differences from the proto-language and, most importantly, a fair number of daughter languages have lost something which patterns like the old absolutive.

3.2 The AUX

Assuming the reconstruction of the AUX set forth at the beginning of this paper, that is, a second position

constituent composed of modality particles, subject clitic pronouns, and tense clitics in that relative order, the differences between proto Uto-Aztecan, and the daughter languages are of a different character than those found for the absolute above. All daughter languages have an AUX.¹² But in some languages it has a different position than that hypothesized for the proto-language. And, it can have a different composition from that hypothesized to the proto-language. That is, the proto AUX marked the notional categories of Modality (by modal particles), Subject Marking (by subject clitic pronouns), and Tense (by tense clitics); the AUX of a Uto-Aztecan daughter language may mark some additional notional category, or some subset of these three, or some additional notional category as well as some subset of these. Finally, the relative order of the elements found in AUX is often different from that hypothesized to the proto-language, even for those languages with essentially its composition. E below outlines the position of the AUX's in the daughter languages; F, their composition and internal order.

E. Position of AUX¹³

NP # X AUX ...

MO # X AUX ...

SH # X AUX ...

CM # X AUX ...

SP # X AUX ...

CH # X AUX ...

TU # X AUX ...

HO ... AUX #

KT # X AUX

SR # X AUX

CA # X AUX

CU # X AUX

LS # X AUX

PA # X AUX

TE # AUX

TR ... AUX #

CR # AUX

HU # AUX

AZ # AUX

F. Composition and Relative Order¹⁴

NP Modality

MO Modality

SH { Modality
Tense }CM { Modality Subject Marking
Tense }

SP	Modality	Tense	SM/OM	Modality
CH	$\left\{ \begin{array}{l} \text{Tense SM/OM} \\ \text{Aspect} \end{array} \right\}$			
TU	Modality	SM/OM	Tense	
HO	$\left\{ \begin{array}{l} \text{Tense} \\ \text{Aspect} \end{array} \right\}$			
KT	Tense	Object Marking		
SR	Modality	SM/OM	Tense	
CA	Modality			
CU	Modality	Subject Marking	Tense	
LS	Modality	Subject Marking	Tense	
PA	Subject Marking	Tense/Aspect	Modality	
TE	Subject Marking	Tense/Aspect		
TR	Tense	and	Aspect	
		and	Subject Agreement	
CR	Subject Marking	$\left\{ \begin{array}{l} \text{Modality} \\ \text{Tense} \end{array} \right\}$		
HU	Modality			
AZ	Modality			

An examination of E and F reveals only two languages which have an AUX exhibiting the position, composition, and relative order hypothesized to the proto-languages. Examples were given at the beginning of this paper of the Luiseño AUX;

in addition object clitic pronouns which mark the number and person of the object of the sentence (Object Marking). (57) contains examples of the Tubatulabal AUX, (58) of the Serrano AUX.

- TU 57. a. miya=ama-luuc-biiš
 go=Modality-SM-Tense
 AUX
 'Let us go immediately.' (TU-V-T-196)
- b. haš=ǰiyaʔaŋ-da alaawinat
 negative=OM-SM are: talking
 AUX
 'They are not talking to us.' (TU-V-G-138)
- SR 58. a. ʔačam k^wi-č čaaçuʔ
 we Modality-SM sing
 AUX
 'We might sing.' (SR-C-ME-10)
- b. ʔiip=vi-ʔ wahiʔ p̄iŋq
 here=SM-Tense coyote pass
 AUX
 'The coyote passed here.' (SR-H-G-18)

Second, there are languages like Huichol and Classical Aztec. Both of these languages include in AUX only the notional category of Modality; that is, these languages include a subset of the notional categories hypothesized to the AUX of the proto-language. (54) and (55) above are examples. Finally, there are languages like Kitanemuk and Hopi. The AUX's of both these languages include only a subset of the notional categories hypothesized to the AUX of the proto-language, but both include in addition some other notional category. (59) is a

Kitanemuk example.

- KT 59. nəʔ=mat-um niʃəhk
 I=Tense-OM I:answer
 AUX
 'I'll answer you.' (KT-A-PR-6)

There are two basic differences between the hypothesis about the relative order of elements in the AUX of the proto-language and the relative order of elements in the AUX's of the daughter languages. First, Modality may occur final to the AUX, as in Papago.¹⁶

- PA 60. kokʃa ʔa-ñi-ki
 fall:asleep base-SM-Modality
 AUX
 'Apparently I was falling asleep.' (PA-H-IN)

Second, Subject Marking may follow Tense, as in Southern Paiute.

- SP 61. suapak-aŋu=ⁿča-ni-ʔ
 nearly:killed=Tense-OM-SM
 AUX
 'You nearly killed me.' (SP-S-G-100)

In summary, all languages in the Uto-Aztecan language family have an AUX, as did the proto-language. However, only two of the daughter languages reflect with any precision the hypotheses about the proto-language. All other daughter languages AUX are to be distinguished in position, composition, or order -- or some combination thereof -- from the hypotheses about the AUX of the proto-language.

3.3 Reflexives

As noted in Section 0 above, the proto-language is hypothesized to have had reflexive prefixes on the verb, prefixes which varied for number and person. The differences between the daughter languages and the hypothesized proto Uto-Aztecan situation are easier to state for the reflexives than for either of the two preceding reconstructions. All daughter languages resemble the proto-language to the extent that they have some explicitly reflexive indication.¹⁷ While some daughter languages maintain the type of reflexive found in the proto-language, some indicate a reflexive object with a genitive construction consisting of a possessive pronominal prefix and a noun stem, usually meaning 'body' or 'self' and a much larger number have a reflexive which is either invariant for number and person or distinguishes only number.

The genitive reflexive is found exclusively in the Takiic branch of the language family; the following is an example from Luiseño.

- LS 62. a. noo notaax toowq
I no-taax see
my-body
'I see myself.'
- b. wunaal potaax toowq
he po-taax sees
his-body
'He sees himself.'

(LS-S-FN)

Cupeño and Serrano are parallel.

The invariant reflexive is the most widespread. Although it is centered in the Numic branch of the language family, it is to be found in Tubatulabal, Hopi, Cahuilla, Tarahumara, and possibly Pochutla as well. The following Hopi examples are illustrative.

HO 63. pam cayhoya naa-kiki
that child Reflexive-bit
'That child bit itself.' (HO-MH-CN)

HO 64. ni? naa-kiki
I Reflexive-bit
'I bit myself.' (HO-MH-CN)

In Hopi, this reflexive element is bound, occurring in (63) and (64) as a verb prefix. While the majority of Uto-Aztecan languages with this type of reflexive resemble Hopi in this respect, they need not. In Tubatulabal, the reflexive, an invariant particle, is an independent element.

TU 65. pišgi uumugiin omoix
then:I hurt Reflexive
'Then I hurt myself.' (TU-V-T)

Finally, the languages which have a reflexive type like that reconstructed for the proto-language are centered in the southern part of the language family. An example was given in Section 0 from Classical Aztec; the following is from Papago.

And Yaqui has yet another pattern.

YA	69.	?ino	?ito	
		?omo	?omo	
		?aw	?omo	(UA-L-NA-33)

In summary, there are two ways a daughter language can differ from the reflexive reconstruction hypothesized for the proto-language. If it has a reflexive like that of the proto-language, it can collapse certain numbers and persons in a fashion different from that suggested for the proto-language. Or, and more importantly, it can have a different reflexive type -- one of two. Most daughter languages differ in reflexive type.²⁰

4. Theory.

4.0 Introduction

The preceding section discussed the synchronic states of the daughter languages as they differ from those hypothesized for the proto-language. Although non-Uto-Aztecanists should now have some sense of what a Uto-Aztecan language looks like and what proto Uto-Aztecan looked like, instilling this sense is not the sole purpose of this paper. The point at issue is that noted at the beginning of this paper: the Uto-Aztecan data exemplify three problems which an adequate

diachronic theory must solve. First, all languages in the language family resemble the proto-language in that they have an AUX, and all resemble the proto-language in that they have some way of indicating a specifically reflexive object; a number of daughter languages do not, on the other hand, have some form which patterns like the hypothesized proto absolutive. A theory of diachronic change must predict what changes are impossible. Second, the synchronic reflexes of the proto AUX and the synchronic reflexes of the proto reflexive exhibit a number of forms. A theory of diachrony must specify, given the fact of a change, its possible results. Finally, the synchronic reflexes of AUX appear different enough that the choice as to a reconstruction seems arbitrary. A theory of diachrony must constrain hypotheses about reconstructed language states.

4.1 Remove the Absolutive

Certain characteristics of language are necessary properties; others are not. A non-controversial hypothesis about change would posit that a language will maintain the essential, necessarily, but that it need not maintain the non-essential. Although for any comprehensive theory of language change we would need a theory which so characterized various possible language properties, for the purposes here

we need only be able to contrast in these terms the three constructions under consideration.

AUX is not a category idiosyncratic to Uto-Aztecan. As discussed in Footnote 12, it was first proposed for English and its cross-linguistic identification is made possible by the definition adopted in Akmajian, Steele, and Wasow. The question, then, is whether a grammar is obliged to include the category or whether it is an optional choice, perhaps contingent on some other characteristic of the language.

The definition of AUX is primarily a method of identifying AUX across languages; it does not, by any means exhaust the generalizations to be made about the category. In Steele (UA-S-AHS), three empirically based, generalizations about the category are argued for at some length. Let me state them very briefly here. First, an AUX can occur in one of only three sentential positions -- first, second, or final.

70. [AUX.....] sentence
 [X AUX.....] sentence (where X is the first element in a clause)
 [.....AUX] sentence

Second, an AUX can contain elements expressing a limited set of notional categories. The list includes elements marking Modality, Tense, Subject Agreement or Marking, Aspect, Question Marking, Negation and a very few others. Finally, the

relative order of elements within AUX is constrained by the properties of the particular categories marked there. For example, in Luiseño Modality occurs at the periphery of AUX. (See (12) above.) Elements marking Modality will always occur at the periphery of AUX because they may be stressed while other elements, as e.g. Tense, may not.

A theory of AUX which explains these seemingly unrelated characteristics of the category also answers the question posed above about its obligatory or optional nature. The theory of AUX is this: The AUX, a category containing at least the notional categories of Tense and/or Modality, maps a sentence radical into a sentence. By sentence radical is meant a series of arguments and a predicate. That is, AUX provides a judgement about a series of arguments and a predicate; AUX is what makes a sentence out of a series of arguments and a predicate. This hypothesis argues that AUX is an obligatory category in the grammar of every language; all languages contain sentences, not (merely) sentence radicals.

The three empirical generalizations above make sense in light of this hypothesis. First, a sentence necessarily has an initial position, a final position, and a second position. If AUX maps a sentence radical into a sentence, it follows that it should occur in some position which is always

and necessarily available. Second, all, but one, of the notional types to be found in AUX can pertain to the sentence. If AUX maps a sentence radical into a sentence, it follows that it should be composed of exactly this type of element. Finally, the ordering possibilities that the generalization about relative ordering rules out should be impossible if AUX maps a sentence radical into a sentence. If the order of elements within AUX can depend only on characteristics of the categories themselves, it does not depend on their scope relationships nor does it follow from some general categorial structure. If AUX maps a sentence radical into a sentence, each of the elements which AUX may contain pertains to the sentence; thus, none of these should be more critical than any of the others. These seemingly unrelated characteristics of the category follow naturally from the theory. The point of linguistic argumentation is to bring coherence to apparently disparate phenomena; the theory of AUX, thus, is precisely what is required.

On first consideration, the absolutive appears totally idiosyncratic to Uto-Aztecan. No other language or language family, to my knowledge, has a morpheme in the noun morphology that patterns similarly. As such, given the hypotheses above, the absolutive need not be maintained over time. However, if we expand the scope of the comparison, similarities

do suggest themselves. Consider the indefinite article of English. In English, the indefinite article alternates with indications of plurality:

71. a. I see a dog.

b. I see dogs.

And, like the definite article, with pronominal possessives.

72. I see his dog.

Except for the absolutive's alternation with a postpositional suffix, the comparison to Uto-Aztecan languages like Serrano or Classical Aztec isn't totally preposterous. If the absolutive could actually be classed in some fashion with the English article (and presumably with like elements in other languages), the total idiosyncrasy of the absolutive -- and hence this as a reason for its disappearance -- cannot be maintained.²¹

Thus, the question of the essential or non-essential character of the absolutive depends on assigning it some function or label. At the moment, the best hypothesis, for the absolutive of the proto-language, is that it indicated that the element to which it attached was a member of the category Noun. Since postpositional suffixes and possessive prefixes are affixed to nouns, the absolutive is absent where there is otherwise an overt indication, on the stem itself, of the categorial status of the stem. Now, if this

hypothesis is correct, the absolutive is again to be considered among the set of non-essential language properties. It is not the case that a category must be distinguished by its inflectional morphology from whatever other categories a language might have. Numerous examples to this effect could be given; let me present here one which is closest to the issue at hand.²² The inflectional morphology of the categories Adjective and Noun in Luisẽño are strikingly parallel. Both take object marking.

- LS 73. a. ?awaal ?oyokval xaariq
 dog quiet is:growling
 'The quiet dog is growling.'
- b. noo ?awaal-i ?oyokval-i tiiw?yax
 I dog-object quiet-object saw
 'I saw the quiet dog.' (LS-S-FN)

Both take plural marking.

- LS 74. ?awaal-um ?oyokval-um xaariwun
 dog-plural quiet-plural are:growling
 'The quiet dogs are growling.' (LS-S-FN)

And, most critically, most adjectives end in -t, -š, or -l, and these consonants alternate with postpositional suffixes.²³

- LS 75. yot 'big'
 noo too-nga yo-nga yawaq
 I rock-on big-on am:sitting
 'I'm sitting on the big rock.' (LS-S-FN)

- LS 76. ?exmawiš 'dirty'
 noo paa-nga ?exmawi-nga ?aašaq
 I water-in dirty-in am:bathing
 'I am bathing in the dirty water.' (LS-S-FN)

In sum, for the absolutive, there are two possibilities -- either of which concludes with the hypothesis that it is a non-essential characteristic of human language. The absolutive may be totally idiosyncratic.²⁴ If it is, it is obviously non-essential. If it is not idiosyncratic, its apparent function is to mark the category Noun, an apparently non-essential function. Thus, although we can't predict in either case that the absolutive will disappear, there is no necessity that it be maintained in the daughter languages.

The predictions about the relative fates of the AUX and the absolutive depended entirely on a theory of linguistic universals, that is, a theory of what are the possible elements of a grammar, and the distinction to be made in that respect between essential and non-essential elements. A similar prediction for the reflexive cannot depend on this basic distinction alone; it must appeal as well to a theory of implicational language universals. Not all languages have specifically reflexive elements. For example, in Lardil a reflexive object is marked by the passive morphology of the verb.

77. a. ngawa pe-tha-kun yadaman-in
dog bite-increment-instantive horse-accusative
'The dog bit the horse.'
- b. yadaman pe-yi-kun ngawu-n
horse bite-passive-instantive dog-agentive
'The horse was bitten by the dog.'
- c. ngawa pe-yi-kun
dog bite-passive-instantive
'The dog bit himself.' (Kenneth Hale, personal communication)

Other languages use the regular object pronouns. Thus, we cannot claim that there is an obligatory and distinct element which is labelled Reflexive. However, the vast majority of languages appear to have such an element. If languages can be divided into those with and those without specifically reflexive elements, it is possible that there is some implicational statement which predicts the difference. Furthermore, since most languages appear to have specifically reflexive elements, the implicational statement should, in all probability, predict only when a language will not. That is, a typologically diverse set of languages will exhibit specifically reflexive elements; those languages without such elements will have some characteristic in common which predicts the lack. Diachronically, then, the possibility of acquiring specifically reflexive elements -- or of maintaining the characteristic of marking Reflexive with some distinct element -- is always available; in contrast, the

possibility of losing specifically reflexive elements is available only under special conditions. Thus, Uto-Aztecan languages, languages descended from a language with specifically reflexive elements, would have a very small chance of losing such elements.

4.2 Possible Results

The preceding discussion suggests that a theory of diachronic change which depends on a theory of linguistic universals supplemented by a theory of implicational language universals could predict the difference in maintenance between the AUX and the reflexive on the one hand and the absolutive on the other. Obviously, it is not the case that the characteristics of a language which are either necessarily maintained or encouraged to continue will resemble that from which they descend; the reflexive markings in the daughter languages are distributed among three types and the AUX's of the daughter languages appear to be even more diverse. The question is whether such diversity can be predictable. The claim here is that it can; the prediction depends on establishing the possibilities for any particular linguistic characteristic and their relative likelihood. That is, the prediction can be made only in the context of a typological study of language.

The first task, then, in regard to the AUX and the reflexive of Uto-Aztecan is to consider the available options. First, there are three types of reflexive elements cross-linguistically. A reflexive object may be indicated by a genitive construction, i.e. a possessive pronoun and a noun, usually a noun meaning body or self; by a special series of reflexive pronouns which vary for person and number, or by an element which is either invariant or distinguishes only number. Languages use one of these exclusively or primarily, so English reflexives are of the first type; French, the second; and Korean, the third. These are exactly the three types of reflexives found in Uto-Aztecan.

A much larger number of AUX's are possible. In Section 4.1, the parameters to the category AUX were stated: an AUX can occur in one of three sentential positions, can contain elements marking any one of a number of notional types, and can have a number of possible internal orders. The combination of these possibilities gives a large number of possible AUX's; e.g. one language may have an AUX which contains the notional categories of Tense, Aspect, and Subject Agreement and occurs sentence finally, while another language may have an AUX with exactly this composition but which occurs in sentential second position.

The second task is to consider whether the possibilities for these two constructions are equally weighted. The three possibilities for reflexive marking appear to be equally likely cross-linguistically. Languages do not cluster in any one of the three available types. Further, languages which are closely related, in Uto-Aztecán as well as in Indo-European, can exhibit different types. For example, in the Cupan subbranch of Uto-Aztecán we find both the genitive reflexive (Luiseño, Cupeño) and the invariant reflexive (Cahuilla); in the West Germanic subbranch of Indo-European, we find reflexive pronouns (German) and the genitive reflexive (English). So, it is to be expected that the daughter languages of Uto-Aztecán would distribute among the three types and that the innovated reflexive would bear no necessary resemblance in type to the reflexive of the proto-language.

This is not to say, of course, that a language can randomly exhibit one of the three reflexive types. It appears to be the case that the type of reflexive a language exhibits is tightly bound up with other aspects of the language and that some general linguistic principle governs all these aspects. The hypothesis is most clearly illustrated in the case of the invariant reflexive. The appearance of the invariant reflexive in a language is bound up with other systems of marking coreference, also invariant for number and

person. For example, languages commonly have possessive pronouns which vary for number and person. But in some languages, there is a special, obligatory, and invariant mark for possession when some element is possessed by the subject of the clause. Compare the two Southern Paiute sentences below, the first of which contains a regular possessive pronominal clitic and the second of which contains the invariant "reflexive" possessive.

- SP 78. a. pinaⁿk^wa paa=[?]η^wa pič[?]p[?]č[?]kai
soon aunt=his arrived
'Soon his aunt arrived.' (SP-S-T-309)
- b. yokop[?]č[?]kaiη^wa šinaη^wa^h pi paaya-^hp[?]č[?]
copulated:with:her coyote aunt:object-own
'Coyote copulated with his own aunt.'
(SP-S-T-309)

And it appears to be the case that a language which has such will also have an invariant reflexive. For a second example, consider reciprocal constructions. Like reflexives, reciprocals can be indicated by some construction which varies for person. In Luiseño, the reflexive elements also mark reciprocal.

- LS 79. a. wunaalum pomtaax toowwun
they Reflexive see
'They see themselves/one another.'
- b. čaam čamtaax toowwun
we Reflexive see
'We see ourselves/one another.' (LS-S-FN)

Or reciprocal can be marked by some element which is invariant for person. English one another/each other is a fair example. But it appears that if a language has an invariant reflexive element, it will have an invariant reciprocal as well.

It was stated above that the AUX of a language has a number of compositional, positional, and ordering possibilities available to it. The statement of positional possibilities needs some tightening. Assuming the three possible positions for AUX and assuming verb initial, verb medial, and verb final languages, the chart below exhausts the logically possible language types.

G.	AUX V X X	AUX X V X	AUX X X V
	V AUX X X	X AUX V X	X AUX X V
	V X X AUX	X V X AUX	X X V AUX

Not all of these possibilities are realized. If AUX is final to the clause, the language must also be a verb final language; a sentence final AUX cannot occur in a verb medial or a verb initial language. Further, initial position is ill-favored for verb final and verb medial languages. Hence, G above should be modified as below.

H.	AUX V X X	(AUX X V X)	(AUX X X V)
	V AUX X X	X AUX V X	X AUX X V
	*V X X AUX	*X V X AUX	X X V AUX

However, given this refinement, the position of any particular AUX, the composition of that AUX, and the relative order of elements within that AUX are not to be predicted from some other fact about the language. First, the claims above about the positions of AUX do restrict the possibilities, but they do not by any means require a unique choice for any language type. It is, in fact, impossible to predict with absolute accuracy which of the choices available to a language will be chosen. Second, AUX can contain any one of a number of notional types. Although the presence in AUX of the elements marking these notional types depends on their presence in the language, it does not follow that they will necessarily occur in AUX when they are present. For example, Subject Marking in Classical Aztec is not a member of the Classical Aztec AUX. The Classical Aztec AUX, as was noted in E above, occurs clause initially; Subject Marking is, however, prefixed to the verb.

AZ 80. an-teečLaso?La
you-love:us

'You love us.'

(AZ-A-R-21)

Further, with one possible exception, it is impossible to predict when, assuming their presence in a language, any of the elements marking these notional categories will occur in AUX and when they will not. Finally, this claim in regard

to the relative order of elements in AUX follows necessarily. If the relative order of elements in the AUX of any particular language depends on factors internal to that AUX, it cannot be predicted from their relative scope or from whatever general categorial structure the language might exhibit.²⁵

In sum, the possibilities for the position, composition, or relative order of an AUX are essentially equally available. Hence, no one of the possibilities for any of these three and no combination of possibilities is more expected cross-linguistically than any other.

I have argued that there are three types of specifically reflexive marking and a number of instantiations of the category AUX. In either case the possibilities are, essentially, equally available cross-linguistically; that is, no one of the possibilities predominates. The historical application of this claim is simple and straightforward: The result of any change which affects either of these constructions is constrained, but, within those constraints, change in any direction is as likely as change in any other. Hence, the diversity among the reflexive marking and the AUX's in the Uto-Aztecan daughter languages is not unexpected; it can, in fact, be predicted a priori.

4.3 Possible Reconstructions

Sections 4.1 and 4.2 have argued that certain predictions for change in Uto-Aztecan -- and for language change generally -- follow naturally from theories of linguistic universals and theories of language universals. This section is concerned with a slightly different problem -- the problem of constraining hypotheses about reconstructed languages -- but the point is essentially the same. Such hypotheses must be based in some theory of language and language possibilities.

As was noted in 4.2, the AUX's of the daughter languages of Uto-Aztecan differ almost from language to language. (See E and F above.) The specific question is whether the reconstruction that was presented at the beginning of this paper can be supported. To repeat, proto Uto-Aztecan had an AUX which (a) occurred in sentential second position (b) containing elements expressing the notional categories of Modality, Subject Marking, and Tense, elements which occurred in (c) the order:

modal particle -- clitic pronoun -- tense clitic

None of these hypotheses, nor their conjunction, violates the definition or the characteristics of the category AUX discussed in Chapter Two, and to that extent the reconstruction is an acceptable one. Such congruence is essential

to a reconstruction; in this instance, however, it does not prove it. The problem is to show that there is some evidence for the reconstruction within the synchronic diversity of the AUX's of the Uto-Aztecan daughter languages. The argument is substantially abbreviated here, but see Steele (UA-S-AHS) for a complete argument; here I will present only the evidence that the daughter languages are not as diverse as they appear without a theory of the possibilities available to AUX and that they agree on precisely the points reconstructed to the proto-language. Since the possibilities available to AUX are substantial and since the particular type of AUX a language exhibits is not to be predicted from some other facet of the language, the fact that the daughter languages of Uto-Aztecan predominate in some set of these possibilities becomes, then, a weighty argument for the shape of the proto-language.²⁶

First, consider the evidence the Uto-Aztecan daughter languages offer for the hypothesis that:

Proto Uto-Aztecan had a sentential second position AUX.

In 4.1, it was stated that there are only three sentential positions for AUX -- initial to the sentence, final to the sentence, or in sentential second position. The Uto-Aztecan daughter languages cluster in this last. All daughter languages except Hopi, Tepecano, Tarahumara, Cora,

Huichol, and Classical Aztec clearly have, at least, a second position AUX. As stated in 4.2, the position of AUX is not entirely a random choice among these three, but exactly one of the three possible positions cannot be predicted for any language type. Thus, the clustering of the AUX's of the Uto-Aztecan daughter languages in sentential second position is a fact of some significance.

Another consideration highlights the importance of this fact. First, most of the languages which have a second position AUX are best termed verb final languages.

I. Verb Position²⁷

Verb Final

Second AUX	Non-Second AUX
Northern Paiute	Hopi
Mono	Tarahumara
Comanche	
Shoshone	
Southern Paiute	
Chemehuevi	
Kitanemuk	
Serrano	
Luiseno	
Cupeño	
Tubatulabal	

Non-Verb Final

Second AUX	Non-Second AUX
(Papago?)	Classical Aztec (Huichol?) (Tepecano?) (Cora?)

All the Uto-Aztecan daughter languages have at least some of the characteristics which are generally consistent with a sentence final verb. (See Greenberg (1966).) They all have postpositions;²⁸ below are examples from Luiseno and Hopi, respectively.

- LS 81. wunaal=upil ki-yk monquš
 he=AUX house-to was:going
 'He was going to the house.' (LS-S-FN)
- HO 82. po'k^yaya 'in±-cve qat±
 Po'k^yaya me-on is:sitting
 'Po'k^yaya is sitting on me.' (HO-HMM-CN)

Some of them have conjunctions which follow the last of a series of conjoined elements; the following is an example from Tarahumara.

- TR 83. remá sa?pá má
 tortilla meat and
 'tortilla and meat' (TR-L-SE-56)

But what I mean here by the term verb final is specifically that in the most common word order, the verb is final to the clause. Classical Aztec is clearly not verb final; the verb almost never occurs sentence finally. (See AZ-S-LOWOC.)

Papago, Cora, Huichol, and Tepecano all allow verb final word order, but, in sentences lacking some focused or topicalized element, it is not common. Examples are given below of verb final sentences in those daughter languages, for which examples can be found.²⁹

- NP 84. S O V
pubuhágayu nímí magótí
shamans person bring:back
'The shamans brought the person back.' (NP-N-V-258)
- MO 85. S O V
poihipoi qahooʔnana ʔanahnacahmíhnahkiʔhti
poihipoi boxes interchanged:them
'Poipoi interchanged the position of the boxes.'
(MO-L-G-377)
- SH 86. S O V
ikʰa pihyaa píímʰín tempetʰa pekʰanuhkʰa
this sweet their mouth:object kills
'The sweetness kills their mouth.' (SH-M-S-22)
- CM 87. S O V
mahitenahpíʔ=caʔ píʔpake píʔnahuma wíʔsakaʔi
warrior=AUX his:arrow his:knife:with split
'The warrior split the arrow with his knife.'
(CM-OS-F-98)
- SP 88. S O V
paapiʔinʰax tákíaya towacia pakapʰíkai
his:elder:brother deer:object child:object killed
'His elder brother killed a young deer.'
(SP-S-T-310)
- CH 89. S O V
níí puusi makapí
I cat:object gave
'I gave a cat.'
(CH-P-G-181)
- TU 90. S O V
piškič ʔnhaniil aalic íwík
then:quote people their:own:bow grabbed
'Then the people grabbed their own bow.' (TU-V-T)
- HO 91. S O V
míʰ wíʰ'ti caqaptat tíʰ'i
that woman dish:object bought
'That woman bought a dish.'
(HO-HM-CN)
- SR 92. S O V
níʰʔači kučiʰ ʔaʰöy níʰvkin
my:pet dog his:bone:object bury
'My dog is burying his (own) bone.' (SR-C-AMMM-5)

- CA 93. S O V
 ?aa taxat ?isil^y ?ay čemxelay pečequiwiwan?i
 that man coyote really our:blanket:object he:has:
 torn:it
 'That man Coyote has really torn our blanket.'
 (CU-S-T-97)
- CU 94. S O V
 mə=qwə pəpə nət pənə[?]əmi mimaquiqa
 then=AUX ? chief his:relatives:object gather
 'Then the chief would gather his relatives.'
 (CU-HN-M-38)
- LS 95. S O V
 heŋeemal=up hunwuti patiq
 boy=AUX bear:object is:shooting
 'The boy is shooting the bear.'
 (LS-S-FN)
- TR 96. S O V
 biré towí kemu sekorí čigore
 one boy your jar stole
 'A boy stole your jar.'
 (TR-L-SE-9)

Now verb final languages, alone, have the potential of exhibiting any of the three positions for AUX; as noted in 4.2, sentence final is a proscribed position for AUX in verb initial and verb medial languages. So the fact that a majority of verb final languages in a language family have a second position AUX becomes somewhat more significant.

The second part of the hypothesis about the AUX of the proto-language is stated below:

The AUX in proto Uto-Aztecan was composed of elements marking the notional categories of Modality (modality particles), Tense (tense clitics), and Subject Marking (clitic pronouns).

Although an AUX, by definition, must contain elements expressing Tense or Modality, the possibility that it will contain both is left open, as is the choice as to which of

these it may contain. Thus, it is worthy of note that only slightly less than half of the Uto-Aztecan daughter languages have an AUX which contains both.

J. Modality and Tense in AUX

Contain Both	Don't Contain Both
Comanche	Northern Paiute
Shoshone	Mono
Southern Paiute	Chemehuevi
Tubatulabal	Kitanemuk
Serrano	Cahuilla
Luiseno	Hopi
Cupeño	Tepecano
Papago	Huichol
Cora	Classical Aztec
	Tarahumara

Furthermore, an AUX can, although it need not, include elements expressing a number of other notional categories, in addition to the criterial notions of Tense and Modality. A sprinkling of some of these possibilities is to be found in the AUX's of the daughter languages. So, a few include Object Marking, e.g. Southern Paiute and Serrano. And a slightly larger number include elements marking Aspect, e.g. Hopi and Chemehuevi, or Question, e.g. Northern Paiute and Cora.³⁰ But for only one type of element is there a substantial number of languages with AUX's which contain it. A relatively large number of the daughter languages have an AUX which contains Subject Marking.

K. Subject Marking in AUX

With Subject Marking in AUX	Without Subject Marking in AUX
Comanche	Northern Paiute
Southern Paiute	Mono
Chemehuevi	Shoshone
Tubatulabal	Hopi
Serrano	Kitanemuk
Luiseno	Cahuilla
Cupeño	Tarahumara
Papago	Huichol
Tepecano	Classical Aztec
Cora	

Since the hypothesis of Chapter Two is that the occurrence of elements marking any of these notional categories within the AUX is absolutely optional and not to be predicted, the number of daughter languages with this distribution is noteworthy.

Finally, the hypothesis about the relative order of elements in the proto Uto-Aztecan AUX is:

The following represents the relative order of elements in the AUX of proto Uto-Aztecan:

Modality Subject Marking Tense

One point of agreement extends across the language family with the exception of Numic (Southern Paiute, Chemehuevi, and Comanche); Subject Marking precedes Tense. Another has two exceptions, but these are not limited to a particular subgroup; Modality occurs at the beginning of the AUX's of the daughter languages. In either case, the

daughter languages exhibit, almost uniformly, the relative orders hypothesized to the proto-language.

Section 4.2 argued that the order of elements within AUX is essentially unpredictable, beyond gross orderings between whole classes of elements which can be found in AUX. Hence, there is no prediction to be made about the relative order of tense elements and clitic pronouns. And, while we could predict that modal elements would be at the periphery of AUX, we could make no predictions about whether that peripheral position would be initial or final to AUX. The fact, then, that there is agreement on both counts in the daughter languages becomes a point of some significance.

Section 4.2 argued that, within certain parameters, the AUX of one language can differ from that of another in position, composition, or sequence. Without this perspective, the AUX's of Uto-Aztecan are diverse. With it, they are strikingly similar. The similarities are reflected in the hypotheses about the shape of the AUX in the proto-language. That is, given the available options for the position of an AUX, the composition of an AUX, and the order of elements within an AUX, the synchronic distribution of the AUX's of the Uto-Aztecan daughter languages along each of these three parameters offers evidence for the AUX of the proto-language,

support for the reconstruction hypotheses stated at the beginning of this paper.

5. Conclusion.

This paper has examined from a number of angles three reconstructions posited for proto Uto-Aztecan. I have attempted to give a sense of what a Uto-Aztecan language is like and of the diversity to be found in the language family. I have attempted to give some sense of what comparative and historical work has been done and of what remains to be done. Finally, and most importantly, I have argued, using Uto-Aztecan data, against a parochial view of comparative and historical work; I have attempted to show how such work can benefit from theories of language and linguistic possibilities and, in turn, how such a study specific to Uto-Aztecan can bear directly on theories of diachronic change.

Notes

1. The original version of this paper -- and the other papers in this volume -- was given at a conference in Oswego, New York, a conference titled "American Indian Linguistics: An Assessment". It may not be immediately obvious how the major topic of this paper is to be considered an assessment of Uto-Aztecan. A straightforward comparison of the daughter languages and the lacunae in our knowledge about them would

substantially overlap with some recent work. (Cf. Langacker (UA-L-OG), particular.) An adequate treatment, on the other hand, of the research into the diachrony of the language family is too large a topic for this volume. Most important, though, parochialism is rife in historical and comparative studies in American Indian languages. Hence, the focus of this work has been shifted away from an assessment of the research in these areas to an assessment of the place of Uto-Aztecan studies in illustrating and deciding various theoretical issues.

Future research in Uto-Aztecan assuredly will attempt to fill the holes in our knowledge of the language family; future research in Uto-Aztecan will directly bear on theoretical issues only to the extent that Uto-Aztecanists make that aspect of their work clear. As an assessment of the state of the art in Uto-Aztecan, then, this paper argues, by example, for an attitude towards research, an attitude that looks beyond the specifics of the field. The argument is two-edged. While Uto-Aztecanists must be concerned with general theoretical questions, those who consider themselves hard-core linguistic theorists must take careful account of research outside the usually very small data base that informs their theories, research like that already being done in Uto-Aztecan.

2. The reconstruction of the absolutive is part of two recent papers by Langacker -- one on postpositional phrases in the proto-language (UA-L-SP) and one on object marking (UA-L-AS). Steele (UA-S-AHS) and Langacker (UA-L-NA) reconstruct the AUX and the reflexive marking respectively.

In part because of the different sources for the reconstructions, the languages discussed in each case are not exactly the same. However, in all cases, they provide a representative sampling of the resulting synchronic states.

3. Examples are written in the (somewhat regularized) transcription of their source. The source of each example sentence is identified in the parentheses following it; the code there identifies an item in the bibliography. In the text, primary sources are similarly identified; secondary sources are identified by name and date. In the code, the language or language group (e.g. UA for Uto-Aztecán) is identified first; the author, second (e.g. L for Langacker); and the source, third (e.g. NA for Nondistinct Arguments in Uto-Aztecán). Note that the source code regularly omits whatever language reference may occur in the title.

This method of identifying items in a Uto-Aztecán bibliography was introduced by Langacker in Nondistinct Arguments in Uto-Aztecán and is generally used. It is an easy (and relatively transparent) method of uniquely identifying each

source in the extensive Uto-Aztecan bibliography.

4. The study of either linguistic universals or language universals assumes that there are certain features to be found in all languages, i.e. that are universal. But the study of linguistic universals is an attempt to discover and define these features; the study of language universals commonly assumes them. The primary focus of the study of language universals is best stated by Greenberg (1974): "The hypothesis that...is of theoretical interest is essentially the hypothesis that the ways in which languages differ from each other are not entirely random, but show various types of dependencies..." (54) The establishment of language typologies is not necessarily without interest for linguistic universals, but commonly the study of linguistic universals ignores them. (But see Hale et al.) Although emotion runs high among those working in either framework about the value of the approach of the other, this paper will suggest it is important to disregard neither.

5. In Miller (UA-M-CS), Taracahitic is not a genetic unit. Rather there is Tarahumara (including Tarahumara and Varohio) and Cahita (including Yaqui and Mayo).

6. This assumes, of course, that numbers should count in deciding questions about the structure of the proto-language.

7. A small number of nouns in Classical Aztec take an

absolute -in which is not descended from the proto absolute:

tooč-in 'rabbit' sool-in 'quail' (AZ-A-I-145)

8. The absolute is generally also absent from the first noun in a noun compound and from a noun incorporated in a verb. Since nouns commonly lack some of their morphology under similar conditions, this fact may not be important to the characterization of the absolute.

9. However, a number of nouns do end in h̄, e.g. pōh̄ 'road', kiih̄ 'house', siih̄ 'guts', and sooh̄ 'star'. And, in the possessed form of kiih̄ 'house', this h̄ is absent, e.g. kii-y-at (house-oblique-his) 'his house (oblique)'.

10. The l is hypothesized to be part of the original stem. Compare Classical Aztec nenepil-li 'tongue'.

11. Crook (SR-C-AMMM) hypothesizes that in such constructions the old absolute has been reanalyzed as a marker of the constituency of the noun and the rest of the construction. Hence, it has been extended to nouns to which it would not otherwise affix.

12. Chomsky (1957) postulated the category AUX for English and analyzed it essentially as follows:

AUX --> T (M) (have+en) (be+ing)

The analysis of the category has remained controversial, as has the existence of the category itself. However, in regard

to the latter, the arguments have been confined, with few exceptions, to the evidence which English brings to bear. With the recent exception of Akmajian, Steele, and Wasow (to appear), how AUX might be identified -- a definition of the category outside arguments peculiar to English -- has never been attempted. Akmajian, Steele, and Wasow define the category as follows:

AUX is a category -- i.e. distinct in its behavior from all other categories of a language -- which labels a constituent containing elements expressing the notional categories of Tense and/or Modality.

They also present an analysis of English which meets this definition and argue that the category is not a peculiarity of English. This paper accepts the existence of the category AUX and assumes the definition above. Its important to note that the definition establishes an equivalence class, a set of of particular language phenomena which are to be similarly identified; the members of these sets need not, however, be identical.

The analyses of the AUX's of the Uto-Aztecan daughter languages offered below are mine. Aside from Hale's Papago (see e.g. UA-HMJP-TCG) and an analysis of Hopi in Masayesva-Jeanne and Hale (UA-MH-CN), grammars of Uto-Aztecan languages have uniformly ignored the issue.

13. E is a simplification of the positions of AUX in the

daughter languages. First, and least importantly, some second position AUX's may occur sentence initially under certain conditions; similarly, some sentence initial AUX's may occur in sentential second position under certain conditions. Much more importantly, a few daughter languages have more than a single AUX, e.g. Luiseño, Southern Paiute, and Tarahumara. These AUX's raise no issues beyond those to be considered, and they make the exposition in a paper of this length significantly more difficult.

14. A element which occurs inside a set of braces does not co-occur with the other elements also listed there. In Tarahumara, Tense, Aspect, and Subject Agreement are marked in a single morpheme; hence, no ordering statement is possible.

Chart F is to be read simply as statements of composition and relative order. It is not to be assumed that all the elements listed will be present in any single AUX. Furthermore, it simplifies these statements, i.e. it focuses on the three notional types which are hypothesized to the proto-language.

15. It is obvious from (56) that an AUX may appear to be part of the verb morphology, if it still meets the definition given in Footnote 12 of the category. In Hopi the evidence is found in sentences which lack a verb, sentences which are the equivalent of English sentences with verbs of motion, as

come or go.

- (i) pam pay paasay ?aw?i
 he already his:field:oblique to
 'He has gone to his field already.' (HO-HM-CN)

In these sentences, AUX affixes to the postposition.

- (ii) pam sicep paasay ?awni-ŋ^wɛ
 he always his:field:oblique to-AUX
 'He always goes to his field.' (HO-HM-CN)

16. This Papago example illustrates the point made at the end of Footnote 14. Tense is absent, and Modality follows Subject Marking directly. However, there are sentences with Tense interceding between the two.

17. In some languages, as will be discussed in Section 4, there is no specifically reflexive element. For example, in some Polynesian languages, the regular pronominal object form of the pronoun, usually plus an emphatic element, is used when the object is reflexive. The sentence is potentially ambiguous between a reflexive reading and a non-reflexive reading. Thus, it is important to make clear that all the daughter languages in Uto-Aztecan do have some element which can be specifically reflexive.

18. Reflexive pronominal forms commonly do not exhibit all the number and person distinctions found in other pronominal systems.

19. Whether the actual forms of such reflexive pronouns are

like those in the proto-language is not considered important here. The pronominal systems of a language often maintain an internal similarity; until we know how to weight such synchronic facts, we can't use them as diachronic evidence.

20. Below is represented in tabular form the data about the distribution of the absolutive and reflexive marking presented in this section. Languages for which the data is unclear are left unclassified. Also these Tables cannot indicate all the complexity discussed in Section 2. As noted earlier, the illustrations of the diversity in Uto-Aztecan in regard to the absolutive, reflexive marking -- or the AUX -- are drawn from slightly different subsets of daughter languages.

I. Absolutive

A. Both proto form and proto <u>pattern</u> .	B. Neither proto form nor proto <u>pattern</u> .	C. New form with proto <u>pattern</u> .	D. Proto form but lacking proto <u>pattern</u> .
Luisen̄o	Papago	So. Paiute	Hopi
Classical Aztec		(possibly	Yaqui
Serrano		other Numic	
Cupeñ̄o		languages)	
Cahuilla			
Tubatulabal			
	Pochutla		

II. Reflexive

A. Genitive	B. Pronominal	C. Invariant
Luisen̄o	Huichol	So. Paiute
Cupeñ̄o	Cora	Tubatulabal
Serrano	Papago	No. Paiute
	Tepecano	Mono
	Yaqui	Shoshone

Classical Aztec

Comanche
Hopi
Cahuilla
Tarahumara
Pochutla

21. Of course, until an investigation into the distribution of such elements is undertaken, their non-idiosyncratic status remains unproven.

22. I am not, however, to be construed as taking the position that because what appears to be inflectional morphology is not peculiar to some category, it argues for the collapse of whatever categories it appears on.

Some analyses of Hopi, for example, would argue that postpositions are verbs because they can take tense endings. (See the example in Footnote 15.) As the sketch of the analysis in Footnote 15 suggests, I would not hold that position.

23. To argue that these overlaps between Noun and Adjective are simply a result of agreement misses the point. First, even if they can be stated as agreement facts, it still is true the adjectives are inflected like nouns. Second, stating this type of agreement in Luiseño is tricky, since an adjective can be marked for number or case when the noun it modifies is not.

- (i) noo tukmal čoraant-i čipiq
I basket round-object am:breaking
'I am breaking the round basket.'

Finally, the question of how agreement is to be handled in a grammar remains an essentially unresolved question.

24. At the Conference from which this volume stems, there was some discussion of the possibility of some similar element in Tanoan. If so, it certainly strengthens the posited relationship between Uto-Aztecan and Tanoan.

25. It is not uncommon to find one or the other of these two hypotheses assumed or explicitly stated in regard to the order of elements in AUX. See e.g. Jackendoff (1977). The evidence against either of these is beyond the scope of this discussion, but it can be found in Steele (UA-S-AHS).

26. Before we begin, there is an important point to make about the discussion to follow. I will argue there for the hypothesis that the AUX of the proto-language occurred in sentential second position, for the hypothesis that the AUX of the proto-language contained elements marking Modality, Tense, and Subject Marking, and for the hypothesis that the relative order of these elements was as stated in (10) above. I will not, however, present explicit arguments for the existence of the AUX in the proto-language or for two claims which are implicit in the above -- a claim about the attachment of clitic pronouns and tense clitics and a claim about the syntactic form of the elements which marked the categories.

languages or dialects. About half of these have been the subject of grammars of some length. A relatively small number have adequate dictionaries and textual material. In addition, as is obvious in the body of this paper, there is a wealth of recent work in comparison and reconstruction. The bibliography below, thus, is to be taken as an introduction to some of the basic descriptive studies and historical works; it includes as well as a list of those works referred to in the body of the paper. For a more complete (if dated) bibliography see UA-L-NA.

Abbreviations

- AA = American Anthropologist
AAASP = American Academy of Arts and Sciences, Proceedings
IJAL = International Journal of American Linguistics
JSAP = Journal de la Société des Américanistes de Paris
UCPAAE = University of California Publications in American Archaeology and Ethnology
UCPL = University of California Publications in Linguistics

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Hokan Inter-Branch Comparisons

William H. Jacobsen, Jr.

Introduction

The diversity with which students of American languages have long been struggling is well illustrated by the Hokan family. Although it is difficult to get an idea of the time depth involved, because of the lack of older documents and the limited amount of etymological research that has been done, Hokan seems to be rather comparable to Indo-European in its time depth and diversity of branches, and may well be even older. Table 1 exhibits successive stages in the recognition of Hokan-Coahuiltecan to 1925.¹ I will be primarily concerned with Hokan proper as it was recognized by Dixon and Kroeber and Sapir by 1919, and will only marginally deal with the later accretions of Coahuiltecan, Subtiaba, and Jicaque that enter into certain studies. I will be centrally interested in comparisons among the branches as opposed to work within any one of them. This paper is not intended to be a complete history of the work on this family, as I have been relieved of that onerous task by the appearance of Margaret Langdon's Comparative Hokan-Coahuiltecan Studies (1974).²

Hokan even in this narrower sense is comprised of 13 branches, the separateness and structural distinctiveness of

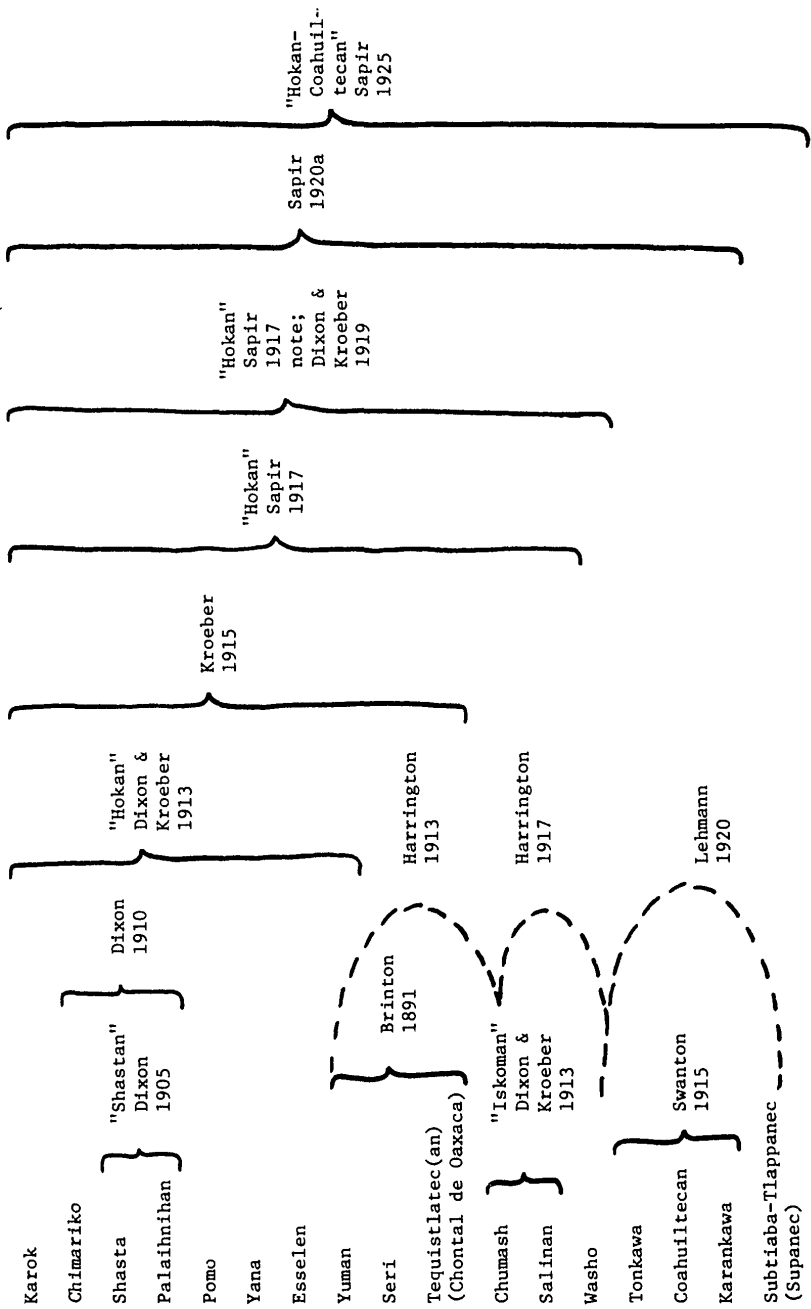


Table 1. Stages in the Recognition of Hokan-Coahuiltecan.

each of which must be underscored. Eleven of these are located at least partly within the state of California, of which half a dozen are now extinct. Five groups are located in a continuous crescent across the north of California: Karok, Chimariko, Shasta, the Palaihnihan languages Achomawi and Atsugewi, and Yana. North of the Bay Area we also find Pomo, a family of seven languages, near the coast, and Washo east of the Sierras. In central California near the coast was the continuous area of Esselen, Salinan, and Chumash. Separated from these by Uto-Aztecan languages, and spread across southern California, western Arizona, and nearby Mexico, is the family of Yuman languages. A little farther south on the east coast of the Gulf of California is Seri, and much farther south in Oaxaca is Chontal or Tequistlatec. The Hokan languages of California look to have originally occupied much of the state, but to have been split apart by the spread of Penutian in the central valley, and to some extent by the spread of Athapaskan in the northwest and of Uto-Aztecan in the south.³

Lexical Comparisons

Let me now attempt to characterize the main studies that we have comparing several branches of Hokan, primarily from the point of view of the relative representation of the vari-

ous branches, as well as of the nature of the available data and of the criteria employed for judging comparability of words.

Grouping together of the original Powell stocks in California began with Roland B. Dixon's 1905 article comparing Shasta, with four dialects represented, to the two Palaihnihan languages, Achomawi and Atsugewi. This embodied 26 comparative sets, including 6 of primarily grammatical value. Among the Shasta dialects the representation ranged from a high of 25 for Shasta proper to a low of 6 for Konomihu, and in Palaihnihan, there were 19 sets for Atsugewi and 16 for Achomawi. The data in these early papers by Dixon, and by Dixon and A. L. Kroeber, was largely gathered by them, and was not very accurate phonetically. The comparisons made involved rough phonetic similarities, with no discussion of recurrent correspondences.

Dixon added Chimariko to these languages in his 1910 paper "The Chimariko Indians and Language." This contained 57 sets of comparisons, all including Chimariko. The 49 sets containing Palaihnihan languages divide into 32 each for Achomawi and Atsugewi.

The first evidence for a Hokan family consisting of seven branches was presented by Dixon and Kroeber in their "New Linguistic Families in California" of 1913. The branches were

Karok, Chimariko, Shasta (subsuming Achomawi and Atsugewi), Pomo, Yana, Esselen, and Yuman. Only five comparative sets were given, plus some grammatical generalizations. Separately recognized was an Iskoman family consisting of Salinan and Chumash. Twelve comparisons were made between these languages. Some indications were given that these two families might be related.

Kroeber's 1915 "Serian, Tequistlatecan, and Hokan" purported to show the relationship of two Mexican languages, Seri and Chontal of Oaxaca (Tequistlatec), to Hokan. The 39 comparative sets contained 34 forms from Seri, 32 from Chontal, plus 34 Mohave forms. In addition, 31 of the sets contained from 1 to 7 additional comparisons drawn from as many other Hokan branches.

Edward Sapir entered the comparative Hokan field with his 1917 paper "The Position of Yana in the Hokan Stock," which represented a considerable advance, with its more than 200 comparative sets. Sapir was able to make his comparisons starting from his well-recorded data from three dialects of Yana, including Yahi. The other best-represented branches in this study, each appearing in a little over half of the comparative sets, are Chimariko and Pomo, the latter primarily from material of S. A. Barrett. Indeed, there are included six comparisons primarily between these two languages, not

including Yana. The comparative sets embody affixes as well as stems. The study includes some comments on phonology, primarily suggestions about ablaut and vowel syncope, and presents over a dozen Proto-Hokan reconstructions.

Table 2 shows statistics for the studies with the largest numbers of lexical sets, beginning with the last-mentioned. For each language employed there is given a number indicating the number of comparative sets in which it appears and the percentage of the total number of sets that this represents.⁴

Evidence for including Washo in the family appeared in two lists of comparisons included in Dixon and Kroeber's 1919 "Linguistic Families of California." One drawn up by Dixon and Kroeber themselves (pp. 105-7) includes 60 sets, and one furnished by Sapir (pp. 108-12) contains 107.⁵ It is interesting to look now at the badly controlled Washo data that had been recorded by both Dixon and Kroeber, to see to what extent errors in recording or analysis might have been present that would be sufficient to vitiate the comparisons made. In my opinion at least 10 (16.7%) in the Dixon and Kroeber list, and 14 (13%) in the Sapir list fall into this category. Most of the mistakes involve misanalysis of the forms, usually failure to recognize the presence of more than one morpheme.⁶ To take some examples from the former list, we find comparisons to lats'a /lá'ca'/ 'calf of leg' (p. 106), where the l-

	Sapir 1917	Dixon & Kroeber 1919	Sapir in Dixon & Kroeber 1919	Sapir 1920a	Sapir 1925	Greenberg & Swadesh 1953
No. sets	202	60	107	118	136	76
Karok	32/15.8%	14/23.3%	21/19.6%	15/12.7%	17/12.5%	9/11.8%
Chimariko	109/54.0%	23/38.3%	35/32.7%	47/39.8%	53/39.0%	28/36.8%
Shasta	31/15.3%	24/40.0%	11/10.3%	9/ 7.6%	20/14.7%	15/19.7%
Palaihnihan	48/23.8%	28/46.7%	13/12.1%	15/12.7%	24/17.6%	10/13.2%
Yana	196/97.0%	21/35.0%	30/28.0%	35/29.7%	53/39.0%	39/51.3%
Washo		60/100%	107/100%		37/27.2%	16/21.1%
Pomo	109/54.0%	27/45.0%	45/42.1%	58/49.2%	48/35.3%	26/34.2%
Esselen	19/ 9.4%	12/20.0%	18/16.8%	20/16.9%	23/16.9%	12/15.8%
Salinan	44/21.8%	10/16.7%	12/11.2%	8/ 6.8%	69/50.7%	19/25.0%
Chumash	27/13.4%	19/31.7%	24/22.4%	24/20.3%	40/29.4%	14/18.4%
Yuman	30/14.9%	17/28.3%	24/22.4%	42/35.6%	35/25.7%	38/50.0%
Seri	14/ 6.9%		7/ 6.5%	15/12.7%	12/ 8.8%	15/19.7%
Chontal	9/ 4.5%		7/ 6.5%	14/11.9%	16/11.8%	37/48.7%
Supanec					136/100%	5/ 6.6%
Jicaque						61/80.3%

Table 2. Representation of Hokan Branches in Comparative Studies.

is the first person prefix (so the form means 'my calf') and seems to be important to the resemblances found. For t-a'wi /tá'wi'/ 'knife' (p. 106) a segmentation of the first consonant (t-) is wrongly suggested; moreover this word seems to be a Washo borrowing from Numic.⁷ Another loan-word, this time from Konkow (Maiduan) is /c'í·kí/ 'spider' (first part of the form tsukumang (p. 107) which means 'spider-web').⁸ For Washo t'iyeli /t'iyeli'/ 'large' (p. 107) the t- was taken as part of the stem, which it is not, but more importantly this was given with the meaning 'small'. This kind of finding for just one language certainly makes one wonder what kind of shifting sand these earlier comparisons were built on, if the forms from other branches may also embody comparable portions of inaccuracies.

The Coahuiltecan languages of southern Texas and nearby Mexico were brought into comparison in Sapir's 1920 article. This contains 118 comparative sets, four of which are between Chumash and Coahuiltecan, mostly Tonkawa. Six of the sets involve grammatical suffixes, the rest stems. Some plausible suggestions on reconstruction and sound changes are given in footnotes. Certain ablaut alternations in Coahuiltecan comparable to those previously noted for Hokan are pointed out. This study did not include Washo among the languages compared. Breaking Coahuiltecan into its five constituent parts, we find

that comparisons to them run from a high of 62 sets for Tonkawa to a low of 16 for Cotoname; in between are Comecrudo, with 36 sets; Coahuilteco, with 31; and Karankawa, with 30. In addition, 19 sets include comparisons to Atakapa.

Sapir's 1925 article purporting to show the Hokan relationship of Subtiaba-Tlappanec (Supanec) of Central America was his last comparative work in this field and turned out to be the last presentation of Hokan comparative material for almost thirty years. This article included comparisons to all the branches he had previously encompassed, including Washo, Coahuiltecan (in the broader sense), and Atakapa. The sharp rise in the representation of Salinan is probably to be accounted for by the publication in 1918 of J. Alden Mason's monograph on this language.⁹ Of the 136 sets of comparisons in this article, 11 are of 'grammatical elements', 7 are of 'particles', and another 11 are of 'demonstrative, interrogative, and other pronominal stems'. The article presents many suggested sound changes for Subtiaba and other branches, with Hokan reconstructions. It also embodies the fullest treatment of Hokan morphology we have so far.

The Greenberg-Swadesh article of 1953 presents comparisons to show that Jicaque of Honduras is a Hokan language. This includes comparisons to all the Hokan-Coahuiltecan branches of the preceding studies, plus the branches of Gulf in

addition to Atakapa: Chitimacha, Tunica, Natchez, and several Muskogean languages; a smattering of more distant families are also marginally compared. It is intriguing to note that Jicaque enters into only about 80% of the comparative sets. In some ways this article represents a reversion to the Dixon and Kroeber period in that phonologically uncontrolled comparisons among forms drawn from a number of sources, often badly transcribed, are involved. Unlike what is generally true in the previously discussed studies, considerable semantic shifts are assumed within some of the sets, e.g., 'old'/'big', 'sky'/'cloud', 'eat'/'bite', 'sun'/'moon'/'fire'/'morning'/'day', 'stone'/'flint'/'arrowpoint'/'knife'. Elsewhere I have pointed out errors in analysis of three Washo forms ('bone', 'wind', 'night') that vitiate their comparison,¹⁰ and have indicated some lapses in bookkeeping.¹¹ This study is the main source of the glottochronological time depth figures that were discussed by Kroeber (1955:94-96), but these results cannot be taken seriously, either absolutely or relatively. Glottochronology is not, of course, supposed to deal with semantically shifting forms. There is also insufficient adjustment for variable amounts of data available. For example, Washo was found to stand rather apart from the rest, but in my judgment Washo forms can be added to from 23 to 29 more of the comparative sets, which would at least make it equal to the best rep-

resented language aside from Jicaque (namely Yana).¹²

William Bright's 1954 article comparing four of the northern languages inaugurated a sequence of new comparative papers, coming primarily from Berkeley, that drew on freshly collected and more reliable data. The 28 sets of comparisons include between 19 and 13 representatives of each branch.

A complementary glottochronologic study by this author of the southerly branches appeared in 1956. Table 3 continues the statistics on the representation of the Hokan branches in these comparative studies. The data of this article was reworked for entry therein, as it is organized into 13 separate pairwise comparisons, such that the number of pairs entered into runs from a high of six for Seri to a low of one each for Yuma, Salinan, and Tonkawa. Moreover, the article did not present all of the comparisons that were actually made, but only those illustrating recurrent sound correspondences. In addition to the languages shown in the Table, there are 66 comparisons to Comecrudo (57.4%) and 19 to Tonkawa (16.5%). Interesting data is presented on the relationship between similarities and recurrent phonological correspondences.

D. L. Olmsted's series of three articles comparing Palaihnihan and Shasta (1956, 1957, 1959) includes 85 comparative sets. The results are negative, in agreement with Bright

No. sets	Bright 1956	Jacobsen 1958	Haas 1964	McLendon 1964	Silver 1964	Gursky 1974
	115	123	94	149	119	707
Karok	123/100%		94/100%	52/34.9%	109/100%	225/31.8%
Chimariko	14/11.4%		6/ 6.4%	11/ 7.4%	3/ 2.5%	131/18.5%
Shasta	14/11.4%		22/23.4%	36/24.2%	119/100%	172/24.3%
Palaihnihan			24/25.5%	11/ 7.4%	8/ 6.7%	288/40.7%
Yana	26/21.1%		94/100%	149/100%	36/30.3%	216/30.6%
Washo	123/100%		13/13.8%	22/14.8%	2/ 1.7%	136/19.2%
Pomo			27/28.7%	149/100%	3/ 2.5%	216/30.6%
Esselen						55/77.1%
Salinan	26/22.6%	6/ 4.9%	14/14.9%	25/16.8%	2/ 1.7%	138/19.5%
Chumash			20/21.3%	12/ 8.1%		76/10.7%
Yuman	8/ 7.0%	34/27.6%	25/26.6%	20/13.4%		173/24.5%
Seri	81/70.4%					62/ 8.8%
Chontal	36/31.3%	1/ 0.8%				87/12.3%
Supanec	40/34.8%					
Jicaque	36/31.3%					

Table 3. Representation of Hokan Branches in Comparative Studies.

1954, concerning the unity and separateness of Dixon's "Shastan" group made up of these languages. Forty of the sets actually lack Shasta members. Karok and Chimariko are included in many sets, and also, especially in the third installment, a few forms from several other branches. Sound correspondences for the stops are carefully tabulated.

Jacobsen's 1958 comparison of Washo and Karok began a series of binary comparisons between two branches, that in most cases include comparisons to several additional branches. This was made possible by the appearance of Bright's (1957) description of Karok, subsequently used in binary comparisons also by Haas and Silver. Yana also began to play even more of a role, due to the availability of the Sapir-Swadesh Yana Dictionary (1960); this in its turn was used in binary comparisons by Haas and McLendon. The Jacobsen article alone of those being considered includes for 78 of its comparative sets explicit references to certain comparative sets of previously published articles which had been or might have been compared to the forms in question, thus including by reference a much larger set of compared forms. An attempt was made at grading the comparative sets as to their probability of cognateness. These were put into three categories, which were not directly indicated in the article, but which sorted out as follows: most likely (grade 3), 49 (39.8%); middle level (grade 2), 52

(42.3%); and least likely (grade 1), 22 (17.9%). This approach perhaps encouraged the inclusion of several rather weak comparisons. Sound correspondences between Washo and Karok were tabulated, and an attempt was made to grade them in addition to noting their number of occurrences.

Haas's 1963 "Shasta and Proto-Hokan" considers in some detail 9 comparative sets with members drawn from all 13 of the Hokan branches, running from a high of 9 sets for Shasta and Palaihnihan to a low of 3 for Seri. Interesting observations on sound changes, especially for Shasta and Karok, are presented.

Three other binary comparisons appeared in the same 1964 volume. Haas (1964) compared Yana and Karok, with a number of additional comparisons. Sound changes were again tabulated, and some similarities to Penutian, Yukian, and Ritwan forms were noted.

McLendon (1964) compared Eastern Pomo and Yana, also with numerous additional comparisons, especially to Karok. Again sound correspondences are presented, along with considerable discussion of vowel assimilation, loss, and contraction.

Thirdly, Silver (1964) compared Shasta and Karok. With the exception of 36 Yana forms, only a few additional comparisons were included. Sound correspondences are again presented and discussed.

Two later representatives of this genre appear in the belatedly published volume resulting from the 1970 Conference on Hokan Languages. James Crawford (1976) compared Chimariko to four Yuman languages, including a consideration of the apparent sound correspondences between Chimariko and Proto-Yuman. This includes 132 sets and makes no comparisons to other branches.

Judith Crawford (1976) compared Seri and several Yuman languages. This study seems to indicate that these two geographically close groups are not more closely related to each other than either is to other Hokan branches. The 227 sets of comparisons include members of nine other branches, as follows: Yana 92 (40.5%), Salinan 87 (38.3%), Karok 72 (31.7%), Proto-Pomo 54 (23.8%), Washo 29 (12.8%), Esselen 24 (10.6%), Chumash 16 (7.0%), Shasta 2 (0.9%), Achomawi 1 (0.4%), Eastern Pomo 1 (0.4%).

As one can imagine, there is bound to be some overlap in the words compared in these several binary comparisons. For example, the 1964 studies of Haas and McLendon, both of which include Yana, have been compared. There are found to be 32 overlapping sets (overlapping being defined as containing the same Yana word), or in other words, the 243 sets of the two articles reduce by 13% to 211 different sets. In similar fashion, comparing the 1964 studies of Haas and Silver, both

of which include Karok, 37 overlapping sets are found, so that the 213 sets here reduce by 17% to 176.

It also should have become abundantly clear that the relative utilization of the various branches depends, not on properties of the family tree, but on relative availability of data and other extraneous factors. Thus such languages as Yana, Pomo, Salinan, and Karok have shown an increase in comparisons involving them when new data has become available.

Paul L. Turner (1967; cf. 1972) approached the comparison of Serí and Chontal (Tequistlatec) with a more negative attitude, feeling that the data he presented suggested that the two are not related languages. He noted that in the comparative list of Kroeber (1915) there appeared to be just six likely cognates, which amounted to over 20% of the 27 word pairs in question. However, when a standard 100-word basic vocabulary list was used, only 8 (8%) seemed to be cognate (of which 4 overlapped with Kroeber's 6 accepted sets). Turner compared an additional 500 semantically matched words and found only 12 apparent cognates (only 2.4%). He further noted lack of cognates and differing taxonomies in the domains of kinship terms, numeral systems, and other isolated lexical categories. In response Bright (1970), noting the inherent difficulty of proving unrelatedness, pointed out that in his earlier study (1956) he had counted 40 apparent cognates from a-

mong 190 semantically matched pairs (21%), using a criterion of regular phonological correspondences.

Viola Waterhouse's paper "Another Look at Chontal and Hokan" (1976) presents an exemplary model of a useful contribution, in which she offers Chontal additions to several comparative studies. Commenting on Turner's study, she would exclude two comparisons of the 12 made from the 500-word list, on the grounds of probable borrowing, but she finds 15 additional cognate sets from the 100-word list, of which seven were in Kroeber's original list, and she also finds two more cognate sets on Kroeber's list. She notes recurrent sound correspondences, and offers 26 new Chontal-Seri comparisons. Considering Chontal as compared with Yuman languages, she offers potential Chontal cognates to 74 of the sets from Wares (1968), makes 10 comparisons to Walapai, and also makes 19 comparisons to the sets in Law (1961), of which 16 overlap with the other comparisons. Turning to comparisons involving different branches of Hokan, she adds Chontal words to the following numbers of sets in the following contributions (all of which already included some Chontal): Gursky 1968, 56 sets; Jacobsen 1958, 25 sets; Sapir 1925, 17 sets (comparing to the Subtiaba words only); Gursky 1966a, 12 sets; Gursky 1964, 8 sets; and Haas 1963, 2 sets. In addition she made direct comparisons to 17 Atsugewi words. She also made a few

Chontal comparisons to studies involving Karankawa, Cariban, and Tlappanec.

Some recent studies involving the southern outliers, Subtiaba and Jicaque, may be briefly mentioned. Webb's unpublished 1975 paper, one of a series, presents 70 comparative sets involving Subtiaba. These encompass 13 branches of the family, not including Esselen. To Sapir's data on Subtiaba was added data recently published by Lyle Campbell. Many semantic shifts are assumed, and the data is often poorly transcribed or miscopied. Some disagreements with Sapir's assumed sound changes for Subtiaba are registered. Webb also reports statistics pertaining to a larger corpus of 268 cognate sets for these 13 branches.

Weathers (1976) presents fresh comparisons between Tlappanec and Subtiaba, confirming their close relationship, and summarizes the conflicting claims of their relationship to Hokan vs. Otomanguean.

Campbell (n.d.) offers a judicious survey of attempts to classify Jicaque, commenting on the Greenberg-Swadesh (1953) article much in the spirit of my above remarks. He discusses the sound correspondences linking the two Jicaquean languages, after which he presents 127 cognate sets involving Jicaque. These include in various combinations the Coahuiltecan languages Comecrudo, Coahuilteco, and Cotoname, and all of the

Hokan branches. The hypothesis of a genetic relationship of Jicaque with Tequistlatec (Chontal) is forwarded, along with weaker probabilities that these are related to some of the Coahuiltecan languages, and inferentially to other Hokan languages.

A Lexical Compilation

I would like to consider in more detail Gursky's 1974 compilation of data for Hokan, as I think it might furnish a rallying point for further advances. Gursky has built upon several earlier studies, especially his 1965, 1966b, and 1968 comparisons of Hokan to Gulf and Algonkian-Gulf. The article clearly represents a reworking and rethinking of comparisons made in other sources, with numerous fresh additions. He has been at some pains to employ the most accurate modern recordings for the languages compared. His comparisons are mostly semantically and phonologically conservative, and he has sometimes separated previously presented sets into phonologically more homogeneous groups. The 707 comparative sets represent more than three times as many as in any other source. Thus I think it would be helpful if those in control of various bodies of data would comment on their utilization in this study (taking a hint from Waterhouse's above-mentioned contribution), and I will endeavor to do so, by way of example, for Washo.

Having said these favorable things about Gursky's article, some reservations must immediately be registered. The question of the number of branches and the geographical spread that a cognate set must run through to have a Proto-Hokan pedigree, raised long ago by August Fick for Indo-European, has scarcely been broached, but the great majority of Gursky's sets cannot seriously be thought to go back to the parent language. Considered by numbers of members, 435 (61.5%) of the sets have only two, 130 (18.4%) have 3, 67 (9.5%) have 4, 35 (5.0%) have 5, and all sets with from 6 to 12 members together amount to 40 (5.7%) in number.

Gursky seems to be oblivious to the geography involved, and enters sets whose members are contiguous on a par with those where they are widely separated. But borrowing of words among groups in California is a possibility to be reckoned with, as studies such as Bright 1959, Callaghan 1964, Bright and Bright 1969, Jacobsen 1966 and 1974, and Whistler 1977 have shown. Loan words may thus be present between contiguous or nearby Hokan branches, and they need not be only recent ones entailing a close similarity of form and meaning.¹³

Looking at the two-member sets from this point of view, accepting Gursky's judgment as to comparability of forms, and using my own judgment as to whether the meaning in question is likely to lend itself to borrowing, I find 40 likely sets of

forms from the following pairs of contiguous languages, of which a disproportionate number, 16, belong to the first pair: Karok-Shasta COUSIN, EAGLE (1), FISH, TO (2), FLY (3), GOPHER, LOG (1), MADRONE, MUSHROOM SPECIES, NETTLE, SACK,¹⁴ SALMON (2), SHOOT, TO (2), STING, TO, SWEAT, WEASEL, WOODPECKER (3); Karok-Chimariko DOG (2);¹⁵ Shasta-Achomawi BASKET (2), BASKET (3), FISH, TO (1), OTTER, SQUIRREL (2); Shasta-Atsugewi GRASS (2); Shasta-Palaihnihan ACORN (3), SING, TO; Achomawi-Yana BLINK, DIG (2), GRAPES,¹⁶ GRASSHOPPER, SPEAR (1); Palaihnihan-Yana GRANDRELATIVE (1), PINE (5),¹⁷ PLUMS (WILD),¹⁸ SPRUCE;¹⁹ Es-selen-Salinan BOW (3), QUAIL (1); Salinan-Chumash BAT (3), DUCK (1), OCEAN, RAT (2).

From another 18 pairs of languages that are not strictly contiguous, but which might well have exchanged lexical material directly or indirectly, I find another 49 likely sets, from which the first pair stands out, with 13: Karok-Achomawi CHERRY,²⁰ CLOVER (1), COCOON, CRAWFISH, DEAD, DENTALIUM SHELLS, EEL, HOOP, JUNIPER, PINE (2), SALMON (1), TIE, TO (1), TRAP (1); Karok-Atsugewi SEW, TO (1); Karok-Palaihnihan NET, THUNDER (1); Karok-Yana FIR, HUMMINGBIRD,²¹ LIZARD, OWL (1); Chimariko-Achomawi EAGLE (3), EAGLE (4), GRASSHOPPER; Chimariko-Atsugewi TREE (4); Chimariko-Yana BUCKEYE (2),²² CHIPMUNK,²³ SHELL, TO; Shasta-Yana TROUT, YELLOWHAMMER; Pomo-Chimariko BREAD, ACORN (2), ROOT (1); Pomo-Karok PEPPERNUIT, PITCH (2);

Pomo-Shasta HAWK (1),²⁴ PESTLE, QUAIL (3); Pomo-Achomawi ONION (2), STRIPED, SPIDER (2); Pomo-Palaihnihan SQUIRREL (3); Pomo-Yana DOCTOR, PEAR-SHAPED, RAT (3); Washo-Yana ACORN, BUZZARD,²⁵ FLEA (1); Pomo-Esselen WILDCAT (2); Chumash-Yuman SPIDER (1); Yuman-Seri SQUASH, PUMPKIN. These 89 dubious sets represent 20.5% of the two-member sets, and 12.6% of the total number of sets.

There are, of course, similar observations that can be made about some or all of the members of sets containing three or more members.

Another possibility of wrong comparison would involve borrowings from families other than Hokan into one or more of a set of compared languages. Gursky is certainly aware of this possibility, as he makes comparisons to or mention of other families or their members in 45 of his sets. But additional probable borrowings into Washo that have gotten into his comparative sets include gá·gǫ́šǫ́ 'flea', from Miwok; hú·ším 'buzzard' from Maiduan; súku 'dog', probably from Nisenan, but noted by Gursky as probably from Russian; šála 'pitch', from Uto-Aztecan, a possibility also noted by Gursky; and pélew 'jackrabbit', perhaps from Miwok.²⁶ A few Washo borrowings have turned up in earlier comparative studies, in addition to 'knife' and 'spider' already mentioned; these include délem 'mole, gopher', from Miwok, in Dixon and Kroeber 1919 (the

Sapir list); díye 'to name', from Numic, in Haas 1964; the word for 'flea' also in McLendon 1964; and the word for 'pitch' also in Jacobsen 1958.²⁷

Another weakness in Gursky's study is the strong onomatopoeic component in at least 23 of the sets, mostly bird names: BARK, TO, BLACKBIRD, BUTTERFLY (1), CROW (1), FISH HAWK, FLY (1), FROG (2), FROG (3), GOOSE, HAWK (1), JAY, KINGFISHER, MAGPIE, MEADOWLARK, OWL (2), QUAIL (1), QUAIL (2), QUAIL (3), ROBIN, SPARROWHAWK, SUCK, TO, WOODPECKER (2), WOODPECKER (3).

Looking at the utilization of Washo in this study, the great majority of forms, 97, have no significant mistake concerning the form or the meaning that is given (this includes the above loanwords). Another 35 have minor flaws in form or meaning, often quite trivial, that do not seem to adversely affect the comparisons made. Serious errors that fundamentally affect the comparisons are found in only four sets, as follows:

Under CALF OF LEG the form lats'a is carried over from Dixon and Kroeber 1919, whose difficulty was explained above.

Under MOUNTAIN (1) is wrongly entered, by an apparent bookkeeping error, Washo háña, which means 'mouth' (and is also compared under MOUTH (1)).

Under SEED is given yaka. This should be yá'ga? and

means 'pine cone'. 'Seed' is étg, which conceivably might be compared here.

Finally, under FIRE (1), by a misunderstanding of Jacobsen 1958:198, s.v. BURN, is given wA-, which was intended to be wA-ŋ- (now regarded as w-ŋ-); the wA- (w-) prefix gives the meaning of applying to the general environment and has nothing to do with 'fire'.

The following are the most significant additional corrections to the Washo forms cited: BLACKBIRD cótgi?, BLOOD (last form) -ásan 'red', CHILD (4) ŋámu? 'daughter', COME (3) (-)í·bi?, CROW gá·gi?, EXCREMENT, INTESTINES (1) pácil 'pus', EYE (1) wí·gi (cf. í·gi 'to see'), FLY, TO (3) y^e- (prevo-calic), yu- (preconsonantal) '(sg.) to fly', MAGPIE tá·tat, MOUSE pušála?, SNOW (3) té·be?, SUN (5) dí·be 'sun, moon, month', ?é·be 'day', TESTICLES yá·g±l, THIGH yó·wi?. Corrections to meanings: under LIVE, TO the meaning 'to live' applies only to the derivative áŋali?; this set hence overlaps with HOUSE (1) and (2); under SHIRT 'skirt, dress'.

Additional Washo forms can be added to several of the comparative sets. Some of these already include Washo, either other words or variant shapes, and some of the comparisons clearly involve sound symbolism or borrowing, but in my opinion at least a dozen are plausibly genuine cognates. These are as follows: ARM (1) álŋ 'arm, wing', BARK, TO wákwag

(onomatopoeitic), BELLY (3) cígú·guš, BREAK WIND ípiw, COME (1) -ug ~ -wg 'hither', COUSIN ʔá·tu 'older brother, male cousin whose parent is older than ego's, older male cousin' (this Washo word is compared under YOUNGER SIBLING), CROOKED ínkun 'bent, dented', CRY (3) í'ib 'to cry', CUT (1) á·kám 'to cut through, sever, cut off', DIGGING STICK díšu, ELBOW (1) dú·cu EXCREMENT, INTESTINES (2) míku 'faeces; to defecate', FAT í·dám 'fat, lard, grease; to be fat', FETCH, TO -il 'to go to fetch something, go to do something and come back again', FLAT (2) also ípleb, ípneb, ípdeb, FROG (2) wá·gíd 'to croak' (onomatopoeitic), GO, TO (2) -uwe? ~ -we? 'hence', GRANDRELATIVE (4) bá·ba? 'father's father' (likely borrowed from Miwok), GRIND (2) í·ge? 'to grind', HAND (1) also du- in duyášu 'to wash one's hands', tul- in tulípi? 'fingernail, toenail', tulícig 'finger, toe', HEAD (3) also íheb 'head', HEART (1) émle 'heart', KILL, TO (2) also allomorph átg, KILL, TO (3) á·baš 'to kill (pl.)', (pl.) to be killed', MOTHER (5) lá?, MOTHER'S YOUNGER SISTER šása? 'mother's sister', NIGHT (2) lélm, NOSE (3) šúyeb, PERSON tánu, ROTTEN ípeš, ROUND (1) also pú·lul 'hoop; wheel; car' (likely loanword), SINEW (1) í·dew, SING, TO íšm 'to sing; song', SNOW (2) d^e- 'to snow' (instead of under SNOW (1)), SPEAK, TO (1) w-g^e-, THUNDER d#n#n# '(thunder) to roar; (many people) to make a loud noise' (onomatopoeitic), VULVA í·bis, WOMAN (1) ʔmó?mo? 'to be a woman',

daʔmóʔmoʔ 'woman'. Hopefully, then, this article by Gursky will serve as a catalyst for further additions to, and refinements of, Hokan comparisons.

Etymology

The Hokan languages are extremely distantly related to each other, and the proof is really lacking that they are mutually more closely related than some might be to some other languages outside of the conventionally-recognized group. Likewise, attempts at finding sub-groupings among the 13 branches seem not to have led to any convincing results. Much of one's feeling that there may be a genuine relationship here is based on certain sets of basic words that run through many of the branches, many of which have been recognized from the earliest comparative works; these are the sort of sets discussed in Haas 1963, for example. There are also certain lexical and morphological idiosyncrasies that seem indicative, such as the specific and unusual meaning in the pair Washo -ámad 'through a tubular space', Karok -vara 'in through a tubular space'.²⁸ The two sets with the maximum number of 12 members in Gursky 1974 are WATER and TWO; the former is discussed by Haas (1954), and has recently been treated again by Oswalt (1976a:2-4, sec. 1-2; 12, sec. 6) in his important paper on Pomo evidence for infantile sound symbolism; the latter, of course, supplied the

name for the family.²⁹

Silver's (1976) concept of 'morphemicization' well epitomizes a basic etymological difficulty, but there is hope of counteracting it by careful studies of individual branches or word families, such as Haas's (n.d.) work on internal reconstruction of Karok words with frozen prefixes, or Oswalt's (1977) study of the Pomo formations for 'tongue', which makes it likely, for example, that Washo áptl 'tail' can appropriately be compared to words for 'tongue' in other branches. Studies of individual branches are indeed moving forward encouragingly, and will undoubtedly be the main source of advances in the next period, along with studies taking into account areal relations to isolate the spread of lexical, phonological, and grammatical material. In gathering additional comparative sets we need to be, if anything, more conservative semantically, but more innovative phonologically, remembering the long time that has been available for sound changes to take place and the lexical attrition that must inevitably have ensued. Thus we must go through a tedious process of weeding out as well as gathering together, sorting out recent and areal accruals to find the genuine Hokan correspondences, which may, after all, obtain only in a limited number of core vocabulary items. Some isolated indications of trends in the study of phonology and morphology follow, with especial attention to

Washo.

Phonology

Among the most useful contributions are those clarifying the phonological histories of individual families. Here one thinks, for example, of Sapir's (1925) observations for Subtiaba and Haas's (1963) description of intervocalic consonant loss and vowel contraction in Shasta and Karok. Of central importance is full-fledged comparative work on branches allowing it, such as Olmsted 1964 for Palaihnihan, Oswalt 1964, McLendon 1973, and Moshinsky 1976 for Pomo, and Wares 1968 and Langdon 1976 for Yuman. Jacobsen's (1976a) study of Yana similarly was designed to get behind the more recently accruing debris in the elucidation of the history of the stop series.

Areal studies such as Haas's (1970) of consonantal symbolism and Bauman and Silver's (1975) of phonological processes in northern California are valuable also, and may point to recent trends that should be discounted. The diffusion of ɬ into Washo (Jacobsen 1966:126) and Chumash (Applegate 1971) would be another example, as also probably ŋ in Washo (Jacobsen 1966:126-127). Jacobsen has tentatively suggested (1973) that certain transformations of the position of verbal suffixes so as to give a rhythmic alternation of stressed and unstressed syllables may have been encouraged to develop by the

rhythmic stress patterns of adjacent Numic and Miwok.

The phonological conservatism of investigators is exemplified by Silver's observation that "the salient feature of the [Hokan consonant] correspondence pattern is that of shift in manner rather than shift in position" (1976:199), which may not be so much a statement about the languages as it is a reflection of hesitancy in recognizing the latter kind of shift. Along these lines, I would not separate, as Gursky does, two sets for 'to swim', one showing -pu- and the other -ku-. I would continue to compare Washo í'dew 'sinew, root' to the other forms showing a labial instead of apical stop, such as Karok ?ípan 'sinew' (Gursky's SINEW (1));³⁰ the suggested addition of Washo í'dɬm to Gursky's FAT would provide another case of Washo -d- lining up with labial stops of other branches. I would be inclined to equate the Washo nominal prefix d- with the pa- of Karok and the k^w- of Yuman, thinking perhaps of an old labiovelar.³¹ With a different phonetic relationship, I would not join Gursky in separating forms for 'house' with medial -w- from those with medial -m-, although I would not be as ready as some to appeal to old consonantal ablaut in cases like this.

Morphology

Sapir's (1925) effort at identifying Proto-Hokan prefixes

is very helpful, but needs to be updated and corrected. For example, his admittedly tentative recognition of Washo transitive prefixes d- and b- crumbles apart in the light of fuller data, although for the latter one might perhaps think of the plural object prefix ba-/be-.

Significant studies of pronouns include Sapir 1920b, McLendon 1976 (for Pomo), Hinton and Langdon 1976 (for Yuman), and Jacobsen 1977 (for Washo). A clear system for the proto-language has not emerged, however. Jacobsen (1977:68-69, sec. 8) offers some salient comparisons of pronominal prefixes among Washo, Yuman, and Karok, but these rather pale in diagnostic significance in the light of broader areal perspectives (e.g., Haas 1976:358-359, sec. 5).³²

In trying to get a better grasp on morphological trends we need to concentrate separately on one or two branches, in the absence of a worked-out proto-structure from which to start, much as Margaret Langdon has done in her paper for this conference. Again areal phenomena need to be kept in mind, as in Haas's work on numeral classifiers (1967) and numeral systems (1976:355-358, sec. 4) in northern California. One interesting example is switch-reference, which was originally discerned by Jacobsen (1967) in Pomo and Washo, as well as Tonkawa and various Uto-Aztecan languages, but was subsequently found to occur in Yuman (cf. Winter 1976) and, more recent-

ly, in Seri (Moser 1977), and also in California Penutian Maidu (Oswalt 1976b) and Yokuts (Geoffrey Gamble, p. c.). This still does not seem likely to have been present in Proto-Hokan, but rather developed in certain branches due to some combination of functional necessity and areal influence. Yuman seems to have turned to account for this purpose (among others) the verbal suffixes -k/-m that originally meant 'hither'/'hence', 'hither' coming to mean 'co-reference', and 'hence', 'switch-reference'.³³

In other studies focused on Washo, Jacobsen has shown (1969) how the stock of instrumental prefixes was added to by a sort of telescoping process, some old stems becoming prefixes, and some suffixes, stems. He has traced (1972) the installation of a first person inclusive/exclusive distinction in this language, as an areal feature of the Great Basin. And he has discussed (1976b) the development of a rudimentary system of gender-like numeral classifiers. Winter has confronted (1970) an interesting problem in the origin of Washo reduplication patterns, whose surface appearance does not match their underlying analysis.

There are thus many interesting problems waiting for, and destined to receive, solutions in the field of comparative Hokan studies.

Notes

1. Cf. the similar display in Shipley 1973:1051, limited to the California branches and using the names of Powell 1891. The significantly different older names are: Sastean = Shasta, Kulanapan = Pomo, and Quoratean = Karok.
2. For other surveys of the history of research in this family, see Bright 1955; Haas 1963:40-43, fn. 1, 3, 6; 1964:73-75; 1973:683-685, 691-692; Olmsted 1964:1-4; Jacobsen 1966: 120-129; Shipley 1973:1059-1065; McClaran 1973:1081-1083; Voegelin and Voegelin 1973:1115-1119.
3. Cf. Kroeber 1955:101-103, sec. 10, on Hokan geography, with indications of the distances involved.
4. I am indebted to Joyce Jacobsen for assistance in the compilation of these figures.
5. The figures for the Sapir list include members of three sets in Sapir 1917 that are compared by reference: nos. 2, 16, and 187.
6. For additional comments of this sort, cf. Jacobsen 1966: 124-125.
7. Also compared (to Subtiaba and Chumash) by Sapir 1925:411, no. 48, who noted that the t- is part of the stem. For evidence of borrowing, see Jacobsen 1974.
8. Cf. Jacobsen 1976a:204, sec. 1.2, fn. 2; Jacobsen 1974.
9. This is confirmed by Sapir 1921, which supplies Salinan

comparisons to 14 additional sets of Sapir 1920a, plus additional or more appropriate forms to three sets in which this language was already represented. These additions would mean that Salinan was represented in 22 sets (18.6%). In addition this note offers 8 sets comparing Salinan to various Coahuiltecan languages, and 28 sets comparing Salinan to various Hokan languages, especially Yana and Chimariko.

10. Jacobsen 1966:124-125.
11. Jacobsen 1966:123 and 131, fn. 10. Note also these corrections to the percentage calculations (p. 221): Chontal-Yana, 17%; Yuma-Yana, 22%.
12. Cf. Jacobsen 1966:123 and 131, fn. 11.
13. Similarly Bright 1965:177; Jacobsen 1976a:204, sec. 1.3 (3).
14. Gursky compares Yurok pu'wiš; similarly Bright 1959:104.
15. Cf. Yurok 'cišah (Bright 1959:104).
16. Similarly Jacobsen 1976a:231, sec. 7.1.
17. Gursky compares Patwin (?) 'cala'la 'pine cone'.
18. Similarly Jacobsen 1976a:226, sec. 6.6.
19. Similarly Jacobsen 1976a:231, sec. 7.1.
20. Cf. Yurok pu'n (Bright 1959:104).
21. Cf. Atsugewi pijú'š (Jacobsen 1976a:231, sec. 7.1).
22. Gursky compares Wintun yonot.
23. Cf. Konkow and Maidu wísla (Jacobsen 1976a:233, sec. 7.2,

fn. 84).

24. Gursky compares Lake Miwok téektek and Wappo téktek.

25. Gursky compares Proto-Penutian *hus; cf. Jacobsen 1976a: 233, sec. 7.2, fn. 84.

26. Cf. Jacobsen 1976a:233, sec. 7.2, fn. 84.

27. I would still compare Yana cal'a to Chontal káLa 'pitch'. For fuller discussion of loanwords in Washo, see Jacobsen 1966:127-129 and 1974.

28. Jacobsen 1958:203, s.v. THROUGH A TUBE; the sound correspondences are recurrent.

29. Cf. Shipley 1973:1050, fn. 7.

30. Jacobsen 1958:202, s.v. SINEW.

31. Similarly Jacobsen 1977:69, sec. 8.

32. The well-attested imperative prefix *ka- (Jacobsen 1958: 201; Judith Crawford 1976:314, to which add pre-Washo *ka-) may be compared with the second person prefix *ke- of Algonkian-Ritwan.

33. Cf. Jacobsen 1958, s.v. HITHER and THITHER.

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Some Thoughts on Hokan with Particular Reference to Pomoan and Yuman

Margaret Langdon

Introduction

Since Sapir's classification of American Indian languages (Sapir, 1929) which essentially proposed a reduction of the immense linguistic diversity of the North American continent to six basic stocks (not including those represented only in Mexico and Middle America), the trend has been toward a certain amount of fragmentation of this scheme. Most drastically affected by the more conservative or "splitters" view¹ is the original Hokan-Siouan stock, several branches of which are discussed elsewhere in this volume. My concern here will be only with the Hokan branch of this major stock, which itself has not remained immune to further pruning, though one additional language, Jicaque of Honduras, has been added to the roster. What is typically included under the label "Hokan" consists of the following families and isolates: Karok, Palaihnihan, Shastan, Yanan, Pomoan, Washo, Esselen, Salinan, Chumashan, Yuman, Seri, Tequistlatecan (Chontal), Subtiaba-Tlappanec, and Jicaque. The fairly recent inclusion of Jicaque (Greenberg and Swadesh, 1953) certainly needs further investigation, though new results based on better and

more profuse data (Oltrogge 1975) strongly suggest a Hokan connection through comparisons with Tequistlatec (Chontal) and Subtiaba. As more work of a descriptive nature (e.g. Dennis and Fleming, 1975; Fleming and Dennis, 1977) as well as comparative-historical (e.g. Campbell ms and Oltrogge and Campbell 1977 ms) becomes available, the establishment of the genetic place of Jicaque becomes a foreseeable possibility. It now seems evident that the whole construct Sapir subsumed under Coahuiltecan is not a unified group (as new evidence presented by Ives Goddard at this conference confirms) and is probably best left out of the Hokan picture altogether. The complex history of the classification and all relevant publications up to 1971 were surveyed in Langdon (1974); they will therefore not be discussed here.

In a recent review of Langdon (1974), Turner (1977) warns that "...anthropologists should be cautious about accepting the results of comparative linguists until methodological problems...have been overcome. The present methodology is too crude to be applied to languages that are suspected of being distantly related." [167] This observation is apt and timely and I believe Hokanists will agree with Turner wholeheartedly. In fact several of them have expressed dissatisfaction with currently available studies and stated explicitly some of the steps that are needed to achieve credible results.

Thus, as early as 1964, Haas dramatically demonstrated lexical intersections between Hokan and Penutian, Yukian, and even Ritwan in the words for 'ear' and 'navel' which are part of the basic vocabulary often assumed to be least subject to borrowing. Other warnings about the limitations of purely lexical comparisons have been voiced. Thus, Jacobsen (1976) states: "...many workers have come to see that comparison of isolated vocabulary items by itself will lead only to limited results [204]... As the work of comparison and testing proceeds, we must have the courage to exclude a large proportion of the comparisons that have been, or will be, proposed..." [204] In the same paper, he provides a meticulous and brilliant demonstration of internal reconstruction, showing that the aspirated stops of Yana are probably of secondary origin, and suggesting a similar explanation for the origin of such stops in other branches of Hokan. Studies of this kind go well beyond the "crude methodology" deplored by Turner (1977).² Similarly, the discussion of "morphemization" by Silver (1976) makes explicit the dangers of simple comparison of lexical items not solidly based on the kind of internal reconstruction that allows the identification of frozen morpheme strings. Finally, Hokanists recognize that the concept of "Hokan" or for that matter, of any of the other groupings subsuming such ancient connections, differs somewhat from

that of the prototypical "language family" in that the relationships it encompasses, while probably partly genetic in the traditional sense, must have been also affected by early as well as ongoing non-genetic areal pressures. "Rather, we may think of Hokan as a group of languages within which certain historical features have been shared. The task of Hokanists would then be, not to put languages into genetic pigeon holes, but rather to trace the prehistory of linguistic sharing." (Bright, 1976 :363)

Perhaps then the rational way to approach the "Hokan problem" is to work within the strong hypothesis that Hokan is in fact a language family in the classical sense, thus keeping alive the eventual aim of fully established sound correspondences and solidly reconstructed meaningful elements in the context of their grammatical structure, while simultaneously welcoming and actively seeking evidence for diffused and universal traits. One advantage of the maintenance of the strong hypothesis, even if serious doubts remain, is the establishment of a community of interests among scholars who, under the circumstances, are more likely to read each other's work and apply each other's findings. The profitability of this approach is attested in the proceedings of the First Hokan Conference (Langdon and Silver, 1976) and in the continuing exchanges among Hokanists.³ Even if the eventual

result of all this research turns out to be a rejection of the Hokan hypothesis, the value of the construct in spurring research and in focusing scholarly debate will remain an important contribution to Americanist studies. No matter what the outcome, we stand forever in the debt of those who constructed the hypothesis...Dixon, Kroeber, and Sapir.⁴

One of the most heartening developments in the last few years has been the florescence of much comparison and reconstruction work within some of the true language families within Hokan, particularly Pomoan (e.g. Oswalt 1976a, McLendon 1973, 1976), Yuman (e.g. Winter 1976, Langdon 1968, 1976a), and Chumashan (Klar 1973, 1977). In this paper, I propose specifically to look at the results of historical Pomo research from the vantage point of insights gained in my own special area of expertise, namely Yuman. Lest this be misunderstood, I hasten to state that these remarks do not imply any assumptions on my part that there is a closer relationship between Pomoan and Yuman than between any two other branches of Hokan. The choice of the two families (supported by a number of Hokanists assembled in 1976⁵) rests uniquely on the state of the art, since some solid reconstruction of both sound systems and morphology is available in various published and unpublished sources for these two families.

To make underlying assumptions as explicit as possible,

a few preliminary comments are in order. Because of my specialization in the field of comparative Yuman, I approach the task with a strong Yuman bias, which is compounded by my lack of direct exposure to any Pomo language. I am unfortunately not alone in approaching comparative work with a skewed outlook, as the number of scholars who have had direct contact with more than one branch of Hokan is extremely limited. The noteworthy exceptions are William Jacobsen, who besides his work on Washo (e.g. Jacobsen 1964), has at least minimally been exposed to both Salinan and one Yuman language; Shirley Silver who, besides being the only expert on Shasta (Silver 1966), also has direct experience with Kashaya Pomo and several Pitt River dialects (Palaihnihan); and Abraham Halpern, the only one to have had contact with both Pomoan and Yuman. It is the intent of this paper to suggest that such a bias, as long as it remains overtly and explicitly stated, may at this time prove of some use and allow some facts to be interpreted in alternate ways. Thus, if it turns out that a process amply demonstrated by the history of Yuman also helps account for some of the Pomoan facts (and vice versa), a common restatement accounting for both branches may provide insights into other branches as well. At the very least, I venture the hope that Pomoists will be so outraged by my distortion of Pomoan facts that they will publish detailed

counterarguments. One additional advantage of dealing with Pomoan and Yuman is that these two groups are less likely than any other two Californian Hokan branches to lead to mistakes of the kind Jacobsen (1976) warns against: "We forget at our own peril that many of the branches of the family are crowded together in a small area, especially in Northern California, and have had a long time in which to exchange lexical material, either directly or via intervening languages..." [205] At the very least, the possibility of borrowings within the last few centuries seems excluded by the geographical separation of the two groups.

Hokanists have been aware of unusual similarities between Pomoan and Yuman for some time, and Halpern (1964) specifically notes:

"First, in a limited number of instances there are unexpectedly close similarities between certain Pomo and Yuma stems... These and many other similar examples collected by Sapir are validated by my work. Second, there are general, but apparently fundamental, resemblances in grammatical structure, specifically in such things as instrumental prefixes and directional suffixes of the verb stem, and the agglutinative relation between the verb theme and tense-modal suffixes. ..." [92-3] These and other structural features of both families will be discussed in some detail in subsequent

sections of this paper, and an appendix is provided in which selected Proto-Pomo and Proto-Yuman reconstructions are shown side by side. Forms cited in the body of the paper with English glosses in capital letters (e.g. ARM) are from that list.

Superficial Similarities

Some of the most obvious similarities between the two families turn out to be demonstrably recent developments within each, or in one or the other of the two, which makes the feature less diagnostic even for the family where it is reconstructed, and suggests that either it could be explained as secondary within Hokan or calls for solid evidence from other Hokan branches. Some of these features are reviewed below.

a. Voiceless Resonants.

Eastern Pomo (McLendon 1975) has a full series of phonemic voiceless resonants. It is thus striking to note that in Yuman, Diegueño (Langdon 1970) and Cocopa (Crawford 1966) have phonemic voiceless laterals. However, McLendon (1973) and Moshinsky (1976) have convincingly demonstrated that the Eastern Pomo voiceless resonants are historically the result of the coalescence of clusters of *h* + resonant and are thus

an Eastern Pomo innovation. The Yuman voiceless laterals, attested only within a single sub-group of the family, are believed to be an innovation in that sub-group; their origin is not as well understood, however, but is tied up with the very productive process of sound symbolism (Langdon 1971). It should be noted also that in several Yuman languages there are instances of voiceless resonants of all kinds as the result of very late phonetic rules similar to the historical Eastern Pomo rule, i.e. they are the result of the coalescence of clusters of h (or x, depending on the language) with a following (sometimes preceding) resonant. Rules of this kind are found in Yavapai (Shaterian 1976), Kiliwa (Mixco 1976) and some dialects of Diegueño (Langdon 1970 ms).

A rather large number of other Hokan languages also have voiceless resonants. Thus Washo (Jacobsen 1964) has a full set of phonemic voiceless resonants. These are, however, restricted in their distribution, fairly rare if the frequency of examples in Jacobsen's description can be taken as significant, and rarer still in grammatical affixes. Internal reconstruction shows one of these affixes -- the reflexive morpheme kM (M in some dialects) -- to be from a sequence *km (Jacobsen 1977). I have not had access to the more extensive reconstruction work in Jacobsen (1960 ms), but assume that other voiceless resonants can also be eliminated for Pre-

Washo. Chontal also has a full set of voiceless resonants, some of which at least are reconstructed for Proto-Chontal (Turner 1969), although an alternate analysis (Waterhouse 1962) treats them as clusters of a resonant and x. Seri has a more limited inventory, only ɬ and W, (Moser and Moser 1965) and so far nothing is known of their origin since they don't seem to enter into alternations (Marlett 1976). Obispeño Chumash had voiceless laterals, which Klar (1973) shows to be a Chumash internal development, probably not fully contrastive even in Obispeño. While voiceless resonants are relatively rare as contrastive segments in languages in general, it should be clear from the above discussion that their formation (when their origins are known) derives from a very natural propensity for some cluster types to coalesce. This is then a result of the common Hokan tendency to develop consonant clusters (often through the other typical Hokan affinity for vowel deletion rules).

b. Aspirated Stops.

Most Pomoan languages have aspirated stops contrasting with nonaspirated ones, and such a series is reconstructed for Proto-Pomo (e.g. McLendon 1973). On the other hand, Proto-Yuman clearly only had one series of stops (Wares 1968), though some of the daughter languages have developed surface

aspirated stops from clusters of h + stop or stop + h (sometimes by metathesis, Langdon 1976b) as in Yavapai (Shaterian 1976), Havasupai (Crook, Hinton and Stenson 1977) and Kiliwa (Mixco 1976). Kiliwa in addition has developed such stops from sequences of stop + fricative (Mixco 1976 ms), an example of which is the form for BREAK WIND.

Silver (1976) has suggested a similar origin for at least some of the aspirated stops of other Hokan languages. In addition, Jacobsen (1976) suggests that Washo voiceless stops (which can be slightly aspirated and contrast with voiced ones) result from the loss of a following consonant, possibly h. He also demonstrates that the aspirated/nonaspirated contrast in Yana stops developed from an earlier allophonic relation between the two sound types. The evidence is therefore mounting to support Jacobsen's proposal that contrastive voiceless aspirated stops are independent developments within Hokan. It is thus of interest to discuss the possible origin of aspirated stops in Pomo, a topic I return to below.

c. The t/ʈ Contrast.

All Pomo languages (McLendon 1973) show a contrast between apical and alveolar stops (t/t) in the plain, aspirated and glottalized voiceless series and this contrast is therefore reconstructed for Proto-Pomo. In Yuman, Yuma, Diegueño,

and minimally Cocopa also exhibit this contrast (similar in phonetic detail to the Pomo one). Here, however, the contrast has been shown (Langdon 1970b) to be derivable from only a single *t segment, although Proto-Yuman clearly had the two phonetic segments [t] and [t̚] in complementary distribution, [t] occurring pre-stress, and [t̚] post-stress. This feature is quite rare among Hokan languages (something analogous is known to exist only in Chimariko, of which not much is known) and thus raises the question of the origin of the contrast in the Pomoan languages. An examination of the Proto-Pomo forms reconstructed by McLendon shows contrasts to be somewhat limited. Thus there is no word-initial Proto-Pomo *t or *t^h; preaccentual contrast is attested only before *a and stem final, although rather few stems end in a consonant. In addition, among the affixes reconstructed by Oswalt, only *t and *t^h appear. All this suggests that internal reconstruction within Proto-Pomo may lead to elimination of this contrast. It should also be noted that the existence of two series of t-like elements is a distinctive California areal feature which is discussed in Langdon and Silver (1977 ms), though its origin remains obscure.

d. Glottalized Stops.

Pomo has a full series of glottalized stops. Even

though Yuman does not have glottalized stops at all,⁶ this feature seems more archaic than others discussed so far, and Hokanists (particularly Jacobsen 1976) are of the opinion that some glottalized stops at least are to be reconstructed for Proto-Hokan. In support of this view is the fact that the great majority of Hokan languages have such a series so that those that do not stand out sharply. They are Yuman, Karok, Seri, and Tlappanec. On the other hand, Pomo at least has some phonotactic restrictions on the occurrence of glottalized consonants -- though this seems to be a natural consequence of the phonetic reality of such segments -- and it must be remembered that glottalized consonants are a widespread areal feature throughout the geographical area where Hokan languages are found.

Even if the features mentioned so far turn out not to be of the antiquity needed for being included in Proto-Hokan, it is evident that they are not irrelevant to the task of unraveling the history of Hokan languages. Much obviously remains to be done to determine exactly the extent to which they are due to inherited structural peculiarities, to areal pressures, or to typological necessity.

Phonological Processes

In this section, I wish to discuss a series of inter-

related phenomena involving the interaction of accentual patterns and morphological composition. Let us start by summarizing the Yuman facts. The typical Yuman word (see Langdon 1975) consists of an inherently stressed root (typically of shape CVC, with some instances of shorter ones including just V) surrounded by strings of prefixes and suffixes. The stress typically remains fixed on the root and much phonological reduction takes place in unstressed portions of the word. In these positions, vowels reduce and delete, and reflexes of proto-consonantal segments may vary depending on their relative position with respect to the root, allowing the identification of various degrees of strength associated with specific positions. Root initial (which is always immediately before the stressed vowel) is the strongest position, where stops remain stops, and glides may be strengthened into fricatives. All other consonantal positions are weak, allowing varying degrees of lenition to take place. In some of the languages, because of mergers and cliticization, some of these new segments come to contrast with their non-lenited counterparts. The only processes which can affect the position of the stress are those of compounding where the initial member is destressed (in only one language, Mojave, is there any evidence of stress shift, which has to do with the interaction of syllable structure, vowel length,

and pitch; this is clearly a Mojave innovation as discussed in Langdon 1977). There is also some tendency in Kiliwa and Yavapai for distinctive pitches to develop on root syllables under conditions which are not yet fully understood but involve certainly syllable structure and syntactic categories. A typical Yuman lexical item has stress on the last syllable, a corollary of the fact that derivation is mostly achieved by prefixation, leaving the accented root in final position (suffixes are typically syntactic in their function).

Pomoists reconstruct a combination stress-pitch accent on the root syllable of Proto-Pomo words. This is totally compatible with the Yuman data, since the stress of Yuman is accompanied by non-distinctive features of pitch as well. It can therefore be seen that Proto-Pomo and Proto-Yuman share the feature of having words accented on the root. Idiosyncracies of word-formation within the two families, however, tend to obscure this parallelism. Thus, in compounds, the Pomo tendency is to retain the full accent on the first member (rather than on the second as in Yuman). In addition, the favorite type of word formation in Pomo consists of prefixing the root with a single instrumental prefix of the shape CV-, so that the accented syllable is typically the second in the word. In addition, a number of accent shifts have affected individual Pomo languages in ways that further

obscure the original facts.

At first sight, there do not appear to be parallels in Pomo to the strong and weak positions in Yuman. I believe, however, that a number of typically Pomo features of word formation may be interpreted as fitting into such a scheme as well, the difference being that in Yuman the tendency is for lenition to affect weak positions, while in Pomoan strengthening affects strong position, with lenition not as well developed. To demonstrate this, it is necessary to describe in some detail the most distinctive phonological feature of word structure in Pomo, namely the presence in most Proto-Pomo words of what Oswalt (e.g. 1976a) calls "laryngeal increments" (i.e. either h or ʔ) in the position immediately preceding the accented syllable. In other words, the canonical form of a Proto-Pomo stem is CVHCV́, where H is a laryngeal. If the resulting cluster (the only type of cluster allowed in Proto-Pomo stems) is interpreted as a manifestation of strong position, it can be seen to correspond exactly to the Yuman root-initial strong position. This interpretation is strengthened by noting that all Pomoists agree these increments not only appear in a predictable position, but are themselves almost entirely predictable by the type of root-initial consonant they precede, ʔ appearing before glottalized stops as well as before b and d, h before all other consonants. Only

before *l do McLendon's 1973 reconstructions show both ? and h. Oswalt (1976b), however, claims that the contrast is attested before all voiced sonorants, although specific reconstructions are still unavailable. With all due reservations and with the warning that Pomoists disagree somewhat on the facts, I will nevertheless take as my basic corpus the reconstructions of McLendon (1973) since they are the most extensive and are available in systematic presentation. According to McLendon, voiced sonorants other than *l require the h increment (and result in the voiceless sonorants of Eastern Pomo discussed above). In all cases where *l is preceded by *ʔ in her reconstructions, the form also begins with a glottalized consonant. Thus we find *p'aʔla.'slug', *q'uʔles 'phlegm', and *t'aʔla.'tick'. The generalization could be stated in a number of ways: 1) in Proto-Pomo, when a stem begins with a glottalized consonant and contains a root beginning in *l, the laryngeal increment must be ?, or slightly more generally 2) Proto-Pomo had a canonical constraint preventing the co-occurrence of a word-initial glottalized consonant and h in the same syllable (note accented, i.e. second, syllables never end in h). This statement is probably too general, as is attested by the exception *q'ohsa/*q'uhsa 'elbow'. Oswalt (personal communication) also claims there are more counterexamples in his reconstructions.

More likely is the suggestion 3) that all these forms (including 'elbow') are old compounds (note that 'slug' and 'tick' both contain the root *la•) and that some phonological material has been deleted between the laryngeal and the root. Note that processes of this kind have been postulated by Oswalt (1977) as having occurred within the history of Pomo languages so that Northeastern Pomo huʔba• 'tongue' he sees as deriving from *huʔuy 'eye, face' + *hiba• 'appendage' (it is of interest in this connection that there are odd compounds in Yuman as well where it is the stressed syllable of the first member of the compound that is reduced or deleted rather than the unstressed one. Thus Diegueño n^yəmta•y 'mountain lion' from n^yəmi• 'wild cat' + ta•y 'big'). Relevant here also is the observation that in Pomo just as in Yuman (and in many other languages), nouns are less clearly analyzable than verbs although their phonological structure is similar to that of verbs. Regardless of what the proper explanation is, it seems pretty evident that at some stage of pre-Proto-Pomo the shape of the laryngeal increment was predictable.

To go one step further, we may ask whether the presence of the laryngeal increment itself is predictable or whether it represents a fully contrastive feature of Proto-Pomo. At this point, it becomes necessary to stress that Pomoists dis-

agree somewhat on the general principles underlying their reconstructions, and that only McLendon (1973) comes anywhere near presenting these principles explicitly. However, I have had some communication with Oswalt and Halpern (besides having access to their published work and to a tape recording of a lecture Halpern delivered at Berkeley in 1962 on the topic of Proto-Pomo reconstruction). The differences lie mostly in each scholar's interpretation of the basic role of certain features in the structure of Proto-Pomo. Most crucial to the discussion at hand is the role of length as it interacts with the laryngeal increments. McLendon (1973) reconstructs both vowel and consonant length, although the latter only rarely, noting in particular the fact that her reconstructions show a pattern of length occurring either before or after the root consonant in many forms lacking a laryngeal increment. She suggests, "...that there were in fact three laryngeal increments in the proto language; *ʔ, *h, and */·/; a hypothesis that Halpern himself partially implied in an unpublished lecture on Proto Pomo..." [51] Oswalt, on the other hand (see specifically Oswalt 1976b) implies that the increments ʔ and h contrast in Proto-Pomo only with their absence, so that for him length is a possible contrastive feature only for root vowels. Halpern, who has kindly spent a number of hours explaining his position to me,

has a systematic and dynamic theory of the morphological and phonological structure of Proto-Pomo, which, in its broad outline, may be summarized as follows.

The Proto-Pomo stem consisted of a prefix CV, followed by a root CV, and an obligatory increment. The number of contrastive increments are two, one a combination of ? and h in complementary and therefore predictable distribution, symbolized H, the other length, symbolized A. The position of the obligatory increment is not stable; it may appear either before or after the root consonant, dividing the stems of the language into two major classes, light stems, where the increment precedes the consonant, i.e. $CV\begin{pmatrix} H \\ A \end{pmatrix}C\acute{V}$, and heavy stems, where the increment follows, i.e. $CVC\begin{pmatrix} H \\ A \end{pmatrix}V\acute{}$. The selection of light or heavy stem is determined by morphological categories and individual suffixes. The light stem is basic, and the heavy stem derived.

In addition to its elegance, this theory allows an explanation for the fact that some forms are reconstructed without an increment at all, since Proto-Pomo undoubtedly had processes of the sort exhaustively described by Oswalt for Kashaya Pomo (Oswalt 1961 -- Morphophonemics) whereby certain suffixes or other grammatical processes have the property of removing the increment. In Halpern's scheme, reconstructed forms without increment would simply be cases where only parts of a paradigm

lacking the increment have survived.⁷

If every Proto-Pomo stem had an obligatory increment and the number of augments is only 2, then one of them is completely predictable. Because the H increment is so idiosyncratically Pomoan, it might be surmised that the length augment is the most archaic of the two.

The above discussion may now be rephrased in language that is comparable to the Yuman scheme: each pre-Proto-Pomo root, when forming a stem, needed a strength feature focusing around the initial consonant, as a phonological reinforcement of the accented syllable. Some were already etymologically equipped with such a strength in the form of the length feature and required no further strengthening. All others take the H increment.

We now return to Yuman with some observations directly suggested by the discussion of the Pomo theory. As was noted above, none of the augment features of Proto-Pomo are reconstructed for Proto-Yuman, only an abstract structural point described as "root initial" which has phonological consequences identified as strong position (Langdon 1975). A number of additional phonetic facts about several Yuman languages may now be pointed out which share some properties with the Pomo increments.

In Diegueño, (as well as in Yuma and Mojave) certain

derivational morphemes consisting of a long vowel are infixes precisely in the position immediately preceding the root, (e.g. $\text{?}\text{əmi}\cdot\text{pi}\text{ɫ}\text{p}$ 'ashy, dusty' < $\text{?}\text{əmpi}\text{ɫ}$ 'ashes') and in the dialect of La Huerta some glottal stops are moved from initial, i.e. weak position, to immediate pre-root position (Langdon and Hinton 1976). Compare Mesa Grande Diegueño $\text{?}\text{ən}^{\text{y}}\text{əməkəná}\cdot\text{p}$ 'you told me' (with all segments in their proper underlying position) to the corresponding form in La Huerta Diegueño $\text{n}^{\text{y}}\text{imka}\text{?na}\cdot\text{p}$. In addition, in some dialects and most markedly in the southern varieties, many items are given in citation form with a ? in exactly that same position (e.g. $\text{x}\text{a}\text{?wá}\cdot\text{k}$ 'twins', $\text{x}\text{a}\text{?k}^{\text{w}}\text{ál} \sim \text{x}\text{ak}^{\text{w}}\text{ál}$ 'lizard', $\text{t}\text{ə}\text{?múr} \sim \text{təmmúr} \sim \text{temúr}$ 'full'). The last example illustrates another common tendency for the root initial consonant to be lengthened, at least in bisyllabic forms. That these ? 's are not part of the segmental underlying representation of the word but are optionally inserted by rule is demonstrated by the fact that even loan words from Spanish where no ? is present etymologically, may acquire this feature e.g. $\text{ta}\text{?mó}\cdot\text{ta}$ 'a medicinal plant' > Spanish guatamote (cf. La Huerta Diegueño tamwáal , Hinton 1975: 220).

In Kiliwa there are many more ? 's than in most other Yuman languages or than need to be reconstructed for Proto-Yuman. One of the favorite positions for the presence of

these ?'s is again directly pre-root. These are so frequently present in nominal forms that Mixco (1977) analyzes them as a 'nominalizer' morpheme, as in x[?]náxu? 'cover'. It does, however also show up in verbs, as in hč[?]wir, 'be in a series, follow', and in forms which apparently are borrowed from Spanish, as in xi[?]wá·tu? 'a plant' > Spanish jiguata (Mixco, 1977, 12-13); cf. Diegueño xi·wa·t̥ ~ xaywa·t̥. In addition, one of the common forms of metathesis in Yuman languages (Langdon 1976b) changes sequences of h + consonant to consonant + h, typically directly pre-stress, giving alternate forms reminiscent of the heavy and weak stems of Proto-Pomo, but with no semantic differentiation.

There is no evidence that these phenomena might be so archaic as to be equatable with the specific Pomo increments, but I do wish to suggest that the processes whereby the two families acquired these features are rooted in shared deep-seated properties of word formation. It is therefore likely that parallels to the Yuman and Pomoan facts may turn up elsewhere in Hokan and could be truly diagnostic of the presence of root-initial elements, even if that is not their synchronic function in the languages in question. A possible candidate for investigation is a process attested across Yana dialects (Sapir and Swadesh 1960) where the Yahí and Southern dialects show segments very much like the Pomo increments

"...in Yahi and Southern dialects h is inserted "after primary short stem vowels and before certain following consonants", for instance, Northern Yana basi 'flesh, meat, body', Yahi bahsi. Southern, but not Yahi, inserts an h before w and r. Yahi, Northern, and Central wawi 'house' corresponds to wahwi in Southern, for example. Furthermore, glottal stop insertion took place in Yahi, before glottalized consonants, e.g. Northern be'cau- 'stuck in a cleft, in between', Yahi ba'cau- " (Moshinsky, 1976:59). Leonard Talmy (personal communication) tells me that processes of this type are also active in Atsugewi. Karok (Bright 1957:38) has a morphophonemic rule whereby the initials of monosyllabic stems are subject to gemination, a possible parallel to the Yuman gemination discussed above. Seri also has consonant lengthening (Marlett 1976) but oddly enough, it follows rather than precedes a stressed vowel. Consonant length is distinctive in Shasta (Silver 1966). Internal reconstruction may eventually throw some light on its origin.

Another aspect of laryngeals must be discussed. In Yuman, while ? is a well established phoneme with full contrastive force, h is not assumed to be distinctive in Proto-Yuman. In the languages that have this segment, it corresponds to *x. In the languages that have x, a phonetic h exists, but only in initial position before a vowel not

protected by a ʔ . Only in Kiliwa have both h and x become contrastive (Mixco 1976 ms) from a combination of sources, the most interesting of which is a generalization of the h onset from word initial to root-initial as well (e.g. 'to go' h^{a} is phonetically $[\text{h}^{\text{a}}]$ in accordance to the general Yuman rule, but a derivative of this root meaning 'to take' pi^{a} is phonetically $[\text{pih}^{\text{a}}]$. Interestingly enough, the distribution of ʔ and h in Proto-Pomo in other than increment position is restricted in special ways: "In Proto-Pomo...all independent words have two syllables or more, at least in an underlying representation. It is often the case that the first syllable is a prefix and the second the root of the word... It is also often the case that the first two syllables are best taken as a unit morpheme, the root. However, in many instances, the status of the first syllable is uncertain; the second syllable carries the most meaning, and the first seems to have little function other than as a "dummy" laryngeal syllable set up to fulfill the requirements of at least two syllables per word. Any assigned meaning would have to be something vague like independent word. The functional load is low because the first syllable is almost completely predictable phonologically [emphasis mine]: (1) The shape is CV-. (2) The consonant is laryngeal, h if the next consonant is ʔ or glottalized or is a voiced stop, ʔ if the next consonant is voiceless and

unglottalized. Only when the second consonant is a voiced sonorant is there an apparently arbitrary assignment of the initial laryngeal to ʔ or to h..." (Oswalt 1976b:3) In other words, the initial segment of such forms is selected in accordance to a rule which is the inverse of that selecting the laryngeal increment, and ʔ and h are not contrastive in word-initial position in Proto-Pomo. In support for Oswalt's generalization, it should be noted that none of the instrumental prefixes reconstructed for Proto-Pomo by McLendon (1973) contain *h or *ʔ. While Oswalt himself reconstructs *ha- and *hi- (Oswalt 1976a:16-17), his discussion makes clear that his initial *h in these morphemes is a cover term for the process he describes in the above quotation. It thus appears that the only position in which ʔ and h truly contrast in Proto-Pomo is root-initially. ʔ seems to be well established as a root-initial segment, and is attested in a fair number of forms for which good possible Yuman cognates are available (FATHER, FIRE, I, HAIR, SALT) whereas not a single candidate for cognate forms exists with initial h. In addition, in some cases, McLendon (1973) has alternate reconstructions with *x instead of *h. All these facts suggest that h might be secondary in the development of the Pomo sound system, just as it is in Yuman.

If h is of secondary origin, what about aspirated stops?

Jacobsen (1976) has elegantly demonstrated that aspirated stops are of secondary origin in Yana and has noted parallels in defective distribution or morphophonemic alternations in Washo, Chumash, and in fact, in Pomo, where no aspirated or glottalized stops have been reconstructed syllable-initially in post-tonic position (this is reminiscent of lenition in Yuman), and no aspirated/nonaspirated contrast is noted in final position. What the exact origin of the aspirated stops is in Pomo cannot be specified at the moment, and it is of course likely that their sources are various.⁸ The discussion of increments above assumes the primacy of aspirated stops as a way of predicting the occurrence of the particular increment, while simultaneously attempting to demonstrate the secondary origin of h. There is, however, an alternative approach to the question of the increments, which was suggested by Moshinsky (1976:59-60), namely that the increments themselves are indeed distinct and that they in turn help account for the development of the three-way contrast between plain, aspirated and glottalized consonants. Moshinsky's hypothesis is that at a stage prior to Proto-Pomo, the "increments" were separated from the following consonant by a vowel, which, by virtue of being unaccented and immediately preceding the accented syllable, would be lost by a process common in the history of both Pomoan and Yuman; when a laryngeal came to

stand before the root consonant, that consonant in turn acquired the feature of glottalization or aspiration as the case may be. The various stages may be summarized as follows (# identifies forms in any of a number of stages prior to Proto-Pomo):

#CVʔVCV -----> #CVʔCV -----> *CVʔ ċv

#CVhVCV -----> #CVhCV -----> *CVhC^hv

This is an attractive hypothesis but it fails to account for the fact that both aspirated and unaspirated stops occur after h. This is not enough to invalidate the suggestion, however, but requires an additional explanation. In fact, a theory suggests itself that would combine both hypotheses and it is even possible that some of the h and ʔ segments may themselves be reductions of other consonant types (the development of Kiliwa aspirated stops from stop + fricative, or for that matter from fricative + stop should again be noted, see BREAK WIND, EXCREMENT). This would be particularly well motivated if we assume that consonant reduction followed vowel deletion. This would also provide an explanation for the lack of consonant clusters other than those involving laryngeals. We would assume that the glottalized and aspirated consonants developed at this time and that the contrast was caused by roots which were not preceded by the type of syllable that reduced. At this point, by analogy, increments began to appear even where

they were etymologically unmotivated, accounting for h before plain stops. The various Proto-Pomo stem types might have developed according to the following sequences (in the formulas, S stands for stop, X for fricative, Q for some other consonant type):

#CVSVCV	----->	#CVSCV	----->	#CV?CV	----->	*CV? Ćv
#CVXVCV	----->	#CVXCV	----->	#CVhCV	----->	*CVh ^h v
#CVQVCV	----->	#CVQCV	----->	#CV•CV	----->	*CV•CV
#CVCV	----->	#CVCV	----->	#CVCV	----->	*CVhCV

By Proto-Pomo times, the situation was synchronically reversed and the increment became predictable from the consonant rather than vice-versa. It might even be possible to suggest at this point a motivation for these hypothesized developments. It should be recalled that the most common function of initial syllables in Proto-Pomo is to serve as instrumental prefixes. It is not unlikely that these were at one time more independent of the word structure than at a later stage and resulted in fact from early stem compounding, later reduced to proclitic status and eventually to full integration into the stem as prefixes. If we now assume that the development of the instrumental prefix system coincided with the period where the first trends for pre-stress syllable reduction emerged, we project to an earlier stage processes which are known to have been operative in the verifiable history of Pomoan and

Yuman. The Yuman type of cycle may serve as a model. Phonotactic requirements seem overwhelmingly to support a preference for bisyllabic forms (also postulated for Pomo in Oswalt 1976b). Since roots are monosyllabic, various devices are resorted to to produce the canonically preferred shape, one of which is the addition of a semantically rather empty syllable preceding the root, for example ʔV- . This in turn is phonologically unstable and tends to reduce and disappear, encouraging the formation of compounds with any commonly preceding lexical element. The compound solidifies, and may be ready for another cycle of reduction, etc.

These tendencies are of importance not only for the history of Pomoan and Yuman, but seem to underly the peculiarly Hokan type of comparative problem, and to explain why so little progress has been made (see Silver, 1976 for more discussion of this situation). If indeed the Hokan root is monosyllabic and accented, it is very likely that anything unaccented would tend to reduce and disappear. Accents in turn can move to other syllables (as attested in the history of Pomoan), or disappear in compounding. It is not surprising that after a long time of being subjected to these trends, languages change radically and that identifying comparable portions of phonological material becomes correspondingly more difficult. It is therefore suggested that internal re-

construction of accentual systems within each branch of Hokan is an urgently needed task.

A peculiarity of the phonological system of Proto-Pomo is the existence of a deficient series of voiced stops, *b and *d. Not only is this series deficient, but voiced stops are notoriously rare, not only in Hokan, but in California languages in general. In fact, Jacobsen (1976) has shown that the Yana voiced stops are historically derived from nasals. This raises the question of their origin in Pomo. Relevant here is the fact that in post-tonic position, the forms McLendon reconstructs with *b and *d followed by *ʔ have reflexes involving nasals. In pre-tonic position, however, there is no evidence within the Pomo languages to relate these segments with nasals. Voiced stops are frequent in pre-tonic position and a number of instrumental prefixes contain voiced stops also, although it might not be accidental that in this set of prefixes there is no contrast between b and p or between d and t (or ṭ). Perhaps in that position the voiced stops derive from earlier plain stops. In root-initial position, however, they are fully contrastive. If they are indeed of secondary origin, it is likely that in root-initial (i.e. strong position) they come from various sources, one of which might be the strengthening of otherwise weak consonants, perhaps *w and *l. This is suggested by the fact that,

among McLendon's reconstructions, root-initial *b and *d are typically found in the standard forms with laryngeal increment, whereas very few root-initial *w and *l forms show the laryngeal increments. When comparing Proto-Pomo to Proto-Yuman reconstructed forms in the appendix, we find no instances of post-tonic *b and *d in Proto-Pomo, so that Yuman is of no help here. In pretonic position, however, we find Proto-Pomo *b corresponding to Proto-Yuman *w or *p (BIG, MAN, ROCK, TONGUE), although Proto-Pomo *d might correspond to Proto-Yuman *n^y (WILDCAT, SUN).

In her Proto-Pomo consonantal inventory, McLendon (1973) includes two elements she symbolized *l^y and *n^y, justifying them as follows:

"The reconstructions *n^y and *l^y, unlike the others proposed, are merely cover symbols for correspondences involving Pse /n/ and /l/ corresponding to Pe /·/ and /l/ and to ∅ or /·/ in the other languages. The two correspondences are limited to word final position of occurrence, but contrast in this position with other sets of correspondences involving /n/ and /l/ in all of the languages. Since the correspondence...occurs in two sets for which there are Yuman cognates ending in /l^y/, the symbol l^y was chosen because of its mnemonic value." [28] At the time, McLendon did not suggest any Yuman parallels for *n^y and even now, with more reconstruc-

tions available, Yuman gives no supporting evidence. Of the two forms with Proto-Pomo *n^y in the appendix, one (EAR), has Proto-Yuman *l^y, the other (SLEEP) has ∅. Nor does the parallel between Proto-Pomo *l^y and Proto-Yuman *l^y become strengthened by the newer forms. If anything, Proto-Pomo *l^y corresponds better to Proto-Yuman *y (CHEST, DIE), or *l (TONGUE, and possibly FLY if some kind of metathesis is postulated). Oswalt (personal communication) believes that McLendon's Proto-Pomo *l^y's might be analyzed as Proto-Pomo *•l and that McLendon's Proto-Pomo *n^y's reflect the sporadic presence of a noun-forming suffix, and therefore do not belong in the stem. His reconstructions (also given in the appendix) reflect this difference of opinion. Whatever the final solution might be, it seems fairly clear that *n^y and *l^y do not represent fully contrastive segments in Proto-Pomo. On the other hand, while the Yuman palatal segments are justified on the basis of the comparative Yuman evidence, there are also a number of remaining problems associated with them, which suggest that the full story is not yet told. One problem is that the palatal segments enter into a number of sound symbolic alternations in Yuman, which tend to disrupt the regularity of ordinary sound correspondences. More work is obviously needed in this area.

A final remark on canonical forms concerns the shape of

the root. All evidence points to Proto-Pomo roots as being CV, while the preferred shape in Yuman is definitely CVC. Can either one of these shapes be considered more basic? The obvious inference would be to state that CV is basic and that the additional consonant of Yuman is ultimately segmentable. This may in fact be the real solution, and there is some Yuman evidence to support this view. Not only are there shorter roots without final consonant, but a number of CVC roots suggest that the final consonant may be an archaic suffix. While keeping this possibility in mind, however, I would like to retain the notion of the primacy of a CVC root, if only to remove more possible instances of accidental convergences. In other words, forms where interesting correspondences are found in three segments which could be considered to represent a root are more valued on all counts than those where only two segments coincide. It is encouraging in this connection that a fair number of sets in the appendix meet this criterion (ARM, BREAK WIND, CHEST, COLD, DIE, EAR, EARTH, EYE, FLEA, FOX, LONG, MAN, TALK, TONGUE, TWO) and several others may be added if it is assumed (and other Hokanists seem to share this view) that Proto-Hokan had only three vowels and that some at least of the Pomo mid vowels originated from diphthongs, a view which the Yuman parallels certainly encourage. The forms for BIG, FATHER, FIRE, MOTHER, and TOOTH should be thus

added to the list of possible CVC roots. This is in fact a startling result when it is based on Proto-Pomo data assuming roots to have the shape CV, since about half of the forms in the appendix turn out to be good candidates for CVC roots. More striking yet is the fact that in the very few forms where both the prefix and the root seem to be comparable, the root is invariably CVC (BIG, BREAK WIND, EAR, EXCREMENT, TALK).

Morphosyntax

A comparison of the grammars of Pomo languages with those of Yuman languages does not reveal many immediate similarities. For example, Yuman languages have elaborate verbal prefix structures, whereas the Pomoan verb allows only a single prefix per stem, one of a set of instrumental prefixes. Yuman has instrumental prefixes also, but the Pomo set is much more systematic and productive. Furthermore, no formal and semantic correspondences emerge from a comparison of the two sets. Undoubtedly the question of the reconstruction of Hokan instrumental prefixes (if such a common set existed at all) is inextricably interwoven with areal influences. Instrumental prefixes are common not only in Hokan but also in Penutian and Uto-Aztecan. The very few instances of Proto-Yuman verbal prefixes for which an earlier origin has been postulated (e.g. Munro 1976:258; Langdon 1976c) suggest that

the most common source of prefixes in Yuman is to be found in nominal elements (pronouns, demonstratives, body part nouns, etc.) On the other hand, the only clue about the origin of instrumental prefixes in Pomo is McLendon's (1975) observation that, in Eastern Pomo, the shape and meaning of an instrumental prefix occasionally is reminiscent of that of an existing verb root. This suggests that the basic shape of the Pomo stem, i.e. instrumental prefix + root may, in some cases at least, go back to an earlier compound root (a hypothesis already mentioned above on phonological grounds), both elements being verbal in origin (something like the forms involving secondary verb stems in Yana, cf. Sapir 1917:17; but also like the compound stems of Maidu, cf. Shipley 1964:38). The point of these observations is that failure to discover cognates among the instrumental prefixes of Pomoan and Yuman does not necessarily mean that such cognates do not exist, but rather that they are to be sought in other areas, i.e. Pomo prefixes may be more profitably compared to Yuman verb roots, and Yuman prefixes to Pomo nominal elements. In addition, McLendon (1975) also notes that some of the stem-forming suffixes of Eastern Pomo look like reduced forms of roots as well, so that there exists the possibility that a Pomo stem consisting of two syllables and ending in a consonant may actually have been built up of three roots.

In both families, the verb morphology is the most productive aspect of word formation, and probably also the most recent and innovative and therefore the least likely to yield directly comparable material. On the other hand, the nouns in both families share features with verbs but are much less analyzable, and therefore are more likely to contain archaic features. It is accordingly considered as not completely fortuitous that so many items in the appendix are nouns or stative (adjectival) verbs.

Yuman languages have verbal prefixes which mark a combination of subject and object. Such prefixes have in fact, been reconstructed for Proto-Yuman (Langdon and Hinton 1976), but are clearly the result of a pre-Yuman incorporation of earlier independent pronominal elements. Pomo does not mark subject or object on the verb, but has possessive prefixes on kinship terms (Yuman has possessive prefixes on all types of nouns also). These are so clearly similar to pronominal elements that they must be of independent origin also. However, the Pomo possessive prefixes are most directly relatable to object forms of pronouns, whereas the Yuman ones are obviously derived from subject forms, another difference in the historical development of the two families. Striking similarities are found between the first and second person pronouns of the two families. While this is not to be discounted, it

must be recalled that, for reasons that are not altogether clear, convergence in phonological shape is a widespread phenomenon in pronominal systems and may thus not necessarily be indicative of genetic connection.

If a number of prefixes can be shown to be the result of grammaticization, this is even more likely to be the case in the area of suffixes. Many Yuman suffixes are known to be historically cliticized remnants of old predicates, and it is not unlikely that some of the very elaborate suffix structure of Pomoan may have developed in somewhat similar fashion. Internal reconstruction in that area is clearly a must.

A few individual morphemes call for comment. Both Proto-Pomo and Proto-Yuman share a pluralization process whereby a morpheme indicating plurality is infixes between an instrumental prefix and the verb root. Yuman has *t (alternating with *č), whereas Pomoan has *lV (with vowel quality phonologically predictable). The Yuman morpheme almost certainly has nominal origin, but nothing is known of the origin of the Pomoan one. No suggestion is made here that these two elements are cognate. If anything, the shape of the Pomoan morpheme is more reminiscent of plural elements found in Seri (Moser and Moser 1976) and Chontal (Turner 1976) involving the segments l and ɭ.

Another morpheme involving the segment *l is recon-

structed for Proto-Pomo, this a suffix *-al, an object marker (McLendon 1973:84). An l-type segment is involved in the case system of Yuman as well, i.e. *-l^y 'in, into'. Now in Pomo, the uses of the suffix reconstructed *-al also seems to involve notions of directionality, since McLendon (1973:72) also reconstructs a suffix *-lal as 'movement towards/in the direction of the goal specified' and Oswalt (personal communication) states it derives locative and directional adverbs from nouns. The notions of 'towards', 'into', and 'object' are of course not incompatible since object functions are often described as denoting the goal of an action and, in fact, a very similar development is attested in Yuman where a directional *-m 'toward goal, away from speaker' has been generalized in Kiliwa to include the direct object case marking. The similarity does not stop here, however, since the Yuman *-m suffix also functions as the syntactic marker of 'different subject', one of the shapes of which involves the segment *-l in Proto-Pomo. The fact that elements of the same functional set are involved in such similar semantic networks is certainly more than pure coincidence. Whether it is also due to genetic relationship rather than to universal tendencies remains of course to be determined.

Word Order

I have shown elsewhere (Langdon, in press) that Proto-Yuman is definitely to be reconstructed as SOV in spite of (and even especially because of) some features which are not normally conceived as being typical of SOV languages, one of which, the great elaboration of prefixes, I have already alluded to. Another one is the order Noun + Adjective, and the facts of relative clause formation, all of which are natural direct consequences of the SOV word order and are well attested in American Indian languages in general.

Eastern Pomo clearly shows SOV characteristics (McLendon, personal communication) and shares much of the typology of Yuman in various syntactic structures, so I will assume that Proto-Pomo is also SOV. There is a very peculiar feature of some other Pomo languages, however, that is present at least in Kashaya and Southeastern Pomo, namely the possibility for subject pronouns to follow the verb. The following sentences from Southeastern Pomo (Moshinsky 1974:125ff) illustrate first the normal subject-initial order, then the subject-final order: *ʔa da fdiqas* (I not know) 'I don't know.'; ... *ʔol da fdiqas ʔa* (that not know I) '...I don't know that.' Most thinking on word order has assumed -- and rightly so -- that pronouns often preserve archaic peculiarities (including word order properties) that other nominals lack, and one could thus infer

that this aspect of Pomo is an archaic feature pointing to an earlier, perhaps verb-initial stage. While this is not impossible since we know so little about the history of word order in Hoka, I would like to suggest another explanation. Oswalt (1964:19) describes another Kashaya construction as follows: "Another example of syntactic divergence [from English] occurs in the use of appositives, which abound in Kashaya. Demonstratives and first and second person pronouns in particular may be used several times in apposition to themselves: /ʔa₁ mul₂ cadu₃ ʔyowe₄ ʔa₅^/ 'I_{1,5} saw_{3,4} that₂.'...the double occurrence of /ʔa/ 'I' is not emphatic; the rather free word order allowed the pronoun has merely resulted in its appearing in two of its permissible positions." An example from Southeastern Pomo confirms the generality of this construction: ʔa ba fdiqbaq te uyil bkolidit ʔa (I subject-particle what-is-known just he(object) will-tell I) 'I'll tell him just as much as I know.' (Moshinsky 1974:125ff) This suggests that the pronoun-final constructions are derived from such appositive, i.e. double uses, by omission of the first instance of the pronoun and represent some kind of afterthought, a very common source of divergent word order in languages in general. As support for this suggestion, note that in Eastern Pomo "The independent clause of a sentence may only be followed by a phrase or substantival dependent clause specifying the subject or agent.

This position is often used to state the fully expanded [emphasis mine] subject, agent, etc., which has been anaphorically referred to in the preceding independent clause." (McLendon 1975:181). In Southeastern Pomo and Kashaya at least, it is also possible for the same pronoun to appear twice, once in its normal position for an SOV language, and once following the verb, i.e. sentence-finally.

Other SOV, or at least verb-final languages within Hokan are Seri (which shows much syntactic similarity with Yuman), Washo, and Shasta. The latter, while exhibiting such nice verb-final features as suffixed cases and postpositions, also has a complex and clearly ancient verb prefix structure indicating mode, subject, number and tense syncretized into single morphemes somewhat like Indo-European (Silver 1966).

Intermediate in typology is Karok, which appears to be the most free in word order of all Hokan languages.

Verb-initial and predominantly suffixing are Yana, Chontal, and Tlappanec.

Finally, there is Chumash, where Northern and Central have VOS order, and Island has SVO. The variety of word order types is clearly as great as in Indo-European, a family with which Hokan shares at least great antiquity.

An observation which was first made by Jacobsen is that so far, the feature of switch-reference has been found only in

verb-final languages, and always in the form of suffixes. Of the verb-final languages mentioned above, only Shasta has not been found to have this feature. On the other hand, two Penutian languages, Maidu (Oswalt 1976) and Yokuts (G.Gamble, personal communication) have recently been found to have this device as well. Of considerable interest will be the study of the origin of the elements which are used in these various languages to signal the switch-reference notion. Note that in Yuman they are homophonous with directional case markers and in Seri the origin of the different subject morphemes is from various forms of an auxiliary 'be' (Moser 1977).

Appendix

In the list below, I give a sample of Proto-Pomo and Proto-Yuman reconstructions which illustrate a number of the parallelisms discussed in the body of this paper. While the intent is to provide evidence leading to the identification of cognates, no genuine claim of cognate status is made, although some of these items are of course more likely to be cognates than others. The Proto-Pomo forms are from unpublished data which Oswalt very kindly provided at my request, and from McLendon (1975). The corresponding forms are given side by side so that the differences as well as the agreements among Pomoists will be identifiable at a glance. In addition, I

have given, when available, and only when different from both Oswalt and McLendon, the reconstructions in Moshinsky (1976) [marked M]. When a form from an individual language (as opposed to a reconstructed form) is particularly relevant, it is given preceded by the abbreviation of the language name (Pomo: Pc = Central Pomo, Pse = Southeastern Pomo; Yuman: Di = Diegueño, Ki = Kiliwa, Ya = Yavapai). A hyphen - separates known morpheme boundaries in the Proto-Yuman forms. This does not preclude the existence of boundaries in the Proto-Pomo forms, which are, however, given in the shape provided by Pomoists.

Some of the differences between individual Proto-Pomo reconstructions are only notational, i.e. they stand for the same set of sound correspondences. Thus, Oswalt's *š̥, *c, *z, and *ž̥ correspond to McLendon's *x, *k, *c, and *č. It is, however, of interest to note that the Proto-Pomo set *š̥/*x corresponds in several cases to Proto-Yuman *ṣ̌ (ARM, EAR, NAME). Other differences have been discussed in the body of the paper. When these are taken into account, there is remarkable agreement, a fact which reinforces the validity of the Proto-Pomo reconstructions. Proto-Yuman reconstructions are my own.

A large number of forms illustrate and dramatically confirm the persistent productivity of two morphemes which

Oswalt has reconstructed for Proto-Hokan: ****ʔa-** 'noun formative' (Proto-Pomo ***ʔV-** or ***hV-**, Proto-Yuman ***ʔ-**) attested in BIG (pl), EARTH, FIRE, FISH, LONG (pl), SUN, WATER, and ****i-** 'body' (typically ***i** in Pomo but obscured by vowel assimilation rules, ***i·** in Yuman) attested in ARM, BONE, EYE, HAIR (head), MAN, MOUTH, TONGUE, TOOTH (for further details, see Oswalt 1975, 1977).

Vowel correspondences are on the whole very good and straightforward, and the possibility of some Pomoan mid vowels deriving from earlier diphthongs is supported by the sets for BIG, CHEST, FATHER, FIRE, MOTHER, NOT, TOOTH (this was suggested by Oswalt in an oral presentation at the Hokan Workshop in June 1976). Another probable source of mid vowels is the lowering of high vowels in certain (still unspecifiable) environments, as in BREAK WIND, FLEA, FLY, HAIR (head), HAIR (body), LONG, RAIN, ROCK, SALT. Parallel processes are well attested in the history of Yuman (Langdon 1976a).

	Proto-Pomo		Proto-Yuman
	Oswalt	McLendon	
AFRAID	* ^h c/ ^h t ^h iya- · (M*k ^h iyá)	* ^h k ^h i·yá/ ^h k ^h iyá·	*m-ʂ-ya·y
ARM	*ʔiʂa/l	*ʔi·xá1/ʔixá1 ^y	*i·-ʂal ^y
BIG ^a (sg)	*baht ^h e	*baht ^h é/baht ^h én	*p-tay
" (pl)	*ʔaht ^h iy	*ʔaht ^h iy /ʔaht ^h iy ^w	Di ʔ-tay

BONE	*ʔihya ^h Pc yaq ^h 'strong'	*ʔihyá / ʔihyá	*i·-aq/č-ak/s-ak
BREAK WIND ^b	*ʔihp ^h et̚-	*ʔihp ^h et̚-	Di p-sit, Ki p ^h it
CHEST	*yeʔe·/l	*yeʔéɽ ^y (Pse wʔéɽ)	*yay/way 'heart'
COLD	*qahzil	*qahcɽl/qac·i	*(-x-)čʔur
DIE ^c	*qala·/l- (M*qahsɽl)	*qalál ^y /qalá-	Di m-lay
EAR	*šima (M *šimán)	*xi·mán ^y	*šmal ^y (k)
EARTH ^d	*ʔa(h)ma·	*ʔahmát/ʔamát	*ʔ-mat
EAT	*maʔa- (tr)	*maʔá 'food'	*ma· 'eat mush'
EYE/FACE	*huʔuy	*huʔúy	*i·-yi(·)w
FATHER	*-ʔe/-me	*meʔ·é	*n-ay (ws)
FIRE	*ʔoho	*ʔohxó	*ʔ-ʔaw
I	*haʔa·	*haʔá·	*ʔ-(n ^y a)
INTESTINES	*ʔihp ^h a		*pxa (Ki p ^h aʔ)
excrement	*ʔahp ^h a	*ʔahp ^h á	
FISH	*ʔahša	*ʔahxá	*ʔ-či·
FLEA	*ʔimela	*ʔi·mélá	Di əmɽ ^y 'headlouse'
FLINT	*q ^h ahca	*q ^h ahká (cf. ROCK)	Ya ʔahk ^w a 'metal'
FLY(insect)	*zamo·/l	*čamol ^y	*šlmu *šmpul 'mosquito'
FOOT	*q ^h ama	*q ^h a·mán ^y	*i·-mi·y (Di əmiɽ ^x)
FOX ^e	*haqaw (M*q ^h amán)	*haqáw	*p-rxa·w/m-rxa·w
FROG(sp) ^f	*wataq/c	*wa·takʔ/qʔ	*xa-n ^y a (Di xantaq)
HAIR(HEAD)	*heʔe·/y	*heʔ·é/heʔey(?)	*i·-ʔi
HAIR(BODY)/FUR	*zi(h)me	*cihmé/ci·me	*-mi(y)(s)

LION (MOUNTAIN) ^g	*yahmot	*yahmótʔ	*n ^y mi-t
wildcat	*dalom	*dâ·lóm(?)	*n ^y mi
LONG	*ʔahqol	*ʔahqól (pl?)	*ʔ-k ^y ul/ʔqu ^l /ʔqo ^l ^y
"	*bahcil	*bahkíl (sg?)	
MAN	*hiʔbaya	*hiʔbaya	*i·pa(y)
MOON	*ʔala·ša	*qalá·(xa)/ ʔal·á·(xa)	*xl ^y ʔa·
MOTHER	*-ht ^h e	*-ht ^h é	*n-tay (Di-tal ^y)
MOUTH ^h	*ʔaha	*ʔahxá	*i·-a· (Ki haʔ)
NAME	*ʔahš ⁱ	*ʔahxí	*-s ⁱ
NOT(verb)	*ʔac ^h o·-	(M*ʔahšín) *k ^h ów/ʔak ^h ·ów	* (m)a·w
RAIN	*..hc ^h e	*kehk ^h é(·)/ ʔihk ^h é	*k ^w i(·)(y)
RECIPROCAL ⁱ	*-m-ċ-	*-(h)ma(·)k-/ -ma(·)k-	*mat 'reflexive' *mak 'back'
ROCK	*q ^h aʔbe	*q ^h aʔbé	* ʔ-wi(·)(y) Di ʔəwil ^y
SALT	*c ^h eʔe·	*k ^h eʔé·	*sʔi· *sʔil ^y 'salty'
SINEW	*hima	*hi·má	*-sma
SLEEP	*sima	*si·mán ^y	*sma
SUN	*haʔda	*haʔdá	*ʔ-n ^y a
TALK/TELL	*cahno-	*káhnów	*k-na·p
TO/IN	*-l	*-lal	*-l ^y 'in, into'
TONGUE ^j	*hibal	*haʔba ^l ^y /	*i·-npal
TOOTH	(M*hiʔbál) *hoʔo	hawba(·)/hibʔa *háʔ·ó	*i·-ya·w

TWO	*ʔaq ^h o· /z (M*ʔaq ^h ós)	*ʔaq ^h óc	*xwak
WATER ^k	*ʔahq ^h a	*ʔahq ^h á	*ʔ-xa
WORM	*bila	*bi·lá	*ʔ-ʔil
WOOD	*ʔahay	*ʔahxáy	*ʔ-ʔi· (Di ʔil ^y)

Notes to Appendix

a. Oswalt suggests that the final *-n of McLendon may be a verbal suffix. The correspondence between two variant forms with different prefixes is indeed startling. Note a similar alternation in Proto-Pomo only, in the set for LONG.

b. Oswalt considers this form to be imitative of the sound. While this is very likely, it does not necessarily invalidate the possibility of these forms being cognate. Lyle Campbell has also suggested such an origin for this and a number of other forms on this list and has even pointed out what he considers to be similarities with items widespread in Central America.

c. Oswalt points out additional semantic notions of 'wane, decline' for this item. Note also a possible connection with the root *ǵá(.) 'separate from someone'.

d. Oswalt does not reconstruct a final *t since he claims it appears only in some adverbial forms.

e. Oswalt suggests imitative origin for this form also, as well as parallels in various Penutian languages.

- f. Oswalt suggests imitative origin here also, and notes that similar words are widespread throughout California.
- g. In Yuman, MOUNTAIN LION is clearly derived from WILDCAT by the addition of a morpheme *t 'the large member of a set'. The Proto-Pomo forms suggest some connection with each other, but not as clear-cut.
- h. The differences in these Proto-Pomo reconstructions are discussed in Oswalt (1977, note 2).
- i. Oswalt analyzes this as bimorphemic, consisting of *m 'plural' + c̣ 'reflexive'.
- j. See Oswalt (1977).
- k. Discussed extensively in Oswalt (1975).

Footnotes

I am indebted to Robert Oswalt and Abraham Halpern for sharing with me some of their unpublished insights into problems of comparative Pomo, and to Shirley Silver for years of intensive exchanges about all aspects of the Hokan problem. My research on comparative Yuman has been supported by the National Science Foundation.

1. Using one of the terms which Mary Haas so aptly employed in her presentation at this Conference to characterize the various philosophies underlying classification schemes.
2. Turner himself was a participant at the First Hokan Con-

ference in 1970, where Jacobsen's paper was read and distributed, even though the Proceedings (Langdon and Silver 1976) did not appear till 1976.

3. Since 1976, Hokanists have held regular yearly workshops.
4. E.g., Dixon and Kroeber (1914); Sapir (1917).
5. At the Yuman-Hokan Workshop held in San Diego, California.
6. Such a series may be in the process of emerging in Kiliwa.
7. This shows remarkable parallels to the Indo-European root.
8. Silver (1976, 1977ms) suggests sequences CVx and CVh as the origin of aspirated stops in several Hokan languages.

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Penutian: An Assessment

Michael Silverstein

At the outset, I should indicate that, by the criteria of regular sound correspondences among languages and of the reconstruction of total proto-forms of words, Penutian in the sense used here is not a proven genetic relationship. So, from this point of view the label "Penutian" (or "Proto-Penutian") does not yet refer to a parent language for the families it embraces.¹ Rather, the label may be taken as a summary for (1) a number of interlocking hypotheses, first brought together by Sapir (1929), that project where and how to look for such correspondences among forms, and (2) encouraging progress in schematizing how such correspondences can be achieved. The hypotheses emerge from a consideration of grammatical structure in the several proposed Penutian subgroupings, noting parallelisms and reconstructible historical trends. The schemas emerge from a continuing effort to deal more and more precisely with the complicated derivational and inflectional morphology of many of the languages concerned, and from considering the typology of classes of sounds in these languages.

As a field for comparative-historical investigation, then, Penutian, perhaps even more than Hokan, contrasts

sharply with Iroquoian or Algonquian. The reasons for this contrast are revealing. There is, first, tremendous linguistic diversity, equalling perhaps that of the entire continent, encompassed within the proposed "superstock." It is thus not obvious, on a Penutian-wide scale, where (structurally speaking) to seek phonological correspondences of lexical forms.² And second, there has been for a long time a peculiar development of comparative-historical Amerindian linguistics, having much in common with post-Bloomfieldian inductive structuralism. This trend has sought doctrinally to work "from the bottom up" and from present to past unidirectionally.

The Constitution of the Hypothesis

This sharp contrast in the nature of the case for Penutian has, I think, been characteristic from the very beginning, when Dixon & Kroeber (1913) first proposed the term for a genetic grouping of certain recognized language families of California. They based the name on a schematization of the stems for the attested numeral 'two' in Wintun, Maidun, Yokuts ("Pen") vs. Miwok and Costanoan ("Uti").³ Now called California Penutian, this grouping of languages was reached principally on the basis of counting lexical resemblances (and an attempt at what would be rather chaotic sound correspondences in the modern sense) among these families which barely could be numerically distinguished from resemblances

to the Hokan languages, also grouped at this time. It seems clear, as Gamble (1973:10-19,27-28) has pointed out, that Dixon & Kroeber's intuitions about the deep similarity of Penutian grammatical structures, based on years of typological investigation within the Boasian areal tradition, were probably decisive in their conclusions.

And it was largely on the basis of morphological parallelism and an implicit theory that morphological change is an essential explanans in justifying correspondences, that Sapir added several other branches to an expanded notion of Penutian. He had done field work on both Wishram Chinook and Takelma (Washington and Oregon, respectively), and had of course studied the Coos and Siuslaw (coastal Oregon) materials of Leo Frachtenberg, and the Tsimshian (coastal British Columbia) materials of Boas. As early as his celebrated paper on "Time Perspective" (1916 [1949]:453n.41,457n.54,459nn.58,59), he claimed that evidence was at hand for a grouping of Oregon languages, Coos-Siuslaw plus Takelma, and for these in turn as an Oregon sister group of (California) Penutian. With the evidence for linkage of Takelma with Kalapuya (Willamette drainage in Oregon) and Chinookan (Columbia River) presented by Frachtenberg (1918), principally stem resemblances, Sapir (1921a,b) formulated a more complete Oregon Penutian group, and added Tsimshian as a northerly outlier of Penutian.

The Oregon grouping is typologically rather diverse, but Sapir thought he discerned a "characteristic Penutian form of stem," $CV_1 CV_1 (C)-$, which undergoes morphophonemic ablaut in inflection and derivation, as a synchronically deep and historically probative point of departure for relating all these languages, and for finding correspondences in internally reconstructible forms when attested ones did not meet the canon. Ultimately, Sapir's Oregon Penutian proper included (a) the coastal Oregon group, Coos, Siuslaw (Lower Umpqua), Alsea (Yakonan), (b) Kalapuya, (c) Takelma. Chinookan and Tsimshian are seen as correlative to the Oregon group; from a structural point of view they seem to have diverged from the Penutian characteristic in opposite directions. The final 1929 Sapir classification of Penutian preserves these coordinate groups, California Penutian, Oregon Penutian, Chinook, Tsimshian, and adds two more coordinate branches, both of which had earlier been proposed as genetic groups, Plateau Penutian and Mexican Penutian.

The first of these is a renaming of "Shahapwailutan," an 1894 classification by J.N.B. Hewitt and J.W. Powell that united Powell's (1891) "Lutuamian" (Klamath-Modoc), "Wailatpuan" (Molale-Cayuse), and "Shahaptian" (Sahaptin-Nez Perce), families centering in the area east of the Cascades in southern Washington and Oregon known as the "Plateau" region.

Jacobs (1931:93) notes that "the hypothetic unification was based on the slender vocabulary evidences then available for Waiilatpuan, Nez Perce, and northern Sahaptin," though he himself, having done field work with Sahaptin and Molale, claimed to have demonstrated the "Shahapwailutan" relationship in manuscript comparative notes. Jacobs goes on to say:

Though I have made no specific notations of Maidu material, readings of Dixon's grammar have made me suspect that this language of northeastern California will be found either genetically affiliated with the large [Shahapwailutan] group, or possessed of very much in common with it. As to the position of the other Oregonian and California "Penutian" languages, I do not have sufficient acquaintance with either published or manuscript materials to speak with any confidence, though cursory readings show that these languages share many traits with [Shahapwailutan].⁴

We can guess that such opinions---probably to be recovered from correspondence during the 1920's---were ultimately reflected in the Sapir classification of renamed "Plateau Penutian" within the larger superstock.

The second addition, the Mexican Penutian group, consisting of Mixe-Zoque and Huave, is apparently based in part on proposals by R.B. Dixon and by L.S. Freeland for the relationship of Zoque and of Mixe, respectively, to California Penutian (Shipley 1973:1052; Freeland 1930). Later in his overview, however, Sapir wavers in assigning "Mixe-Zoque-Huave" to his Central American group "B, stocks spoken only in Mexico and Central America, so far as is known at present" (1929

[1949]:176), though at other points he surmises that these Mexican languages, as well as Xinca (Guatemala), Lenca (Honduras and Salvador), and perhaps Jicaque (Honduras) and Paya (Honduras), are Penutian outliers! Indeed, with the exception of Whorf's "Macro-Penutian" (1935:608; see Gamble 1973:61f. and Shipley 1973:1052-53) and Swadesh's (1956) lexicostatistic "Penutioid" phylum (see Gamble 1973:63-65; Shipley 1973:1053-54), both of which classifications involve vast chunks of North and Central America, there has been little further attention directed to Mexican and more southerly extensions of Penutian,⁵ which I do not consider in discussion below.

Thus, the emergence of Sapir's Penutian group can be seen as the gradual result of second or third order linkage of hypotheses of relationship between highly diverse families. The logic seems to have been something like, "If language or family x, a member of suspected larger group X, can be related to large group Y, then all members of X must be related to all members of Y"; and so on, meshing iteratively. But what holds this all together? What justifies this reasoning?

Sapir's Criteria for Penutian

If we take the information about Penutian that Sapir gives in his 1929 classification, it seems clear that his ideas were still highly influenced by "correspondences which

were first dimly brought to my consciousness years ago by certain morphological resemblances between Takelma and Yokuts..." (1921b:58). As he characterizes the group in his synthesizing article (1929[1949]:175):

The Penutian languages are far less cumbersome in structure than [Eskimo-Aleut, Algonkin-Wakashan, Nadene], but are more tightly knit, presenting many analogies to the Indo-European languages; make use of suffixes of formal, rather than concrete significance; show many types of inner stem change; and possess true nominal cases, for the most part. Chinook seems to have developed a secondary 'polysynthetic' form on the basis of a broken down form of Penutian; while Tsimshian and Maidu have probably been considerably influenced by contact with Mosan and with Shoshonean and Hokan respectively. ...subject is...differentiated...for intransitive and transitive constructions.

This is a kind of idealized Penutian type, or archetype. It is clearly differentiated by Sapir from the attested modern languages, some of which, in passing, he typologizes as follows (1929[1949]:173):

[Languages] like Takelma and Yokuts, are of an inflective cast and may be compared, for structural outlines, to Latin and Greek; still others, like Coos, while inflective, have been reduced to the relatively analytic status of such a language as English; agglutinative languages of modern complexity, comparable to Turkish, are common, say...Sahaptin.

As can be seen, Sapir projects a kind of ergative Indo-European-like parent language, with word structure much on the order of Takelma and Yokuts (the "Latin and Greek" of Penutian). He sees the typological divergences from this as due to grammatical evolution and to external influences of an ar-

eal sort. For example, Chinook shows a remarkably complex inflected word structure, with the traditional polysynthetic development of the "sentence-word." The verb, especially, has many one- or two-phoneme long morphemes strung in elaborate (and frequently discontinuous) morphological constituencies. Sapir sees this as the immediate product of an older isolating syntax, rich in word proclisis and phrasal enclisis; and this itself "a broken down form of Penutian" which is the result of phonetic changes operating on the inflective parent language. (Note that Coos is characterized as of this form also, "reduced to relatively analytic status.") Again, Maidun alone of the California Penutian families attests two highly productive derivational affix systems in verbs, instrumental prefixes and locative suffixes. Sapir (1916[1949]:458-59) sees the first as an areal phenomenon in the contiguous Maidun, Northern Paiute, Washo, Shastan, and the second in Maidun, Washo, Shastan, and Yana, both features having diffused into Maidun.

It is interesting that Sapir sees the structural type of Yokuts, within California Penutian, and of Takelma, within Oregon Penutian, as the descendant type languages par excellence. Let us examine the features of the archetype in terms of how they fit with our current knowledge of the structure of these languages, and of how important they will be for re-

solving the Penutian problem.

Make Use of Suffixes.

Yokuts, a language of extreme morphological rigidity, is entirely suffixing, with the exception of a single archaic and unproductive prefix nV(')- that can be segmented from almost half of the kinship stems. Newman (1944:221-22) calls attention to its historical value, suggesting that it "may be a survival of Penutian **n-, 'my'," giving Sapir's "Nass River Terms of Relationship" (1920) as a reference. Nass, like the other Tsimshian languages of British Columbia, does indeed have a frozen prefix n(V)- on a number of obviously old kinship terms (Boas 1911b:379). But this prefix is additionally a regular marker of alienable possession in the Coast Tsimshian language (Boas 1911b:393). Cognate prefixes seem to be found in a number of proposed Penutian languages for one or both of these functions (Silverstein ms.), casting doubt on their 'first person' origins. Furthermore, a more extensive use of adverbial and instrumental prefixes seems to have characterized reconstructible California Penutian (Silverstein 1972; 1975).

Takelma makes use of several kinds of prefix-like elements, especially in verbs, where we find strict order classes in several layers of proclisis: Incorporated Object - Loca-

tive Adverb - Instrument - Modal - [Verb Stem] (Sapir 1922:55-56,64-92). This is recent machinery, reflected in the fact that the Modal element is otherwise a strict second-position sentence enclitic. Sapir (1916[1949]:459n.58) believed that at least the instrumental prefixes (incorporated noun stems and specialized body-part morphemes) were developed by diffusion into Takelma "under Shasta-Achomawi influence." Other than this proclitic sequence, there is a unique inflectional prefix in Takelma, wi- 'first person singular', which occurs on terms of relationship only.

Sapir's idea of Penutian suffixation exclusively is best exemplified, on the whole, in the languages of the Oregon Penutian group and in reconstructed Chinookan (Silverstein 1974; 1977); while such language families as Tsimshian and, within the Plateau group, Sahaptian and Lutuamian seem to violate the scheme most. Tsimshian, which has a complicated and tightly-knit phrase-level clisis as the productive morphosyntactic apparatus, Sapir saw as having been considerably influenced by "Mosan" languages, in particular by Kwakiutl.⁶ Yet in Tsimshian we find that such few suffixes as do exist are precisely of the categories we would expect (see below).

The implication of this is that we should look for correspondences mostly in root and suffix complexes, and that prefixes should be the result of a complicated history of

structural readjustment, where they are genuinely from an earlier layer. A second implication of great import for furthering Penutian studies is that, in general, there should be a great deal of morphological debris found at the end of stems, irregularities in lexical form under derivation and inflection that would be highly probative if we could, by comparative means, project back an older functional segmentation. Thus, "irregular" verb and noun suffixal derivation and inflection would provide the most useful kinds of comparisons.

Suffixes Have "Formal" rather than "Concrete" Significance. Both Yokuts and Takelma have rich derivational and inflectional systems of suffixes. There is characteristic asymmetry of verb and noun as derivational base, both languages having only marginal verbalizing machinery for noun stems. The innermost layer of verbal derivation in both languages can indeed be characterized as more "formal" (or "relational")⁷ than, say, the proclitic complex of Takelma, because such suffixes involve the fundamental propositional relations (voice, transitivity, causativity, etc.) of the verb word. A second (rightward) layer of derivation involves various further changes in transitivity, such as ditransitivizing suffixes of various specific meanings. Up to this point, Takelma and Yokuts are parallel, but at further remove from the root, the two lan-

guages diverge. Takelma "incorporates" object pronominal suffixes, some specialized as indirect objects, and has elaborate sets of person-number subject (or subject-object) desinences, much like Indo-European "primary" and "secondary" desinences, differentiated for conjugations and for tense-modes. Possessed nouns show virtual parallelism of the relevant morphological categories. The comparison with Greek is apt in this respect. Yokuts, on the other hand, finishes the verb word with an optional set of aspectual suffixes, several of which are patently old auxiliary verbs internally reconstructible as such (Newman 1944:96-97,102-4,106-7), and finally a tense-mode or tense-aspect desinence. There is thus no "incorporation" of elements for person, and no true personal inflection. This is so of the Yokuts noun as well, inflected only for optional plurality and case.

Indeed, on a Penutian-wide scale, the Takelma type of tightly knit personal desinential inflection is a recognizable characteristic of the Oregon languages such as Coos, Siuslaw, Alsea, Kalapuya, Molale. But these have been overlain by a system of pronominals that are either attested as, or easily reconstructible as, clitic elements the position of which in a sentence is determined, as in Sahaptin, by the phrase position of the word to which they attach. Where California Penutian languages show true pronominal inflection (as opposed

to "incorporation"), they too seem to have developed it independently in only part of a family, or by patently recent elaboration (cf. Pitkin 1963:114-20 on Wintu; Silverstein 1972: 54-72, and Hamp 1966 on Miwok). Tsimshian as well shows divergence within the family in the method of personal inflection, the common and seemingly ancient Tsimshian suffixal apparatus indicating only voice and transitivity. Chinookan has an almost entirely prefixing productive inflectional apparatus of very recent date (Silverstein 1974; 1977). There are a few vestiges, however, of true aspectual and distributive (plural) suffixes now discernible (Hymes 1957), which must be carefully distinguished from compounding of "concrete" location-motion and nominal roots, a major past historical trend in Chinookan. And Sahaptian and Lutuamian, too, while elaborately suffixing, are strongly "concrete" in these respects, including directional and locative elements and subordinate verbal roots. Except for certain irregular theme-classifying markers and specialized voice and transitivity debris, these languages diverge sharply from Sapir's Penutian model.

The productive typological indications, then, point away from the Takelma or Yokuts (or Indo-European-like) type of system with derivational suffixation and inflectional desinences (including person). However, it is clear that all the most highly divergent languages in the proposed superstock

have numerous parallelisms in whatever ancient or moribund suffixal material remains; these are indeed "formal" or "relational" categories represented, and frequently strikingly parallel in shape. The Oregon group as a whole, I think, rather than Takelma in particular, represents the fruitful archetype to guide comparison. And, in this light, "formal" prefixal material is thus suspect for comparative purposes.

Many Types of Inner Stem Change.

Both Takelma and Yokuts are exuberant in this respect, though the nature of the alternations differs in some degree. Takelma has some 22 types of vocalic length, consonantal glotalization, and final reduplicative combinations for aorist vs. non-aorist forms of verb stems, about 8 of the combinations productive, and some used as well for other, inherently aspectual distinctions (Sapir 1922:95-117). The noun, by contrast, shows only a few, etymologically relevant such stem forms (Sapir 1922:215-21). The verb stem alternations are fairly independent of the suffixal apparatus in Takelma, having inherent grammatical value in and of themselves, though certain stem forms occur with only certain combinations of inflectional desinences (which differ for the aorist vs. non-aorist categories). Additionally, there is a morphologically conditioned qualitative ablaut of underlying stem vowels o to

u (or ü), a to e, i being unaffected, depending on the presence or absence of certain suffixes in all layers of derivation and inflection.

Thus, formally, there are four processes, implemented in different combinations in specific morphological environments. Yokuts shows all of these, but in somewhat different distribution. Reduplication, a "natural" or "iconic" process (Sapir 1921c:76-78), need not concern us from the comparative-historical point of view, save for observing its obvious ubiquity. But additionally, Yokuts shows a most pervasive and rigid system of root vowel quantitative and qualitative ablaut, and of stem consonant glottalization, all under strict morphological conditioning. There are eight underlying root vowels in Yokuts, long and short a(·), o(·), i(·), u(·), with rigid harmonic consistency in the root. Each combination of root-plus-suffix uses one from among a set of "dynamic vowel formulas" (Newman 1944:38-53) which specifies the quantity and (partly by automatic phonological rules) the quality of the resulting vowels of the derived inflectional stem. It is clear on internal morphophonemic reconstruction that the Yokuts system of ablaut, which interacts with a word-level automatic phonological vowel harmony, has resulted from a restructuring of vocalic length (or "rhythmic") alternations as well as qualitative alternations. Additionally, there are various suffixes,

especially aspectual ones, which are said to have "floating glottal stop" (Newman 1944:15,17) resulting in the glottalization of a resonant second consonant in a stem. The indication from frozen glottalized nonresonant second consonants is that this is the phonological debris of a once more widespread morphological process.

The dynamics of stem processes in these two languages are highly developed, to be sure. But we find what seem to be some comparable part or parts of this kind of system in the morphophonology of Wintun, of Miwok, of Costanoan, as well as of Coos, of Sahaptian, and of Lutuamian, all of which provide an obvious avenue down which the demonstration of Penutian must proceed.

The three cited California Penutian families all have stem ablaut that is morphologically conditioned, Wintun both quantitative and qualitative, Miwok(-Costanoan) principally "rhythmic" or length (including three grades of vowels, zero, short, long); these show many specific parallels in type to the Yokuts phenomena. Within Coast Oregon Penutian, Siuslaw uses noun stem ablaut as a declensional marker. Coos and Klamath (Lutuamian) have vowel-zero alternations in different stem-forms of roots, but more interestingly show various "vowel harmony" processes that are principally morphologically conditioned and parallel to the Takelma-type of interchange,

a with e, o with u (these are all five-vowel systems). Sahaptian has generalized this older morphologically-conditioned interchange into a kind of abstract, morpheme-level vowel harmony with a "dominant" series of morphemes (containing *a, *o) and a "recessive" series of morphemes (containing *e, *u), *i-morphemes originally neutral (see Aoki 1966; Jacobsen 1968; Rigsby & Silverstein 1969). The families with three canonical vowels, Tsimshian and Chinookan, do not seem to show any surface traces of this phenomenon, though there may be a promising lead in Chinookan palatalized reflexes of consonants (Sapir 1926) pointing to an earlier system of five vowels.

In comparative terms, it is clear that the systems of stem vowel modifications form the most central morphophonemic apparatus of the California Penutian families. In the other languages, where we find suitable vowel systems there are important morphologically-conditioned stem vowel processes and harmonic processes. Similarly, glottalization, a clear morphologically-conditioned stem process in Takelma and Yokuts, has traces in other languages, such as Coos and Kalapuya, that bespeak importance to stem formation independent of the usual diminutivization alternations.

The processes subsumed under this typological point, then, seem to be central organizing principles of Penutian comparison, without consideration of which no accurate phonological

equations will be achieved. In a great number of these languages, any stem to be cited is already a very complex morphological formation; and it is only by seeking the history of such formations---including, note, reduplication, quantitative and qualitative ablaut, and glottalization---that we will be able to make progress in historical phonology.

True Nominal Cases.

While Yokuts has a well-developed (six-member) and clearly ancient system of nominal case-marking on both substantives and pronouns, Takelma does not. In Takelma the syntactic relations of nouns are coded by word order and by two systems of cross-referencing already referred to. Pronominal elements are "incorporated" in, and also appear in inflectional desinences on, verbs. Thus possibly only the debris of a true nominal case-marking system could be found, in certain frozen post-stem "characteristic" suffixes akin to noun declensional morphs (to continue the Greek analogy). But Sapir himself (1922:212) argues against this.

If we look at the other members of the proposed Penutian, we find that desinential case systems are ubiquitous in the California subgroup, on both substantives and independent pronouns; and this feature characterizes the members of the Plateau subgroup as well. Of the Oregon languages, Siuslaw has

a clear substantival case system of four cases, including weak and strong ablaut forms of stems, while it shares with Coos a near identity of systems of proclitic "discriminative" (ergative) markers. In Tsimshian, only Coast Tsimshian has an elaborate system of final postclitics, called "connectives" (Boas 1911b:354-63), on every major lexical constituent of the sentence, indicating the syntactic relations between preceding and succeeding major lexical constituents, "case" being thus perhaps epiphenomenal. But all the Tsimshian languages have at least one special case-like suffix (generally -(a)m) to indicate attributive modification. This shape recurs as basic attributive or genitive in many of the case languages in Penutian.

The question of how nominal case should influence our thinking about Penutian can not, of course, be resolved merely by head-counting. To be sure, advances in the study of syntax have clarified the distinction between case-relations of the proposition (a semantic schema) and case-markings of the clause or sentence (a surface-syntactic schema). From a syntactic viewpoint, there are many different kinds of systems for coding case-relations at the surface of language, pure desinential nominal case (whereby is indicated the derived case-relation of the very noun on which it occurs) being just one of many typological possibilities. Indeed, the families consid-

ered here as Penutian show virtually the whole range of possibilities, from strict constituent order (Tsimshian) to cross-referencing by "incorporated" pronominals (Chinookan) to true nominal case-marking (California Penutian). Mostly, there are combinations of partial systems of a particular type in any one language, certain groups of case-relations only being indicated by any one kind of system.

So for comparative purposes the focus must be on how specific comparable case mechanisms interact with other formal categories of the sentence (for example, voice, tense-aspect, inherent nominal referential content, main vs. subordinate predication, etc.). When expressed in terms of formal consequences for allomorphy in lexical forms, answers to these kinds of questions are of central importance to Penutian comparison: the answers determine morphosyntactic comparability of grammatical forms that make lexical correspondences probative.

Differentiation of Transitive and Intransitive Subject.

Such a distinction characterizes Takelma subjective verbal desinences, in this language with no case-marking system for independent substantives. (See Sapir 1917 for a complete typology of North American languages.) There is a distinct set of subjective desinences for true transitive themes, for "ac-

tive intransitives," and for middles (or statives). Yokuts, on the other hand, has a straightforward Indo-European type of subjective or nominative case, used for all surface subjects.

The situation here is somewhat more complicated than appears at first, because, I sense, Sapir was alluding to the structural type we now call "ergative" case-marking, which is never a pure type, but rather occurs universally as a system of split case-marking, the splits depending on any of a number of categorial properties of the elements of a clause (see Silverstein 1976 for the general outlines and application to Chinookan). For example, one very common conditioning factor of the ergative marking in these Penutian languages is the relationship of person categories in semantic Agent and Patient, which I have termed a "global split system."

In such a system, which results from the implicit ranking of noun phrase types as good or poor Agents and Patients, different Agent-Patient combinations of first-on-second, third-on-first, etc., will have distinct inflectional forms. Such global splits are characteristic of Tsimshian, of Chinookan, of Oregon Penutian, of Plateau Penutian, but not of the California Penutian languages. But since this is a universally-expectable phenomenon (with many parallels in North America and elsewhere), it is not of great interest except as there is attested or reconstructible formal parallelism of the machin-

ery for splitting the case system. Note that the Tsimshian languages manipulate the sequence of constituents and the shapes of inflectional pronouns, differentiating a special global ergative for first or second person Patient forms (Boas 1911b:383-92). Coos, among the Oregon languages, has a "discriminative" noun proclitic x- (etymologically probably a topicalizer) following the definite article to mark globally poor third person Agents (Frachtenberg 1922a:324-25). Siuslaw uses a "discriminative" (ergative) proclitic q- just on pronouns and terms of relationship, while all other lexical noun phrases have stem vowel ablaut as the ergative mark (Frachtenberg 1922b:462-63,570-72). Sahaptin has a split ergative system that uses a combination of enclitic pronouns, first position verb prefixes, and nominal case desinences (Jacobs 1931:124-28,143-46,226-29,244-57). Given this wide variety of formal apparatus, there are few, if any, conclusions to be drawn just on the basis of the occurrence of split ergativity.

But such mechanisms also impinge on word formation, and can aid us especially in trying to understand possible relationships between case languages (where lexical forms have multiple shapes depending on the morphophonemics of a paradigm, e.g., ablaut) and cross-referencing languages (where nominal forms tend to be invariant). Sapir surmised not only that the Penutian archetype was a case language, but also that

it was ergative in character. I think that we must reformulate this as a research question in the following way: what kind of split ergative system would account best for such formal and functional case-alignments as do seem to exist among the various families with nominal case-marking, and how does this fit with the data of the cross-referencing languages, every one of which shows some degree of ergative split? There must be consequences at the level of lexical form in order to make any such argument, especially since split ergativity itself is a phenomenon well represented in Western North America (though it goes under various names in the distinct traditions of Americanist scholarship).

Methodological Problems in Substantiation

I think it is fairly clear that the investigation of Sapir's Penutian superstock cannot proceed except by refining the kinds of assumptions he made about morphosyntactic structure as they provide the basis for specific comparisons of lexical form. There has been an unfortunate countervailing tendency in Amerindian linguistics, particularly debilitating in problems of remote relationship like Penutian, to see phonetic (i.e., phonemic) correspondences and the establishment of "sound laws" using isolated lexical forms as something different from, or discontinuous with, or even opposed to consideration of morphosyntax.⁸ Of course, the achievement of a

statement of regular phonemic correspondences and sound laws is the strongest and most desirable means of proof of relationship of lexical forms, precisely because the corollary historical hypothesis is that the forms in question are morphosyntactically identical (or that morphosyntax is irrelevant to the comparison), no systemic change other than regular additive phonological rules being relevant to tracing a complete etymology from a common earlier form. When we approach the level of Penutian comparison that Sapir proposed, we are beyond the realm of obvious morphosyntactic comparability of forms; and this is true, though to a much lesser extent, even in Dixon & Kroeber's original California Penutian group.

To be sure, Penutian comparative linguistics, like any such endeavor, rests on the fundamental "arbitrariness" of forms compared and reconstructed. But, as Saussure clarified, linguistic signs defined by relations of opposition are "relatively arbitrary" or "relatively motivated" to different degrees within each given linguistic system. This is measured by the extent to which lexical forms are irregular or regular in being analyzable by proportional form-meaning differences. Hence, the most interesting comparisons for the historian of language are those lexical forms with the greatest arbitrariness within their own respective grammatical systems. Such correspondences provide the surest basis both for proof of re-

lationship and for productive descriptions of historical development, for showing how erstwhile regularities have become irregularities. Sapir's proposals about Penutian grammatical structure do indeed point to particular structural features of these languages that will be of considerable importance in justifying comparisons of lexical forms; to different degrees in the various subgroups, they do provide the metric of "relative arbitrariness" of lexical forms we may compare. (See Silverstein 1972, 1975 for the application of this perspective within California Penutian; Hymes 1957, 1964b on a Penutian-wide scale.)

On the other hand, as I hope has been made clear by my review of the constitution of the Penutian hypothesis in its full form, and of the typological hypotheses, Sapir saw many specific features of the proposed Penutian languages as fundamental innovations of grammatical structure. This implies both subgrouping, from the Penutian-wide point of view, and reconstructive linguistics at more intimate time depths, from the point of view of the specific constitutive families. It is to these problems that I now briefly turn.

Work Towards Solidifying the Subgroupings

Since the notion of a linguistic family, and its implied proto-language, is only a heuristic for giving etymologies and thus for describing linguistic history,⁹ we must ask about the

utility of the subgroup labels. In terms of our present understanding, we can give estimates of how useful such labels are in explaining known features and forms of the attested languages. Again here, there are implied hypotheses about what initial structural starting point is reasonable and fruitful for explaining lexical forms in attested languages, and such qualifiers as "established," "virtually certain," "probable," "possible," and "improbable" (never "impossible") must be interpreted in this way.

California Penutian.

This is established or at least virtually certain. Even when we consider the great divergence of these families, there remain numerous points of structure common to these families that require California Penutian etymologies for lexical forms showing them, including here several complex stem formations (Pitkin & Shipley 1958; Broadbent & Pitkin 1964; Silverstein 1972; 1975). California Penutian word structure is extremely complex (Yokuts, for example, having provided Sapir with a model in this respect), every stem form being highly grammaticalized in terms of vowel morphophonemics and other morphological processes. It will be only in terms of working through these processes, rather than attempting to work in spite of them, as so many of the spurious earlier comparisons show,

that any real progress will be made in this quarter.

Within California Penutian itself, there is the question of subgrouping into the traditional two intermediate subgroupings of Dixon & Kroeber (Wintun-Maidun-Yokuts vs. Miwok-Costanoan) or some other subgrouping, or none at all. Clearly, Miwok-Costanoan (or "Utian"; cf. Shipley 1973:1056n.16) is a single subunit, though not on the purely phonological grounds proposed by Callaghan 1967 (Silverstein 1972:170-71). But the other subgrouping possibilities are not yet firmly decided. One suggestion (Silverstein 1975) is that Maidun-Yokuts forms a subgrouping that has innovated in several important respects, attested Maidun languages diverging only more recently from the rhythmic and structural patterns of some Yokuts-like ancestor.

While this is an unsettled issue, it is not so radical a proposal as that of Whistler (1977:172) that "the hypothesis of a California Penutian kernel is dead...Penutian entry to California must have occurred in several stages and likely from different directions." This seems to conflate the question of diverse geographical migrations into new ecological zones, resulting in loanwords, with the question of common historical origin, whatever the *Urheimat*. Nevertheless, we find here an interesting, archaeologically-based argument that the California Penutian languages have all come from the

north (and perhaps northeast) to their historical areas. The received opinion has been based on culture-geographic distribution of the California Penutian families; it sees a radiating spread out from the region of San Francisco Bay, and in particular a late northward movement of Wintun speakers (Kroeber 1925:349-50; Sapir 1916[1949]:459-60).

That there has been a long-term series of southern movements from the north is, of course, in keeping with the relationship of the California languages to those of Oregon and beyond. One problem in seeing this relationship has, I think, been the great divergence of the sound systems of the California Penutian languages from the other proposed Penutian languages, in which we find characteristic Northwest Coast-Plateau types of phonologies. Certainly, of the California Penutian languages, only Wintun (and, diffusionally, Lake Miwok in part; cf. Callaghan 1964) has anything near the richness in consonantal inventory of the typical more northerly language. I think, however, that attention to morphophonemic alternation in a framework of giving a total morphosyntactically-motivated etymology for California Penutian lexical forms will in fact lead to reconstructions that are phonemically much more northerly in form than has heretofore been suspected (cf. Hymes 1964a:215). This will include re-evaluation of some of the phonemic correspondences already proposed within the several

California Penutian families which were based on only a fragment of a single stem form of a derivational or inflectional set (Silverstein 1972 *passim*).

Oregon Penutian.

It is not clear that this is a unified and separate grouping, although in structure these languages show a real homogeneity, as compared with the whole of the proposed Penutian languages, determining numerous parallel morphemic constructions. Unfortunately, the specifically comparative work on some of the constituent families of this possible grouping has been of a schematizing phonological kind. This has resulted in only a small number of essentially identical partial sound correspondences in a few stems (on Coos see Pierce 1965; on coast families and Takelma, Pierce 1966; on Takelma and Kalapuya, Swadesh 1965, Shipley 1969, 1970). As was indicated above, rather than a schematized phonology, in terms of which glottalization is ignored, vowel ablaut formulae ignored, etc., we need attention to these very central morphological features to substantiate comparisons among these languages.

Nevertheless, that there is a relationship between Takelma and Kalapuya is virtually certain; whether or not there is the kind of exclusivity that would justify Swadesh's label "Takelman" (1965:237) is unclear, however, since the phonological

identities proposed have been won at the expense of morphology. In this connection we should compare Coos, the relationship of which to Takelma is highly probable (Swadesh 1964:184-91). The existence of any "Coast Oregon Penutian" grouping is very problematic; and closer relationship between Siuslaw and Alsea must be careful to separate out a layer or layers of apparently massive borrowing (see Frachtenberg 1922b:438,461-62).

I think that any statement of relationships at a level comparable to Sapir's Oregon Penutian will have to take into account Molale as well, which seems structurally integral to this set of languages, though previously grouped by fiat elsewhere.

Plateau Penutian.

This "Shahapwailutan" grouping is very improbable. As we have seen, it goes back to Powell himself. But within it, the Wailatpuan subgroup of Molale-Cayuse has little to support it (Rigsby 1966, 1969). It appears to me from a survey of the Molale data that, if anything, it will probably be more directly related to Kalapuya-Takelma and the other "Oregon Penutian" languages. Similarly, although there are many points of comparison between Sahaptian and Lutuamian, and although Aoki (1962, 1963) has presented some interesting morpheme comparisons, it seems to me that Klamath (Lutuamian) has strong

possibilities for relationship with California Penutian (see Shipley 1966), and Sahaptian for relationship with the Oregon languages, particularly as this might be the correct avenue of historical explanation for systems of derivational morphology and inflectional theme formations. Sahaptian itself is now an established family ready for precise systematization of history beyond the statement of correspondences (see Aoki 1962, 1966; Rigsby 1965; Jacobsen 1968; Rigsby & Silverstein 1969). So far as we now know, Cayuse is a poorly attested language isolate.

Chinookan and Tsimshian.

These are both established small families of (in Penutian-wide terms) closely related languages, in which there is good control over many historical developments.

The Penutian affiliation of Chinookan is probable, given the way internal reconstruction (Sapir 1926; Silverstein 1974, 1977, in press) is revealing a history of innovations away from a Penutian-like base, substantiating several of Sapir's historical insights. I suspect this Penutian affiliation will be most directly at a level that includes the "Oregon" languages and Sahaptian.

Tsimshian, if related, is more problematic, since the kinds of traceable morphosyntactic relationships I have so far

discerned (Silverstein ms.) involve the very phrasal syntax that Sapir projected as Kwakiutlized. We will obviously have to turn our attention to careful comparative study of lexical formations with derivational suffixes, to make any progress on this front.

Notes

1. For admirable reviews of the history of work on these languages, both descriptive and comparative, see especially four recent sources, Shipley 1973, Gamble 1973, Thompson 1973, and Okrand 1974. I do not attempt here to duplicate their excellent bibliographical coverage.
2. Since it is important for the argument here, I should specify that I intend this term in Bloomfield's (1933:162,166, 274) sense of "all forms that can be stated in terms of [segmental---MS] phonemes, including even such forms as already contain some grammatical features" (1933:264), and of which the smallest unit is the morpheme---any morpheme. This was the standard usage prior to the 1940s.
3. The relationship of Miwok and Costanoan had been stated or suspected earlier (Latham 1856; Gatschet 1877; Kroeber 1910; contra, Powell 1891), and Miwok-Costanoan is listed as a group in Sapir's (1929) classification.
4. It should be pointed out that in Boasian discourse, such

as this, "traits" of languages are grammaticalized lexical forms, here being judged comparable among the languages, and hence, in an historical-diffusionist sense, "shared."

5. Note for example Diebold's (1961[1964]:506) statement, "The genetic pedigree of Huave awaits further comparative investigation." Compare L. Campbell (this volume). Hymes' (1964a) lexical sets include Mixe and Zoque forms, however.
6. Compare Boas' description in the grammatical sketch (1911a: 440) available to Sapir:

The position of words in the sentence is determined by syntactic particles. The parts of the sentence are held together firmly, and their position is definitely determined by their coalescence with syntactic elements which indicate the relations of subject, object, instrument, and possession. By this means the whole sentence is knit together so firmly that a separation into words is quite arbitrary. The firmness of this word-complex is due largely to the complete phonetic coalescence of the syntactic particle with the preceding word, and to its function as determining the syntactic value of the following word. It is of course impossible to determine whether this is an original trait of the language, or whether it is due to a phonetic decadence of the syntactic elements, similar to the one that may be observed in French in the combinations between verb and pronoun.

7. The term comes from Sapir's general schema for the types of grammatical categories (or concepts), as found in his Language (1921c[1949]:101ff), the "relational" or "formal" pole of morphology "indicating or implying relations that transcend the particular word to which they are immediately attached" and "relating the concrete elements of the proposition to each other, thus giving it definite syntactic form." That is, such

morphological elements, though word-bound, can be analyzed only with respect to the propositional (referential) content of the entire sentence.

8. This is a complicated problem in the history of linguistics itself, which would require careful documentation starting at least from the nineteenth-century heritage of "typological"-genetic classification by gross grammatical characteristics vs. inspectional lexical resemblances; a dichotomy of method characterized by Haas (1969) as "grammar or lexicon?".

One would have to show the way Bloomfield's and Sapir's achievements in establishing Algonquian, Uto-Aztecan, and Athabaskan historical phonology have served as models for resolving the false dichotomy in favor of "lexicon"---though the technical sense of that term has changed (cf. note 2). And, most importantly, one would have to trace this attitude more recently to the heritage of post-Bloomfieldian linguistics, which was hostile to European synchronic and diachronic practice, and innocent even of the actual theoretical and methodological apparatus of Bloomfield and Sapir.

9. Perhaps there is an increased understanding of this principle now, which might explain why we are in a period of less enthusiasm for large-scale "reductions" in Powell (1891) classificatory groupings than was the case formerly, when ethnological, rather than purely linguistic, history guided comparison.

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Salishan and the Northwest

Laurence C. Thompson

1. The Family

The Salishan¹ family is large--some 23 languages extending aboriginally over most of the present state of Washington, much of southern British Columbia, northern Idaho, and western Montana, and a small area of the north Oregon coast. The diversity of tribal groups embraced was well understood by the late nineteenth century (J. W. Powell 1891:102-5), but the number of distinct languages involved remained vague until recently, and subgrouping is still a problem: only now is there beginning to be sufficient descriptive work to clarify dialect continuities and permit the comparisons necessary to distinguish shared innovations from common retentions.

Boas recognized twenty "dialects" (what we would now call languages), and saw a major cleavage between the Interior and the Coast (Boas and Haeberlin 1927). Studying percentages of cognates in the core vocabulary represented primarily in the word lists Boas had assembled, Swadesh (1950) identified 23 languages (although not all the same ones we now recognize) and four main divisions of the family, adding the northerly and southerly detached enclaves Bella Coola and Tillamook on a par with Interior and Coast, the latter in turn with further

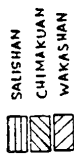
ramification. Current research has led to a somewhat different interim classification, shown in Table 1. While such family-tree type schemes obscure many diffusional effects and other similarities, they do give some notion of the way we think a primitive unity was successively modified and split up.

Table 1. SALISHAN LANGUAGES

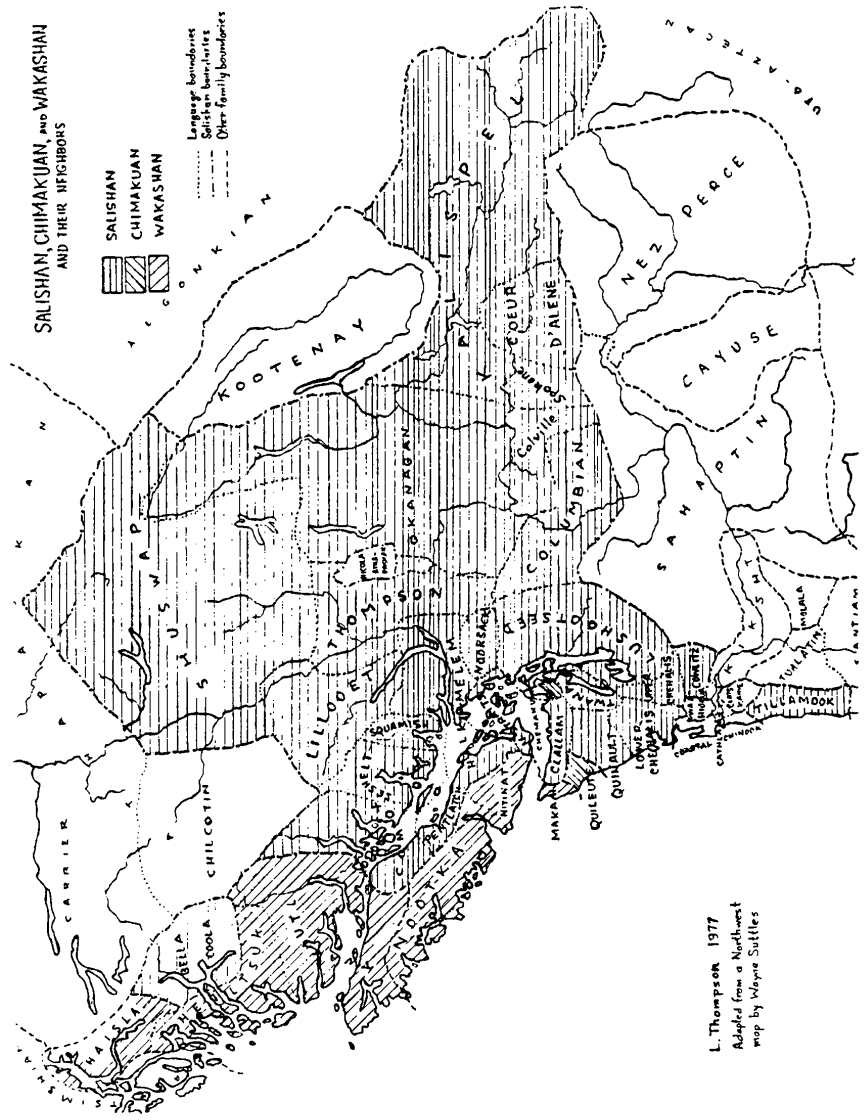
Bella Coola (Be)	(Main body, continued:)
Main Body:	Tsamosan Division
	Inland
Coast Division	Upper Chehalis (Ch)
Central Salish	Cowlitz (Cz)
Comox (Cx)	Maritime
Pentlatch (Pt)	Quinault (Qn)
Seshelt (Se)	Lower Chehalis (Lo)
Squamish (Sq)	
Nooksack (Nk)	Interior Division
Halkomelem (Hl)	Northern
Straits	Lillooet (Li)
Clallam (Cl)	Thompson (Th)
Northern Straits (Ns)	Shuswap (Sh)
Lushootseed (Ld)	Southern
Twana (Tw)	Columbian (Cm)
Tillamook (Ti)	Okanagan (Ok)
	Kalispel (Ka)
	Coeur d'Alene (Cr)

It seems likely that the Proto-Salishan speakers originally settled along the shores of the protected inland salt waterways, around the mouth of the Fraser River or nearby. Under the pressure of increasing population, favored by the bountiful food supply, the group must have expanded gradually along the Gulf of Georgia to the north and Puget Sound to the south, developing distinctive regional ways of speaking.

SALISHAN, CHIMAKUAN, and WAKASHAN AND THEIR NEIGHBORS



Language boundaries
 Salishan boundaries
 Other family boundaries



L. Thompson 1977
 Adapted from a Northwest
 map by Wayne Suttles

Eventually, whether by original removal to a distant village site or by the encroachment of alien (Wakashan) peoples severing their connection with the central mass, the ancestors of the Bella Coola were isolated far to the north. Probably somewhat later a considerable group left the central body and crossed the mountains into the interior plateau country, developing eventually seven distinct Interior Salish languages and stretching across northern Idaho to western Montana. About the same time a southerly group broke away and went to occupy the flat wood- and prairie-lands to the south of Puget Sound, eventually expanding toward the open ocean and occupying the Pacific littoral. This is the group we now call Tsamosan (Swadesh's Olympic)--four languages. But probably before they reached the ocean another fragment--ancestors of the Tillamook--left the southern end of the central body and eventually settled south of the Columbia River on the north Oregon coast. Meanwhile the central body itself had diversified, but, maintaining greater contact through a network of family and other social ties, it continued to act as a diffusion area, giving us ten historic languages strung out along the inland waterway. Two of these--Clallam and Northern Straits--share many innovations and form the Straits subgroup; in fact, they are so similar that some scholars (following Boas) consider them dialects of a single language, despite limitations of mutual intelligibility.

2. Salishan Typology

Table 2 gives a generalized phonological chart; individual languages differ from this in various details. What we find is a rich consonantal system with extensive matching in articulatory positions between obstruent and sonorant subsystems.

Table 2. GENERALIZED SALISHAN PHONOLOGICAL SYSTEM

p	t	c		k	q	k ^w	q ^w	ʔ
p'	t'	c'	χ'	k'	q'	k ^h	q ^h	
		s	ʃ	x	ç	x ^w	ç ^w	(h)
m	n	(r)	l	y	(ʎ)	w	(ʎ ^w)	
m'	n'	(r')	l'	y'	(ʎ')	w'	(ʎ' ^w)	
				i		u		
						ə		
						a		

Among the obstruents (basically voiceless), stops and affricates pattern together and oppose plain and glottalized ejective manners; corresponding voiceless fricatives form a third manner. The gaps in this system are also characteristic--in fact, of the fifty-odd languages of the Northwest only four have a labial fricative, and, although the unglottalized lateral affricate is quite common in other Northwest languages, only one Salishan language, Comox, has it as a rare, obviously borrowed phoneme. The prevelar-uvular oppositions are also

strongly characteristic. However, where we show here a k-series (prevelar), many Salishan languages have instead an alveopalatal \check{c} -series, which is to a great extent functionally equivalent; a few languages have both series. The opposition of rounded and unrounded velars is again generally characteristic of the area. Two Central Salish languages--Halkomelem and Comox--have an interdental affricate series (t^θ , θ , and marginal t^θ). In all the languages except Tillamook h is infrequent.

The sonorants in parentheses appear in relatively few languages--all Interior. Tongue-tip flaps and/or trills (r, r') are limited to Southern Interior languages (in Kalispel only in the Spokane dialect). Sonorants that fit the uvular series are general for Interior Salish; they are typically articulated as pharyngeals or with pharyngealization. Northern Interior languages and northern dialects of Okanagan have a rare set of prevelar voiced fricatives (γ, γ'). On the Coast the small Straits Salish group has velar nasals η, η' . Several languages lack l, l' , having converted earlier voiced laterals to semi-vowels, usually y, y' .

Vowel systems are usually small, although vowels often exhibit wide variation. The central lax vowel ə , in particular, adapts strongly to its consonantal environments, and in many cases the foreign ear has great difficulty recognizing

whether a variant of ə or one of the tense vowels is being heard. Many occurrences of unstressed lax vowels are predictable in their environments, while others contrast, making analysis complicated. Some languages have developed more complex vowel systems, further adding to analytical problems. Interior languages all show some adaptation of vowels to retracted tongue-root position, which is inherent in postvelars and r, r̥; there are likewise cases where such retracted vowels appear without conditioning factors.

Most languages show alternations between stressed and unstressed realizations of morphemes--the stressed occurrences having characteristic tense vowels, the unstressed versions having ə or no vowel at all. When vowels disappear adjacent to sonorants, these sonorants become partly or wholly syllabic. In the case of semivowels they are simply replaced by the corresponding vowels; thus there are important morphophonemic alternations between y and i, w and u. On the other hand, disappearance of vowels can also leave long strings of obstruents. One language, Bella Coola, has gone to the extreme in this, presenting whole utterances without vowels. Rounded elements have important interrelationships as we might expect: for many languages the contrast between plain and rounded velars is neutralized before and/or after u.

The grammar is likewise complex. Usual clauses begin

with a predicate, the only obligatory element. This can be followed by one or more subordinate phrases elaborating references implicit in the predicate, or providing additional information. The heart of the predicate is a transitive or intransitive word. It is often accompanied by one or more particles detailing such information as aspect, relative time and place, degree of validity, and so on. Transitive words imply agents and patients. Intransitives are varied--some indicating actions or states, much like familiar English intransitive verbs, but others referring to entities more like English nouns; these are asserted as existing or identified ('there is a man', 'it is a stone', etc.) With the addition of appropriate affixes or particles fully inflected forms (both transitive and intransitive) can be marked for use not as the predicate of a clause but as one of the adjunct elements, so that these now can be seen as subordinated predicates. Words then fall into two major categories: full words, which can appear as predicates, and particles, which cannot. In such a system the familiar opposition of noun and verb seems alien and misleading as a descriptive device. One type of particle is especially characteristic throughout the family: deictics clarify the relationship of the predicate and of entities connected with it to the situation in which the speech act occurs, and the knowledge and experience of the speaker and hearers.

Full words can be quite simple, consisting only of a single root, but more commonly involving several morphemes. For most of the languages prefixes are limited to a few important ones, but suffixes are legion. There are also a few infixes, and all the languages make quite extensive use of reduplicative affixes. In addition to a host of grammatical affixes there is also a large body of suffixes that carry lexical meaning, now usually called lexical suffixes (following Kinkade 1963:352). They cover a number of semantic classes such as parts of the body, other familiar elements of nature, various artifacts, and some concepts; they are frequently extended to metaphorical and abstract uses. Words commonly have up to three of these. Transitive words indicate both object and subject, in that order, as suffixes after the ubiquitous transitive marker -t (although it is frequently disguised by morphophonemic developments); third person object, however, is zero. Other affixes indicate the kind of relationship between subject and object, some aspectual information, the extent of control involved, etc. A single word can thus incorporate a large number of semantically discrete ideas. Morphophonemic changes often obscure the underlying shape of stems and/or affixes. This complex of factors justifies the label polysynthetic.

3. Comparative Phonology

3.1. Boas.

Comparative Salishan begins with Boas and Haeberlin (1927), which sets forth the most important sound correspondences. It was originally intended as an explanatory essay to accompany vocabularies in 35 Salishan dialects, including at least one representative of all 23 languages. (In this full documentation, which has remained unpublished [Boas et al MS], Boas recognized the weak quality of the phonetic recordings; his brilliance and his own practical experience with many of the languages enabled him to transcend their limitations.) While no formal reconstructions are provided, the discussion presumes the direction of change in most cases, so that one can infer quite well the sort of reconstruction intended (Table 3). The proto-phonemes listed without parentheses are specifically mentioned as presumed earlier stages in the statement about shifts; those in parentheses are exemplified as essentially identical elements unchanged in most languages. One sees emerging here the typical Northwest phonology just outlined. The ejectives, however, are very inconsistently recorded in the material, and only *k' is specifically mentioned. (As we might expect, the discussion includes some statements that have subsequently proven erroneous; we shall ignore those in the summary except where they are important to an understanding

of the evolution of the historical phonology.)

Table 3. PROTO-SALISH PHONEMES
INFERRED FROM BOAS AND HAEBERLIN (1927)

p	t	(c)		k	q	k ^w	q ^w	(?)
(p̣)	(ṭ)	(c̣)	(ʃ̣)	ḳ	(q̣)	(k ^{ẉ})		
		(s)	(ʃ)	x	ɣ	x ^w	ɣ ^w	(h)
m	n	l	y			w		
			i			u		
				a				

Most of the material on which this comparison depended was collected either by Boas himself during the last two decades of the nineteenth century, at a time when, to quote his own comment, he "had not mastered sufficiently the art of clear phonetic perception and rendering" (Boas and Haeberlin 1927:117), or by James Teit, who was still less experienced and only sketchily trained. Forms for some languages are cited from earlier sources which reflect still less sophistication. A notable exception, however, is Sapir's Noun Reduplication in Comox (1915b), based on a few sessions with a Nootka informant whose mother was Comox; it includes comments about the apparent history of some sounds and identifies some words as Wakashan loans.

The main set of shifts discussed is the one involving the palatalization of simple prevelars; rounded prevelars were not so affected, nor any of the uvulars. Boas points out that

prevelars and uvulars have often been confused by field workers recording these languages (an observation confirmed by recent field studies), so that some of the apparent anomalies are to be explained this way. Yet there are cases where many languages show rounded prevelars which correspond to alveopalatals in other languages. We shall see that this problem leads to some important insights later.

Examples are given for *k and *x, which appear unchanged or somewhat fronted in Lillooet, Thompson, Shuswap, Columbian, and Okanagan of the Interior Division, in Bella Coola, and commonly in Cowlitz of the Tsamosan Division. In all other languages they have shifted, primarily to alveopalatals č, š. The two areas showing the shift are discontinuous, with Kalispel and Coeur d'Alene to the east of the k-x block, the rest of the languages to the west of it.

Another important shift affected eastern Interior languages: *a is fronted and raised to i in Okanagan and Coeur d'Alene, while (Boas says) Columbian, Lillooet, Thompson, and Shuswap retain the original vowel. The notations in these other languages show a quite regularly in the etymologies offered; this is of considerable interest, because although the data are full of inconsistencies and vowels are surely difficult to perceive, it seems unlikely that so many words would have been so consistently mis-perceived as containing a:

mid-twentieth-century investigations of Lillooet, Thompson, and Shuswap reveal regular fronting of the vowels involved, so that recent recordings show [æ] and [ɛ] type pronunciations. Boas notes quite a high [e] before y in Thompson, which is still the case; this may well have been the start of a sound shift that has taken place during the past half-century or a little more. Thompson speakers still sporadically produce [a] rather than [æ] or [ɛ], so the change is not yet completed.

Boas observes just such a change affecting Halkomelem among the Central languages, with neighboring Nooksack and the Lkungen dialect of Northern Straits sometimes showing it. He cites examples with more conservative [a] in Squamish, Seshelt, Pentlatch, Comox, and Lushootseed, and in the Lummi dialect of Northern Straits. By the 1950s all Northern Straits dialects, including Lummi, showed this shift. (Nooksack seems also to have nearly generalized it.) So it seems this innovation may have started with Halkomelem (where in fact, quite a high vowel, close to cardinal [ɛ] or higher, is usually heard) and spread to neighboring Nooksack and Northern Straits. The Northern Interior languages were then between two areas where original *a was being fronted and raised. A similar change can be inferred for Tillamook, for which Boas' own recordings show almost invariably [a]; but recordings of the 1930s show many cases of [æ] and considerable vacillation; in the 1960s,

the last known speakers of the language used almost exclusively [æ, ɛ] in the pertinent positions.

Boas signals *l developed to a semivowel in several languages--usually y (appearing as i, as does inherited Y, between consonants or between consonant and pause): thus in Thompson and Clallam, and often in Squamish. Comox, on the other hand, has w for *l in the environment of u, and sometimes *l is apparently simply lost. More localized is the change of *y to an unusual z-sound (an alveolar slit spirant) in Lillooet and Thompson.

In Comox, original semivowels become voiced stops/affricates (*y > ʃ, *w > *g^w > g^y); Lushootseed has a parallel development resulting in d^z g^w. Boas also refers to corresponding č in Straits and suggests y in other languages may be a later development. Part of the confusion is due to the troublesome distribution of sibilants in the languages around the mouth of the Fraser. We now know that in mainland Halkomelem there is partial complementation and free variation between [s] and [š], [ts] and [tš], while in the island dialects and in Straits languages those elements are in contrast. However, in Northern Straits C has a quite limited distribution. Both there and in Clallam the recordings vacillate, so that apparently the contrasts were not recognized. The picture is further complicated by the fact that original *k has developed to

s in Northern Straits, to c in Clallam.

Finally, Boas recognizes several localized developments. Eastern Halkomelem dialects show l < *n. Tillamook evidences w < *m, h < *p. Bella Coola frequently loses vowels, shifts *q > x̣, and vocalizes final *-ən as -a. Several Interior languages have merged *t' and *χ'; in Lillooet, Thompson, and Shuswap as χ', in Coeur d'Alene as t'. The perception of ejectives was so poor that Boas states this as a more general interchange of t with "affricative l". Here a Grassmann's Law type of rule heightened the confusion: in Shuswap, Okanagan, and Kalispel (also in Tillamook), the first in a sequence of two ejectives is deglottalized, and in the first two languages deglottalization of χ' results in t.

3.2. Vogt.

The 1930s brought fuller descriptions of several languages: Boas' own sketch of Upper Chehalis in notes for an analyzed text (1934), Reichard's (1938) grammar of Coeur d'Alene, Edel's (1939) sketch of Tillamook, and Vogt's (1940a) Kalispel grammar, with texts and dictionary. These descriptions emphasize the important opposition between plain (unglottalized) and ejective stops/affricates, the distinctions between c, c', s, and č, č', š, and the independent status of ʔ, h, and of the lateral fricative ɬ. The Coeur d'Alene phonological system clearly shows

three sets of additional sonorants to which Reichard assigns various r-type symbols.

Vogt (1940b) clarifies several descriptive problems in Coeur d'Alene and Okanagan as well as in Kalispel: the distinctive nature of glottalized sonorants parallel to plain ones (distinct from sequences of sonorants with glottal stop); the alternation of stressed vowels with unstressed ə; and the glottalization of preceding plain consonants by a following underlying ʔ. He observes that several of Reichard's surface vowels in Coeur d'Alene are positional variants of a common central vowel, which he writes ə for the neighboring languages. He advances the Boas-Haeberlin comparison in recognizing earlier distinctive *r, *r', evidenced in Coeur d'Alene, Okanagan, and the Spokane dialect of Kalispel, but falling together with reflexes of *l, *l', in the other Kalispel dialects; and identifies an apparent shift of stress in Coeur d'Alene toward the beginning of words. He cites the correspondence of Coeur d'Alene d to Kalispel y, i, and of g^w to w, u, implying changes similar to those observed in Comox. He clarifies vowel correspondences, showing that besides Cr Ok i : Ka i, there is Cr Ok i : Ka e (a low front vowel).

An important step of Vogt's concerns Reichard's r-type elements beyond the apicals: R, R', r^w, r^w' fill out the resonant series and correspond to Ka Ø, ʔ, w, u^ʔ. He recognizes,

despite meager and misleading phonetic description, that these sounds (whose pharyngeal quality now explains their mystery) match χ , χ^w , functioning as uvular sonorants. (For the move of uvulars to pharyngeal articulation in neighboring Wakashan and the general problem of pharyngeals, see Jacobsen 1969.)

Actually, all the Interior Salish languages have these uvular-pharyngeal sonorants, which in some languages--particularly Kalispel--are very hard to perceive (Kinkade 1967). They are not very common, however, and it has been difficult to identify clear cognates in the other divisions. A few rather doubtful etymologies suggest that they have been devoiced to uvular fricatives in some coast languages; it may also be that some of the difficult problems with vowel correspondences will be relatable to these elements.

The implications of Vogt's comparative efforts are shown in Table 4. New information is boxed in the chart; parenthesized elements are reflected indirectly in the discussion. The unglottalized lateral affricate represents the morphophonemically deglottalized variant of χ' , which Vogt elevated to distinctive status historically.

Table 4. EARLIER SYSTEM INFERRED
FROM VOGT (1940a)

p	t	c	λ	k	q	k ^w	q ^w	?
p'	t'	c'	λ'	k'	q'	k ^w	q ^w	
		s	ɬ	x	χ	x ^w	χ ^w	
m	n	r	l	y	ʕ	w	ʕ ^w	
(m')	(n')	(r')	(l')	(y')	(ʕ')	(w')	(ʕ ^w)	h
			i			u		
			e	(ə)		a		

3.3. Swadesh.

During the next decade two more descriptive studies appeared--Newman's (1947) phonology of Bella Coola, and Tweddell's (1950) sketch of Lushootseed. Swadesh draws on these publications, as well as on the studies already cited, in his investigation of comparative Salishan, to update the unpublished materials on the languages in the Boas Collection. It was this body of material to which he first applied his glotto-chronological technique (Swadesh 1950), which has sparked similar considerations in most of the world's language families. (Among further Salishan applications, see especially Elmendorf 1951, 1962a, 1969, 1970, 1976; Suttles and Elmendorf 1963; Jorgensen 1969.)

In the course of this work Swadesh reconstructs a number of forms for Proto-Salish (with etymologies contained in a slip file in the Boas Collection called "Salish Cognates").

He presents his results in a kind of "wave theory" phonology (Swadesh 1952), citing nine etymologies and setting up the Proto-Salish system shown in Table 5. Although he gives no correspondences, he discusses in detail the sound changes implied. The system differs from Vogt's only in omitting glottalized sonorants (for lack of confirming data) and in simplifying the vowel inventory. However, Swadesh's understanding of the details of developments goes far beyond the earlier studies. In fact, Vogt's view is really only of the ancestor of Coeur d'Alene, Kalispel, and Okanagan (i.e. southeastern Interior Salish), while Swadesh's encompasses the entire family. It is interesting that practically the same phonemic proto-system is reconstructible from three closely related Interior languages as Swadesh deduces from the entire body of material. On the other hand, Swadesh's understanding of the complex dynamics and details of development is impressive, especially given the chaotic and difficult source material.

Table 5. PROTO-SALISH PHONEMES
OF SWADESH (1952)

p	t	c	χ	k	q	k ^w	q ^w	?
p'	t'	c'	χ'	k'	q'	k' ^w	q' ^w	
		s	ʃ	x	χ	x ^w	χ ^w	(h)
m	n	r	l	y	ʃ	w	ʃ ^w	
			i			u		

Swadesh sees several sweeping changes operating over the territory. One shifted $*r > l$ in most languages, r remaining only as Vogt noted (see above) and in Columbian. This must be a very old change which diffused slowly, reaching Kalispel very recently: the dialects having only l nevertheless show retracted vowels before l which continues old $*r$. Similarly in Thompson $*r > l$ must be the most recent of a set of shifts: $*l > y$, but no cases of original $*r$ are involved; still earlier $*y > z$, as in Lillooet, not affecting the reflexes of original $*l$.

Palatalization of unrounded prevelars to \check{c} \check{c}' \check{s} characterizes many languages. In some cases the changes have gone further, depalatalizing these elements. Thus Clallam shows c c' s from $*k$ $*k'$ $*x$, and most Northern Straits dialects show further $c > s$, affecting also original $*c$. Thus in those dialects original $*k$, $*c$, $*x$, and $*s$ all appear as s . Given these developments and inaccurate recordings of sibilants and affricates (as noted above), it is understandable that Swadesh missed the contrast between c and \check{c} , c' and \check{c}' , s and \check{s} in several languages. For this reason, his view of developments in the northern Central languages is seriously skewed.

Swadesh also cites interesting parallel developments in languages which are not now contiguous. The palatalization of prevelars (as Boas noted) involves languages on two sides of a

central conservative area. But such a common change can easily be independent in the two areas. More striking is the shift of **w* to a stop, found in Coeur d'Alene, Tillamook, Lushootseed, the Straits languages, and Comox. (A similar change is taking place in Quinault of the Tsamosan Division, where /w/ has the allophone [g^w] before vowels.) In Coeur d'Alene, Lushootseed, and Comox the reflex is a voiced stop, which Comox has further delabialized; in Straits languages the stop is devoiced to k^w, and in Tillamook, Swadesh observes, it is devoiced and delabialized.² The history of original **y* is similar, although not entirely parallel: it develops to a stop in the same languages as **w*, except for Tillamook; Swadesh somehow does not recognize the change in Lushootseed, and because he has missed the c/č contrast in Straits, he cannot recognize that č is the reflex of **y* there.

He discusses the change of **l* to semivowels in some detail, suggesting original contiguity for the languages sharing it. The problem is more complex than he realizes and needs to be studied in conjunction with other kinds of evidence for earlier location of the languages and in connection with the development of **l* in neighboring Wakashan.

One confusion assumes major importance: Swadesh had the prejudice that in all the Salish languages central vowels are nondistinctive transition vowels between consonants (1952:235).

This led him to drop any ə-type vowels from transcriptions, and in turn made it impossible for him to recognize the dynamics of stress shifts and prevocalic consonant developments in a number of languages. (His unpublished etymologies contain some cases of reconstructed *ə, but they lack internal consistency; it seems he must have proceeded to reconstruction in an impressionistic way, with many resulting inconsistencies.)

3.4. Current Research.

Recent comparative phonological discussions reflect further advances in descriptive coverage. Besides many articles on specialized problems, there are now grammars and fairly extensive lexical coverage on Shuswap (Gibson 1973, Kuipers 1974a), Squamish (Kuipers 1967, 1969), Northern Straits (Mitchell 1968, Efrat 1969, Raffo 1972), Lushootseed (Snyder 1968a, b; Hess 1967, 1976), Upper Chehalis (Kinkade 1963-64; a dictionary of this and closely related Cowlitz now in preparation). Several other languages have quite extensive grammatical sketches: Okanagan (Watkins 1970, Mattina 1973; Mattina also has a dictionary in progress), Spokane dialect of Kalispel (Carlson 1972; he also has a general dictionary of Kalispel in progress), Thompson (Thompson and Thompson, in press b; they also have a full grammar and dictionary in progress), Bella Coola (Newman 1969a,b, 1971; Davis and Saunders 1973, along with numerous

separate papers by these two authors on detailed analytical problems), Clallam (Thompson and Thompson 1971). Kuipers has set up a format for classified word lists of 1800 items, and several are already prepared: Shuswap (Kuipers 1975), Bella Coola (Nater, in press), Seshelt (Timmers, in press), Lillooet (Eijk, in press). An earlier, but similarly extensive, list covers three dialects of Halkomelem (Elmendorf and Suttles 1960). Four languages have detailed generative phonological treatment: Coeur d'Alene (Sloat 1966, Johnson 1975), Lower Chehalis (Snow 1969), Comox (J. Davis 1970), Twana (Drachman 1969). The most pressing need remains full descriptions of the languages still spoken.

3.4.1. Additional developments. Ignored earlier, the development of θ , t^{θ} in Halkomelem and Comox is signaled by Elmendorf and Suttles (1960:5-6), Elmendorf (1962:7). They reflect PS *c, *c'; rare t^{θ} perhaps results from an old cluster *ts.

In Kuipers' (1970) beginnings of a Salishan etymological dictionary (157 roots reconstructed from his own Squamish and Shuswap materials, compared with Coeur d'Alene, Kalispel, and occasional Halkomelem and Okanagan forms) another proto-phoneme emerges: uncommon * γ represents the correspondence of Li Th Sh NOK γ to Cr \check{y} , to y in other Interior languages, and perhaps y on the Coast, although clear etymologies are lacking. This gives the very full Proto-Salish system shown

in Table 6. Among sonorants note that *w fills the rounded prevelar position, but *ɣ now rivals *y as unrounded prevelar. Of doubted antiquity, glottalized sonorants are parenthesized.

Table 6. PROTO-SALISH PHONEMES
OF KUIPERS (1970)

p	t	c		k	q	k ^w	q ^w	ʔ
p'	t'	c'	χ'	k'	q'	k' ^w	q' ^w	
		s	ʃ	x	χ	x ^w	χ ^w	h
m	n	r	l	y	ɣ	ʃ	w	ʃ ^w
(m')	(n')	(r')	(l')	(y')	(ɣ')	(w')	(ʃ ^w)	
			i			u		
								ə
								a

3.4.2. Labiovelars. Straits Salish shows an interesting set of correspondences: where most other languages have m, Clallam and Northern Straits most often have instead a velar nasal ŋ. Boas and Haeberlin (1927:134f) considered this a shift *m > ŋ, and Swadesh (1952:241) repeats this opinion. Important etymologies unrecognized in the earlier studies relate to this matter, showing that where most other languages have p or p', Straits languages show primarily č, č', respectively. Thompson (1965) suggests these correspondences reflect an original labiovelar series. Noting them independently, Suttles (1965) sees č, č', ŋ as the regular Straits reflexes of Proto-Salish *p, *p', *m, Straits cases of p, p', m all to be explained as loans fitting a convincing set of semantic categories. But

there remain Straits words containing labials, including some grammatical morphemes, for which no source is identifiable. The problem remains troublesome and must be studied with fuller materials and in a broader context of borrowing which takes into account words which have been borrowed from Straits.

Whatever the explanation for the Straits words containing labials, tracing the $p : \check{c}$ type correspondences to PS labio-velars still appears attractive, and is less in conflict than it might seem with the high frequency of historic labiovelars. Many of these have obviously developed from plain velars in rounded environments. Cases in which $*k^w$ and $*k^{\check{w}}$ are clearly to be reconstructed from historic labiovelars are surprisingly few. More study may well reveal particular environments in which labiovelars were retained, while elsewhere they developed to labials in most languages, but to palatals in Straits.

If that is correct, and all Straits words with labials are loans, then the Proto-Salish system lacked labials ($*k^w$ clearly functions as a velar)--a feature directly continued in Tillamook. This would fit interestingly with other languages in the area which are weak in labials. On the other hand, the system would contain $*\eta^w$ without corresponding $*\eta$. Etymologies thought to contain PS $*y$ but showing inappropriate reflexes in certain languages may well reflect such a $*\eta$. And the rare Proto-Interior $*\gamma$ may reflect the same element.

3.4.3. Occlusion of sonorants. Lushootseed and Twana share with Chimakuan Quileute and Wakashan Nitinat and Makah the development of original nasals to voiced stops, leaving nasalless systems contradicting the universality of nasals (Ferguson 1963). Thompson and Thompson (1972) suggest this development began with Lushootseed as an extension of the voiced stops/affricates it developed from original semivowels ($d^Z < *y$, $g^w < *w$), then diffused to adjacent Twana, and on to Quileute, Makah, and Nitinat. In this connection, it is noteworthy that Comox, which also developed stops/affricates from original semivowels, shows a similar tendency to convert nasals to voiced stops (Sapir 1915b).

The Lushootseed semivowel development is interesting in itself. Usually $*y > d^Z$, but \check{y} is also observed where there is another palatal in the word. The history is obscured by a later development in northern Lushootseed by which alveopalatals dissimilated to alveolar affricates and fricatives when an alveopalatal precedes in the same word (cf. 'tooth' Nld $d^Z\text{əd}i\text{s}$ Nk $y\text{ən}i\text{s}$; 'leg, foot' Nld $\check{y}\text{ə}\text{s}\text{əd}$ SLd $\check{y}\text{ə}\check{s}\text{əd}$ Ti $y\text{ə}\check{s}\text{ə}\text{n}$). A similar dissimilation may explain the cases of g in Lushootseed, presumably delabialized reflexes of $*w$. For $*w$ and perhaps $*y$, it appears that glottalization acted to prevent the development to a stop (contrary to the suggestions of Drachman [1969:205-10] and Hoard [1971:75-6]). Investigation of this

will require inquiry into the history of glottalized sonorants in this and other Central languages.

In Northern Straits, Efrat (in press) shows that the different shapes roots assume in certain aspectual stems are best understood through recognition that some roots end in a plain sonorant, others in a glottalized sonorant. This fits with evidence in Clallam, indicating reconstruction of glottalized sonorants for Proto-Straits, and evidence elsewhere in Central Salish makes it probable Proto-Central Salish had such distinctive elements. Work in the Tsamosan and Interior Divisions also indicates glottalized sonorants for those proto-languages, and deeper comparison now confirms them for Proto-Salish. The picture is clouded by the fact that glottalized sonorants have developed secondarily in a number of the modern languages; especially evident is the morphological use of glottalization to convey diminutive and other specialized notions.

In some languages glottalization moves about in words, apparently tending to be attracted by stress; this is observable at least in Shuswap (Kuipers 1974a:30) and Twana (Drachman 1969:passim). But in Thompson certain roots have the property of glottalizing any sonorant in the immediately following suffix. Squamish (Kuipers 1967:55) also has such roots; probably also Kalispel, Upper Chehalis, Straits, Halkomelem, and Tillamook. The roots themselves often contain no

synchronically recognizable glottalic element, while others actually containing glottalized sonorants fail to have this effect; some glottalizing element is indicated for the proto-language as part of those roots.

Original glottalized semivowels were decomposed in Pre-Straits and Pre-Tillamook to $*\gamma$ $*\gamma^w$ between vowels under certain stress conditions. A similar development affected all glottalized sonorants in Comox. In Thompson $*y'$ often appears as $\text{č}'$. Straits appears to have developed $\text{č}'$, k^w from $*y'$, $*w'$ under particular circumstances. Further study of this topic is much needed.

3.4.4. Other effects on sonorants. Nearly everywhere final $*-l$ was devoiced to $-l̥$, falling together with original $*l̥$ and often extending analogically to non-final position. A few languages, particularly Columbian, retain the voiced $-l$; Upper Chehalis, Cowlitz, Lushootseed, and Tillamook have a number of cases of alternating $-l̥$ and $-l-$. A similar fate befell $*w$, but perhaps earlier; evidence for this is especially clear in Tillamook, where $-x^w \sim -g^w-$, $-g-$ (all from $*w$).

In Kalispel $*n > y$ before s . Carlson (1976a) discusses this with Spokane examples, showing that it has resulted in a regular synchronic alternation. He suggests the change began as palatalization of n to \tilde{n} at a time before $*x$ had become š , when $*s$ may have been more palatal (as it often is in the

historic k-languages). Before š and ʃ, *n is lost altogether. Bits of evidence in other languages indicate that this development may go back to Proto-Interior at least, while the shift before s is apparently limited to Kalispel.

3.4.5. Vowels. Less progress has been made in understanding the vowels. Nevertheless it seems clear that the proto-language must have had a basic four-vowel system:

i u
 ə
 a

This has been preserved in several languages, and the ways in which more complex systems have arisen can easily be recognized.

The need to reconstruct *ə is least obvious, but evidence is offered by Kuipers (1970) and, for Proto-Interior Salish, by Kinkade and Sloat (1972). In several coastal languages *ə is necessary even in unstressed positions to provide the environments for certain stress shifts and consonantal developments.

3.4.6. Stress and ablaut. In most modern Salish languages many morphemes appear under stress with tense vowels which disappear or are reduced to ə when unstressed; such a system may have characterized earlier stages (Kinkade and Sloat 1972; Kuipers, in press: sec. 5). However, many morphemes with *ə as principal vowel have no reconstructible counterparts with

tense vowels. It appears Proto-Salish roots were either "strong", with tense vowels; or "weak", with *ə. Main word stress fell on a strong root unless it was captured by a strong suffix; it fell on a weak root only if no suffix could take it. Judging from evidence in Upper Chehalis (Kinkade 1966), Lushootseed (Hess 1976), and Straits (Thompson and Thompson 1971), unstressed syllables retained underlying vowels. Many modern consonant clusters result from subsequent loss of these, whereas many consonant correspondence irregularities likely reflect simplified old clusters. Vowel loss also led to stress shifts, developing into penultimate stress patterning in many Coast languages. Some unusual vowel correspondences are due to umlaut (Thompson 1972; Thompson, Thompson, and Efrat 1974); others reflect vocalization of syllabic sonorants and possibly original qualitative ablaut (Kuipers 1970; in press).

3.4.7. Unrounding of (post)velars. Related to questions about the origin of historic labiovelars (3.4.2.) is evidence for delabialization of such elements in a few languages. Tsa-mosan languages and Tillamook sometimes show reflexes appropriate for unrounded velars and uvulars in correspondence with labialized elements in other languages. Beyond obvious unrounding before *i in Tillamook the conditioning of the development in all these languages is unclear. Especially problematic is the 2d singular subject suffix, for which Shuswap

(while generally lacking unrounding tendencies) supports the reconstruction *-ax suggested by these languages. Yet no convincing rounding influence is evident to account for *-ax^w indicated by most languages.

3.4.8. Short-range comparisons are needed to provide firmer bases for deeper level reconstruction. There is already Interior Salish work (discussed above) and the beginnings of Halkomelem dialect comparison (Elmendorf and Suttles 1960) and Proto-Straits reconstruction (Thompson, Thompson, and Efrat 1974). Kinkade (1973) explains the puzzling mixture of prevelar and alveopalatal reflexes of PS *k *k' *x in Cowlitz corresponding to Upper Chehalis uniform č č' š. Within words unrounded prevelars were fronted to alveopalatals directly before *i (assimilation); they also shifted before a uvular in the same morpheme (dissimilation). But the palatal shift was blocked in the presence of an alveolar sibilant in the same morpheme (dissimilative retention).

3.4.9. Retraction. Several Interior Salish problems relate to the production of sounds with retracted tongue-root (cf. work on effects of tongue-root retraction elsewhere in the world: e.g. Stewart 1967, Pike 1967, Gregerson 1976). Evidence for PS *r (Kinkade and Thompson 1974) varies on this theme. Occurrences of r are limited to the second consonant position in roots not containing uvulars. Thompson, where PS *l > y,

shows l corresponding to r; also (borrowings aside) to l in r-languages in stems with uvulars and in positions other than C₂. This indicates a wider distribution for PS *r, supported by adjacent retracted vowels in several languages.

In Kuipers' recent summary of Proto-Salish phonological typology (in press; see also 1973) he reconstructs a retracting feature, ultimately (pre-Salish?) equated with pharyngealization, to account for special consonants ɕ, ʂ, and dark ɭ in Lillooet and Thompson and unmotivated retracted vowels throughout the Interior. He then derives r from *l as C₂ after retracted vowels.

Sloat (1972) explains morphophonemic shifts to retracted vowels in Coeur d'Alene suffixes as the effect of special-property roots. Other Interior languages are similar; Mattina (1976) shows that in Colville cognate roots show pharyngeals, which move to suffixes when stress shifts to those suffixes.

Proto-Salish presumably developed retracted allophones of vowels in syllables having a consonant produced with tongue-root retraction. Vowels in suffixes assimilated after such stems. Kuipers' retracting feature may as well be reconstructed *ɣ̣, distinct, however, from historic ɣ, ɣ^w, which go back to uvular sonorants. In Okanagan *ɣ̣ coalesced with *ɣ̣; in other languages it disappeared, leaving retracted vowels and Li Th ɕ, ʂ, ɭ.

Kuipers' reconstruction is economical and well motivated, but the *l > r theory faces considerable conflicting evidence and does not explain why the environment for the shift was so limited. The other approach posits infrequent but generally distributed *r, developing to l in most of the descendant languages. This shift would only recently have reached Interior Salish, where retracted effects associated with l are widely observable. In the r-languages, affected last, it would perhaps have begun in stem-initial and spread as dissimilation to cooccurring uvulars; l-allomorphs developing in suffixes were then generalized. What remains is r as C₂ in stems without uvulars. In Spokane, where vowels preceding r are unretracted, the dynamics of Schane (1971) are evoked: marked allophones reverting to their unmarked counterparts in environments where they do not contrast.

Salishan's Athapaskan neighbor Chilcotin has a similar relationship between paired vowels and consonants (Krauss 1975; Cook, in press). Retraction may well be an areal feature.

3.4.10. Revised phonological chart. The most recent studies suggest a different Proto-Salish system, sketched in Table 7. New or changed reconstructions are boxed. Labials are cited in parentheses because the historic labials may all come from labiovelars. Similarly *r, *r' are parenthesized because they may have developed from laterals. Note that the semivowels

now form a separate subsystem.

Table 7. PROTO-SALISH SYSTEM
EMERGING FROM CURRENT RESEARCH

(p)	t	c		k	k ^w	q	q ^w	ʔ
(pʰ)	tʰ	cʰ	χʰ	kʰ	k ^h w	qʰ	q ^h w	
		s	ʃ	x	x ^w	ç	ç ^w	h
(m)	n	(r)	l	ʔŋ	ŋ ^w	ʔ̣	ʔ̣ ^w	ʃ
(mʰ)	nʰ	(rʰ)	lʰ		ŋ ^h w	ʔ̣ʰ	ʔ̣ ^h w	ʃʰ
				y	w			
				yʰ	wʰ			
				i	u			
				ə				
				a				

4. Comparative Grammar.

4.1. Early Survey.

The first extensive grammatical comparison is Reichard's (1958-60) monograph, based primarily on Coeur d'Alene (Reichard 1938), Kalispel (Vogt 1940a), Tillamook (Edel 1939), Upper Chehalis (Boas 1934), and Lushootseed (Tweddell 1950). It refers also to Swadesh's (1950, 1952) coverage. Restating paradigms and other information for convenience in comparison, Reichard also does considerable reinterpretation. She compares pronominal elements, special transitive formations, deictic elements, stem formatives, lexical suffixes, compound stems, numerals, reduplicative elements, and particles serving various syntactic functions. She concludes with a long summary

of problems, a reconsideration of phonological changes (identifying a few developments not previously noted and commenting insightfully on Swadesh's treatment), a comparative vocabulary, and a summary of the aspects of Salishan structure which reappear in the various languages and so are characteristic for the family. Only the beginnings of a comparative grammar, it is nevertheless important, and especially impressive when we recognize the limitations of the descriptions on which it is based.

4.2. Individual Topics.

4.2.1. The pronominal system. Hoard (1971) takes up pronominal elements and proposes a reconstruction for each case warranting it. The view is much improved over Reichard's, since it takes into account fresh and generally more reliable descriptive coverage of many languages, as compared with Reichard's unevenly represented five. These treatments, supplemented now by further study, indicate that Proto-Salish almost certainly had at least the following sets of personal deictics: (1) possessives ('my', 'your', etc.) of which the first and second singular elements were prefixes, the rest suffixes; (2) object suffixes, attached directly to stems ending in *-t 'transitive'; (3) subject suffixes, apparently originally attached to either intransitive stems or to transitive stems directly after the

object suffixes; and (4) full words with predicative force ('I'm the one, it is I who...', etc.). The object suffixes consisted of two sub-sets, one used with causative stems, the other with other transitives.

Original use of the subject suffixes is unclear, but four patterns are widespread. (1) Everywhere there are at least traces of their use in transitive forms following object suffixes. (2) In all languages except Bella Coola and Tillamook they appear attached to a particle base *k, yielding subject clitics widely used as intransitive subjects. (3) In the Northern Interior, in Central languages, and in Tillamook they are associated with a particle *wə, apparently originally a subordinator. (4) In at least many Central languages and Tillamook they are attached to predicative words in other kinds of conjoined or subordinate constructions. That such pronominal elements do not constitute simple substitution for NP-type adjuncts is evident from the considerable syntactic differences (Hukari 1976a).

4.2.2. Pluralization. Except for predicative third person plural ('they're the ones', etc.) and first and second person plural throughout the system, pluralization is optional in Salishan. The ways in which plural reference is emphasized in the various languages are diverse. In Proto-Salish the third person must have been, as it is in all the descendant languages,

mostly ambiguous as to number; there were perhaps a number of disambiguating devices with different kinds of emphasis. One such device is possibly reconstructible: stem-initial CVC-reduplication is fairly widespread, covering repetition of acts, extensiveness of states, and intensification of qualities, as well as pluralization (often collective, but sometimes distributive) of subjects or objects, and it is used with first and second persons as well as third.

Salishan languages have paired roots, one indicating singular, the other plural agents or patients. But optional pluralization by regular devices is available to these pairs also, yielding contrasts 'a few act' (from singular roots) vs. 'many act'. The circumstances are thus different from those in some Amerindian families where a system of suppletive roots for singular and plural reference parallels a larger formal system with a particular device for pluralizing singular expressions. The system appears very old. While a number of cognates are to be observed among the roots involved, these roots have sometimes quite shifted their meanings in some languages, or differ as to singular or plural reference. In some languages the matter is complicated by the existence of pairs of phonologically related roots. At least Thompson and Upper Chehalis have systematic pairs of roots differing only in ə vs. tense vowel, the latter signalling plural. A few others differ by one

consonant (e.g. Th $c\acute{i}\chi^w$ 'lie', $m\acute{i}\chi^w$ 'several lie'). The overall aspect of Proto-Salish handling of pluralization is still unclear.

4.2.3. Special affix types. The earliest Salishan comparison of all is a study of reduplication types by Haeberlin (1918), still the only extensive coverage of that topic. The available grammars state the patterns for individual languages, and Hess (1966) studies the northern Lushootseed system in detail. Kuipers (in press: sec 8) summarizes the most common types.

Far more attention has been devoted to lexical suffixes. It is estimated that each language aboriginally utilized some 100-150, plus perhaps a few dozen non-productive ones. Every Salish grammar has described their use. Again Haeberlin was pioneer, making an extensive comparative survey (now edited and published: Haeberlin 1974), originally intended, like Haeberlin 1918, for the general Salishan comparison Boas planned (3.1 above). (Neither study attempts reconstruction, but they provide invaluable bases for further elicitation and analysis.) Newman (1968) categorizes the semantic spheres covered by lexical suffixes. Hamp (1968) contrasts the use of similar elements in Chimakuan Quileute. Kinkade (1969) compares Salishan lexical suffixes with those of Wakashan and Cḥimakuan, finding no convincing support for the Mosan hypothesis (5.1 below). Categorization in semantic and grammatical terms is offered by some

synchronic studies (Kuipers 1967, 1974a; Davis and Saunders 1973; Saunders and Davis 1975a, b, c). Other scholars see broader functions and doubt the suffixes should be considered copies of underlying nouns. They are dominant in non-acculturated usage and often have generalizing functions; in folk taxonomies they sometimes fit nodes unnamed by independent words (Amoss 1969, Kinkade 1975a).

4.2.4. The noun/verb problem. Several scholars have commented on the difficulty or relative meaninglessness of attempting to distinguish clearly between nouns and verbs in Salishan languages. Reichard (1938: *passim*) signals the extensive coincidence of nominal and verbal stems in Coeur d'Alene and notes that many apparent verbs appear nominal in form. Edel (1939: 5) finds no rigorous distinction between noun and verb stems in Tillamook. Newman (1969a: 176-177) indicates the lack of inflectional criteria for distinguishing Bella Coola nouns and verbs; even inflected transitive words can function as either predicates or substantives and such functions must be defined syntactically. Kuipers (1968) contrasts Squamish and English usage, concluding that Squamish is better described without a noun/verb opposition. Kinkade (p. c.) is preparing a full study with extensive exemplification from many languages of the family. In studying texts in these languages one is continually struck by the predicative "feel" of all full words.

One wonders whether this may not be a quite natural concomitant of polysynthetic structure.

4.2.5. Numerals. Elmendorf (1962b) shows that from the point of view of the number system, Tillamook aligns more closely with Central Salish than with the Tsamosan Division (a characterization since supported by the study of other features).

The numbers invite further consideration. It appears that a decimal system has been superimposed on a quaternary system. The first four numbers are widely related and apparently unsegmentable. There is evidence for borrowing of some terms for higher numbers within subgroups. The word for '8' is analyzable as 'twice 4' in the Tsamosan languages (the word on which the name for that group is based). Words for '5' and '10', although widely cognate, are clearly analyzable as containing the lexical suffix for 'hand'.

4.2.6. Kinship. Elmendorf (1961) has also studied kin systems comparatively. Although he bases his conclusions on only the terms involved in aunt/uncle/niece/nephew and grandparent/grandchild categories, he offers convincing evidence that the Southern Interior systems are closer to the original than are most coastal systems, and Tillamook again helps confirm this conclusion. Suttles (1965a) extends Elmendorf's discussion, showing that while a hasty view of the Halkomelem system leaves the impression of great simplicity, close linguistic work with

traditional texts uncovers considerable complexity. In addition to the terms of reference easily uncovered by genealogically oriented questions ('my father', etc.), there are also two other sets of terms--one for address ('father!'), the other designating kin status ('one who is a father'). Other Coast languages need comparable investigation.

4.2.7. Prefixation. Newman (1976) explores categories utilizing prefixes (in some cases proclitics). Besides several topics discussed elsewhere, he studies spatial elements, suggesting a few basic ones have come to be combined in different ways in different languages. (Some of these were probably rather roots, as they still are in many languages; the set *ʔu- 'directional'/*ʔa- 'locative' may reflect an early pattern of vocalic symbolism.) He posits a rich proto-system, severely curtailed in Bella Coola and most Coast languages, but perhaps elaborated in the south Interior. He also discusses prefixes expressing predicative notions like 'eat', 'have', 'make', assembling the few recognizable cognates. Apparently now vestigial, this type may have been more important at the earlier horizon.

An especially important prefix is the so-called "nominalizer" s-. Its functions are remarkably similar throughout the family (except in Comox, where a diffused Kwakiutlan pattern prohibiting initial consonant clusters precludes s-C forms), signaling reference to products, results, or generalized

concepts. It is widespread as a subordinator. In many languages it seems to serve as a major aspectual marker. Some scholars now prefer to gloss it 'absolute'.

Newman's monograph concludes with a valuable summary and interpretation of the observed facts. Although Bella Coola exhibits many prefixes, only the "nominalizer" *s-* and the stative-progressive *ʔaɫ-* are productive. Often it has clearly dropped from usage prefixes which must have been common in Proto-Salish. Sporadic frozen forms in various languages suggest that Proto-Salish had a number of productive prefixes which have gone out of use nearly everywhere. This hints that Salishan may earlier have had a more strongly prefixing structure, which has since been greatly reduced. Such a characterization is in striking contrast with the observed structure of Wakashan and Chimakuan, where, except for reduplicative material, prefixes are entirely lacking.

4.2.8. Aspect. The problem of aspect is one of the most vexing ones in grammatical comparison. Just one aspectual category, the stative, is widespread if not universal (reports for some languages are not too clear). It is marked by a prefix which can be reconstructed something like **ʔac-* ~ **ʔas-*, apparently with dissimilation of **c* to **s* before coronals other than **s*. This or a derived alternation has survived in some languages, while others have generalized one alternant.

Newman (1976) concludes that Proto-Salish must have had also a continuative (durative) and perhaps a completive aspect. These categories, however, present numerous difficulties in the comparison. Many languages have such an obligatory opposition while in others simple predicates seem ambiguous in this respect, although disambiguating particles are available; the particles are frequently unrelated. In Upper Chehalis and Cowlitz the stems are different for the two aspectual forms, and, furthermore, the continuative is associated with one set of pronouns, the completive with another. In Columbian the distinction is indicated by a set of prefixes and suffixes. In all three languages the opposition is marked quite differently in the intransitive and transitive. Another puzzling fact is that stative forms in Upper Chehalis and Cowlitz are associated with the completive, while in Columbian the stative prefix is part of the apparatus for marking transitive forms as continuative. Coeur d'Alene is similar to Columbian. Straits languages mark the continuative with a variety of allomorphs, only partly phonologically determined; most widespread is glottal stop infix in historically strong roots, suffixed in weak ones. Halkomelem, Squamish, and Comox more typically use reduplicative prefixes. Lushootseed and Twana use unrelated prefixes, and in Lushootseed this is only one of several aspectual distinctions which are still not well understood.

Thompson and Shuswap can express a continuative notion by means of an auxiliary, but this expression is optional; unmodified forms can carry either continuative or completive meanings.

Seemingly more basic in Thompson is the obligatory opposition changed vs. unchanged status. Changed status ('inchoative') is marked in strong roots by an infix which copies the stressed vowel and adds a glottal stop, in most weak roots by a suffix // -əp//. Cognate formations, with apparently the same meaning, are found throughout the Interior Division. Outside of it at least Tillamook has a cognate for the strong root formation. One wonders whether the Straits continuative is related. In any case, it would seem to demand reconstruction.

4.2.9. Aspectoidal categories. In addition to the major aspectual distinctions there are many others expressed in the different languages--relatively minor and more specialized, mixed with tense notions--resembling the category Friedrich (1974:56) has called aspectoidal. Thompson, for example, utilizes a variety of affixes, auxiliaries, and postpositions to lend aspectual nuances; these include 'immediate', 'sudden result', 'developmental', 'completed', 'readied', 'perfective', 'imminent', 'actual', 'habitual', 'persistent', 'continuing'; 'immediate past', 'immediate future', 'general future'. Other Interior Salish languages seem to be similar. Kinkade (1976d) assembles the particles and particle-like elements reported

for this group. There are obvious cognate forms in several languages, but much more work will be necessary to perceive what the Proto-Salish system may have been like.

This brings up the matter of tense. Newman (1976) assumes a past and two future prefixes for Proto-Salish, although he notes tense is only weakly developed in the modern languages. His *k 'future' is better considered an 'irrealis', used to indicate also unrealized states and actions, thus covering future. Everywhere the marking of tense seems facultative, corroborating Silverstein's (1974) placing of Coastal Chinook in an ambiance of strong aspectual and low-yield tense distinctions.

4.2.10. Control. A category of control is fundamental to the entire predicative system of Salishan languages. Forms are obligatorily marked to indicate whether some agent is in control of the situation or not. Non-control forms refer either to acts, events, and situations involving accidental, unintentional, or involuntary actions or to those accomplished at the expense of much time, effort, or trouble. This opposition intersects with other major categories like transitive-intransitive, reflexive, passive, causative, unlike the situation in some languages where notions of limited control are conveyed in some cases by forms having other primary functions (e.g. formulas with get in English). In at least many of the Salish

languages the overwhelming majority of roots are [- control], and this explains why participants mentioned in connection with predicates consisting of just such roots are patients--affected by the action or state designated. That is, whereas mention of an English root strike or squeeze or push immediately suggests to an English speaker an agent striking, squeezing, or pushing, the corresponding Salishan root suggests to a Salishan speaker that someone or something is struck, squeezed, or pushed. There is a large but limited class of roots which are [+ control], including such items as those meaning 'go', 'eat', 'drink', 'talk', 'give', etc. Certain affixes mark stems as [+ control], converting [- control] stems. There are also a few [+ limited control] morphemes; affixes of this type derive emphatic limited control forms even from [+ control] stems. A preliminary report on this matter was given at the 41st Americanist Congress (Thompson and Thompson, in press a) followed by a general treatment (Thompson, in press).

4.2.11. Pronominal subjects and objects. Because of the complex formal relationships between aspectual forms and pronominal elements, the Proto-Salish transitive system is still seen only in shadowy outline. Upper Chehalis and Cowlitz suffix objects in both the continuative and completive forms. Subjects are suffixed only in continuatives, while completives take clitic subjects. This is parallel to the treatment of

intransitive forms, where subjects are suffixes in the continuative, but clitics in the completive. Study of the Tsamosan systems is necessary to determine whether there is some internal explanation for these specialized associations; otherwise, they must reflect the original state of affairs.

Tillamook seems to have generalized the subject suffixes, but most Interior languages have sorted the elements out according to transitivity: transitives take subject suffixes, intransitives take subject clitics.

The Central languages may have gone through a stage like that of the Interior. The repeating pattern of stress shifting back to the penult and loss of material from final unstressed syllables has obliterated differences among forms and led to reinterpretation of what were earlier object-subject suffix complexes as simply objects. At the same time subject clitics, which are used throughout the intransitive system, came to be used with transitives, too, so that transitive forms now end with an object suffix and the subject is marked by an accompanying clitic. A significant exception is the third person subject suffix, which still appears with transitive forms in at least Straits and Halkomelem. Lillooet also shows this sort of system, which has the earmarks of recent influence from its coast neighbors.

In connection with clitic pronouns a problem of word

order development needs to be resolved. Most languages show these subjects as enclitics to the main predicate word, but in several languages auxiliaries (with meanings like 'very [much]', 'truly', 'always', etc.) can come first. In some, the subject may appear either enclitic to this auxiliary or to the main predicate; in others it must follow the auxiliary. There are a few languages where the subject clitics appear optionally either before or after the main predicate word. Ingram (1975) seeks to explain these cases as part of a general shift from SOV to VSO order. He sees the person markers appearing before the predicate as conservative from the earlier period when noun-phrase-like elements specifying subject and object must also have preceded. If, as Hukari (1976a) indicates for Lu-shootseed, these person markers are not pro-forms for noun phrases, the argument evaporates. In any case, Noonan (1976) finds the proposal wanting, both because of mis-analysis of the data and on general theoretical grounds. He considers the subject markers *kn*, etc., as old inflections of an auxiliary type verb, so that the constructions would be inflected verb plus complement (not the expected order for an SOV language).

The optional position for the *kn*-type subjects probably has a simpler history. Proto-Salish likely had subject enclitics attached, as in several modern languages, either to the main predicate or to a preceding auxiliary. In the early

history of some languages, some of these auxiliaries became so semantically unmarked that they tended to be omitted in rapid speech in clause initial position, leaving the enclitic subject pronoun optionally there before the main predicative word. Precisely this pattern is observable in Thompson where $w^{\text{?ex}} \text{ kn } \text{?i}\lambda\text{m}$ 'I am singing' ('continuative-marker I sing') is most frequently shortened to $\text{?ex kn } \text{?i}\lambda\text{m}$, and in allegro speech the ?ex is sometimes scarcely heard. Halkomelem has a similar tendency. Then, in languages like Squamish and Columbian, the auxiliaries went out of use altogether.

4.2.12. Passives. There are important problems concerned with the adjunct phrases by which predicates can be modified. Hess (1973) has explored some of these, drawing on Lushootseed, Straits, and Halkomelem materials. The type of English transitive sentence in which both agent and patient are indicated by noun phrases (e.g. Bill killed the bear) seems atypical of at least many Salish languages, and is actually impossible in Lushootseed, where only the patient can be so specified. In fact, such sentences as do occur in elicited material may represent one of the ways bilingual speakers tend to modify the tradition of their Indian languages in adaptation to the English model to please assiduous linguists. Even in languages which appear to permit such sentences, they are rare or non-existent in spontaneous conversation and traditional texts

(noted most recently by Hukari 1976b).

However, there is a form of the predicate which has usually been called passive, and it permits specification in adjunct phrases of both agent and patient. The curious thing, as Hess (1973:92) points out, is that if the one function common to the passive in all languages is to provide agentless predications (Lyons 1968:378; similarly Chafe 1970:219-20) then the Lushootseed construction does not qualify, because it is precisely the only one in the language which permits a third person agent to be specified in the same predication as a third-person patient. In these rather full clauses the agent is introduced by a particle often called 'oblique', reminiscent of English by. That these may be recent innovations, possibly even under the influence of English, is suggested by the fact that in at least one language (Halkomelem: Hukari 1976b:90; Suttles 1976) the key predicative forms are formally subjectless transitive words inflected only for object. Parallel forms in Thompson sharply divide the third person passives, which can be supplemented by an adjunct specifying the agent, from the first- and second-person forms (containing regular object suffixes), which cannot.

4.2.13. Ditransitives. Transitive expressions involving two objects are particularly interesting. Spokane (Carlson 1976b) offers two different kinds of focus--focus on the beneficiary

or the benefit. For example 'I made a basket for Agnes' is represented in Spokane by two different sentences. One, utilizing a predicate with the suffix *-ṣ̌i*, centers on Agnes, the beneficiary, and indicates that it is for her that I made the basket; it may mean that she is unable to make it herself, so I do it for her. The other, marked with the suffix *-ḥ̣*, centers on the basket (the benefit) and indicates by means of a preposition with the object Agnes that she is recipient. In some cases this second type can suggest some unfortunate or unpleasant consequence for the beneficiary, as in 'I lost Albert's dog' and 'I had sexual intercourse with Albert's wife'.

In Thompson (Thompson and Thompson 1976) only one construction is available, which serves both ranges of meaning. Here it is the *-xi* suffix, cognate with Spokane *-ṣ̌i*, which is used, with just a few fossilized forms with *-ḥ̣* (but enough to suggest that Thompson has probably lost this category since Proto-Interior Salish times).

The "beneficiary" is commonly the least marked element--i.e. the direct object. This leaves the languages with a ditransitive system that seems to function in exactly contrary fashion to that of more familiar languages, where the beneficiary is quite regularly the "indirect" object. So, for example, in the sentence meaning 'you smashed the woman's dish', 'woman' is the direct object, while 'dish' is marked by the

'oblique' particle, which does duty in other sentences to introduce instrumental and other secondary notions--in particular, as we noted above, to mark agents of apparent passives. Spokane and Thompson employ cognate particles for this purpose. Further comparisons will be necessary to determine whether Thompson and perhaps most other Salish languages have transferred the original functions of the $-i$ suffix to the productive $-xi$, or whether Spokane (and some other southern Interior languages) have innovated a specialization of the two suffixes different from their original functions, which may only have been to mark the different focus. Kinkade (1976b) shows that Columbian has both $-xi$ and $-i$ forms but they do not seem to be semantically specialized in the way the comparable ones are in Spokane.

4.2.14. Modal categories are perhaps even less well understood than aspectual ones. In each language there is an assemblage of particles and affixes which convey modal sorts of meanings, but at the present level of most descriptions it is difficult to see how they fit into any clear system. Some major categories are, however, widespread. An imperative seems reconstructible as PS $*-wa?$ ~ $*-a?$ (distribution still unclear), appearing with both intransitive and transitive stems.

Another device that can be considered modal involves suffixation (or postposing) of subject markers to predicative

words in clauses introduced by subordinating particles--in particular *wə, which might be termed 'subjunctive'. Although the clauses introduced by this element in Thompson appear to be simply conjoined (closely connected with the previous clause or sentence--and texts often involve long strings of such sentences), some uses suggest more dependent status; in separate sentences this construction signals imperative or exhortative meaning. In other languages, such as Lushootseed and Tillamook, these clauses are regularly dependent and usually represent not-yet-realized, conditional, or contrary-to-fact notions.

The elements which now appear unintegrated in major systems in the languages carry meanings like 'should, ought', 'may', 'want to, feel like'. One category includes a number of evidentials--e.g. 'hearsay information', 'observed situation', 'presumably'. All these need more thorough descriptive and comparative study.

4.2.15. Negative constructions are similar throughout the family, but while in some languages the negative word acts as an auxiliary, in others it pre-empts the function of main predicate and requires the negated predicate to appear in subordinate form--usually with the absolutive ("nominal") prefix. The negative words themselves are seldom cognate from language to language, although a negative in subsidiary uses in one language is sometimes cognate with the primary negative in

another. This is difficult to interpret historically, but may suggest that Proto-Salish had a complex system involving several negatives, each with different force.

4.2.16. Deictic systems. Many languages have phonologically relatable particles in two categories--those which occur at the end of predicate phrases, modifying preceding predicative words; and those which appear initially in complements or adjunct phrases, introducing those elements. Usually it is the initial consonant or cluster which is similar or identical in the two sets. In some languages the predicate postpositions are longer than the introductory particles so that they could be seen as containing a syllabic and final portion deriving them for this use, or, alternatively, the introductory particles could be seen as abbreviated forms of the longer words. No evidence has yet emerged to support either development historically. Several of the initial consonant elements appear cognate among many languages.

Preliminary consideration suggests that Proto-Salish had at least two intersecting oppositions: marked feminine or secondary vs. unmarked non-feminine or primary, and marked absent vs. unmarked present. A possible third opposition, less clear, may have been near vs. remote, probably both marked categories. The Interior Salish languages lack gender distinctions. Circumstances suggest that the gender systems of the other

languages, including Bella Coola, are retentions from the proto-language, and that the Interior languages lost them. This fits with the looser, more democratic social organization of the interior groups and the highly stratified coast societies. One can see the complex stratification as either acquired or lost, but it seems impossible to explain the gender distinguishing deictics of the coastal languages, interrelated as they appear to be, as innovations. On the other hand, the apparently cognate particles in the Interior are used rather differently in the different languages and are more easily seen as innovating in their functions. Several of these particles are used to introduce complements and adjuncts in Interior languages, so that the gender problem is related to the difficult question of what the marking of non-predicative sentence elements may have been in Proto-Salish.

4.2.17. Semantic domains. As the semantic systems of Salishan languages are more deeply plumbed one is struck by the importance of shape in connection with many roots--a feature reminiscent of the Athapaskan languages. Descriptive coverage is apt to be inadequate unless field research is specifically directed at the problem. For example, one root that is clearly reconstructible on the basis of its widespread occurrence has the meaning 'concave object (like a basket or canoe) turns upside down'. In Thompson two different roots refer to the

existence or development of space within a substance or object--one indicating a layer between two other layers, the other suggesting a porous condition, as a substance riddled with holes. More familiar differences like 'long, narrow (usually cylindrical) object is positioned' vs. 'flat object is positioned' are also common.

Other characteristic ways of looking at the world are evident from folk taxonomies, the investigation of which has barely begun. Several recent ethnobotanical studies (Turner 1973, 1974, 1975; Turner and Bell 1971) provide the background for studies of the native taxonomies of plants. Similar approaches to the animal world and other features are also indicated. Such work inevitably leads off into the realm of folklore, where the mythical significance of the animals becomes evident. Much of this has relevance for comparative work because we need to know the extensions and interconnections of concrete objects in order to consider the validity of proposed semantic shifts--which become more important as we consider more distant relationships.

Two detailed papers treat anatomical domains--Saunders and Davis' (1974) study of Bella Coola head bone nomenclature, and Kinkade's (1975a) treatment of the overall domain of anatomy in Columbian.

4.2.18. Diffusion. Although borrowed words are frequently mentioned in descriptive and comparative studies, extensive diffusional studies have been very limited. Bella Coola, obviously separated for a lengthy period from its Salishan relatives, has been a natural target for investigation. Newman (1974) presents a careful study of ecological vocabulary showing strong influence from neighboring Kwakiutlan groups. Nater (1974) has assembled numerous lexical similarities between Bella Coola and nearby languages.

5. The Broader Perspective

5.1. Further Relationships of Salishan.

Efforts to relate the Salish family to other language groups have been hampered by the lack of rigorous reconstructions, which are only now beginning to be possible. Sapir's (1929) placing of Salish in a Mosan stock, ultimately part of his Algonkin-Wakashan phylum, was not documented. Swadesh's (1953a, b) sketch of a Mosan comparison has not seemed especially convincing to other scholars working in the field, and it has turned out to be impossible to carry any further the lines of relationship suggested there. Further doubt is cast by Swadesh's later position (e.g. 1964), that all the world's languages are ultimately related, but Mosan is not one of the

intermediate groupings, and at least Wakashan is viewed as more closely affiliated with a different stock.

To scholars working with comparative Salish, similarities to Chimakuan and Wakashan seem all to suggest diffusion, although some borrowings may reflect considerable antiquity. However, another unit in Sapir's Algonkin-Wakashan stock was Kootenay. Haas (1965) reviews the history of the search for affiliations of that language isolate, and goes on to consider the best available evidence. She reports primarily on her comparison with the considerable body of Algonkian reconstructions, but observes also a number of resemblances to forms in Salish languages. Some appear to reflect borrowing, but others may indicate a distant genetic connection. Lawrence Morgan, a student at the University of British Columbia, has begun assembling materials to demonstrate a genetic connection between Kootenay and Salishan. He has himself collected extensive material on Kootenay, including dialectal coverage, and has made a good deal of progress in its analysis, pushing beyond the limited treatments offered by Canestrelli (1926), Boas (1918, 1926), and Garvin (1947, 1948a, b, 1951a, b, 1953, 1954). Formal presentation of his results is yet to come, but the material looks promising. It includes comparison of some intricate grammatical details, and many of the proposed cognate morphemes must be isolated from surface forms both in Kootenay

and in Salishan languages in such a way that borrowing would seem a quite impossible explanation of the similarities involved. Some interesting non-identities are involved in the sound correspondences Morgan has recognized: Kootenay (Kt) t' : PS $*c'$, Kt c : PS $*t$, Kt c' : PS $*x'$, and Kt $m \sim n \sim w \sim u$ corresponding to our newly suggested PS $*\eta^w$.

5.2. Chimakuan and Wakashan.

The prospects for demonstrating a genetic relationship between these two families are perhaps better than for showing a connection of either with Salishan. The effort is not easy--not only because there is obviously a great deal of borrowed material between the two families, some of it perhaps dating back a long time, but because the Chimakuan family is so small--just two quite closely related languages, and documentation of the one (Chemakum) was severely limited before it became extinct. It then approaches the case of a language isolate being compared with a family. J. V. Powell's (1975) reconstruction of Proto-Chimakuan, and now a fairly extensive dictionary of Quileute (Powell and Woodruff 1976), the extant language, should help.

Powell (1976) proposes extensive etymologies, utilizing Heiltsuk data in comparison with Chimakuan, partly in order to reduce the incidence of loan material but partly, too,

because of the lack of a body of Wakashan reconstructions. Nonetheless, it appears probable that a good deal of the material presented reflects borrowing. The Chimakuan forms do indeed seem quite different from the Heiltsuk, but in much the same ways that cognate Nootkan forms do, so that the Chimakuan words may be borrowed from some Nootkan source. On the other hand, some very interesting correspondences are involved, and Powell offers some convincing explanations of developments which make the comparison look promising. Collaboration is certainly called for between researchers in the two families.

An obvious need here is reconstruction of Proto-Wakashan, and, behind that, full coverage of all the Wakashan languages, leading to reconstruction of the vocabulary and grammar of intermediary Proto-Nootkan and Proto-Kwakiutlan. (For Wakashan comparative work see coverage by Jacobsen in this volume.)

5.3. Other Groups.

Other Northwest groups have been considered genetically relatable to stocks belonging to other areas and so are most meaningfully discussed in connection with those stocks. A few comments about recent developments are, however, perhaps pertinent here.

Several small families are generally thought to be Penu-tian (see coverage by Silverstein in this volume): Takelma, in

southern Oregon; Kalapuyan, in the Willamette Valley; Coosan, Siuslaw, and Alsea on the Oregon coast; Chinookan in the lower Columbia valley; Sahaptian, Klamath, Molala, and Cayuse east of the Cascade mountains; and Tsimshian in west-central British Columbia. The connection of this last family is perhaps the most questioned; reconstruction of Proto-Tsimshian will benefit from further data now being collected by Dunn, who has indicated (1976; in press) that a southerly coastal dialect perhaps constitutes a third language in the family--as distinct from Coast Tsimshian as it is from the interior Nass-Gitksan.

Eyak and Athapaskan languages in the area are being studied in connection with the family generally (see coverage by Krauss elsewhere in this volume). The more remote connection of Tlingit remains problematic for at least some scholars; in addition to Krauss' treatment in this volume, see now also a recent monograph by Pinnow (1976). Haida, on the other hand, is a different story. Levine (1976) considers in careful detail the features which have been proposed to link Haida to Tlingit and Eyak-Athapaskan, forming the Na-Dene phylum (esp. Sapir 1915a, Hymes 1956, Pinnow 1968). He argues persuasively that all of these fail, and shows how much of the evidence cited in support of the hypothesis is erroneously analyzed and/or dubiously comparable. Haida then furnishes the area a new isolate.

5.4. Areal Studies.

In conclusion we should note that the Northwest is a classic example of a linguistic diffusion area. However, descriptions of the languages are only now beginning to provide the basis for serious areal studies. These will be interesting in their own right, as well as for their essential contributions to genetic comparison and reconstruction, and the insights they should afford general work on typology and universals. (For a survey of the fragmentary observations that can now be made on areal features in the Northwest see Thompson and Kinkade, in press; Kinkade 1976a.)

Notes

1. The terms Salish and Salishan are used interchangeably in the literature. There is perhaps some tendency to prefer the suffixed form when alluding to genetic connections, but it would be difficult to make that specialization stick. The most common term for referring to the reconstructed ancestor language is Proto-Salish. In some (mostly early) works the Latinized form (Lingua) Selica is used. The word derives from the Kalispel-Flathead Indians' term that designates their linguistic unity, but in most current usage in English it refers to the family or to one or more languages as members.

The present paper surveys primarily comparative Salishan; references to descriptive work are thus incidental, as they relate to comparative efforts. For a general survey of research on Northwest languages up to 1970 see Thompson 1973. For support of our research on this language family over many

years I am grateful to the U. S. National Science Foundation, the University of Washington Graduate Research Fund, the British Columbia Provincial Museum, and the Melville and Elizabeth Jacobs Research Fund (Whatcom Museum, Bellingham, Washington). I am also indebted to many colleagues--Indian experts, fellow researchers, and students--for cooperation and discussion on the many problems we have encountered in this research. In particular I thank Aert H. Kuipers for making available a pre-publication copy of his summary of Proto-Salish (Kuipers, in press); M. Dale Kinkade for discussion and suggestions as I drafted this paper; Philip N. Jenner, Sharon V. Mayes, and William R. Seaburg for critical reading of a late draft; and my wife, M. Terry Thompson, for help at all stages of the work.

Readers unfamiliar with the language, dialect, and group names central to the discussion here may wish to consult the following alphabetical list, in which broad phonetic transcriptions are supplied: Bella Coola [bèləkúlə], Chehalis [tʃihéɫɪs], Chemakum [tʃéməkəm], Chimakuan [tʃimækwən], Clallam [klæləm], Coeur d'Alene [kərdəlén], Colville [kólvl̩l], Comox [kómòks], Cowlitz [káwlɪts], Haida [háydə], Halkomelem [hàlkəméləm], Heiltsuk [háyltsuk], Kalispel [kælɪspəl], Kootenay [kútəni], Kwakiutlan [kwákyutlən], Lillooet [lɪfluwèt], Lkungen [ləkwúnən], Lummi [lÁmi], Lushootseed [ləʃútsìd], Makah [məkó], Mosan [mósən], Nitinat [nítənæt], Nooksack [núksæk], Nootkan [nútkən], Okanagan [òkənágən], Pentlatch [péntlætʃ], Puget [pyúdʒɪt] (= Lushootseed), Quileute [kwíliyùt], Quinault [kwínòlt], Salish(an) [séliš(ən)], Seshelt [sísèlt], Shuswap [ʃúswòp], Spokane [spòkæn], Squamish [skwómɪʃ], Tillamook [tíləmùk], Tsamosan [tsámòsən] (= Swadesh's Olympic), Tsimshian [tsìmsʃən, tsímʃən], Twana [twónə], Wakashan [wøkæʃən].

2. We now know that northern Tillamook, like its southern dialect, has an opposition corresponding to that of rounded vs. unrounded velars in the other languages. It is convenient to continue designating it in this way, although the "rounded" velars are usually rather neutral sounding while the "unrounded" ones are produced with lip-spreading (Thompson and Thompson 1966). The opposition was apparently maintained in all environments in the southern dialect, but in the north the rounding was lost before *i. The g^w Swadesh refers to here thus appears as g in these cases; it is devoiced in voiceless environments.

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Abbreviations:

AnL = Anthropological Linguistics.

CAIL = Conference on American Indian Languages. (Held at the annual meetings of the American Anthropological Association.)

CJL = Canadian Journal of Linguistics.

DC = Dutch Contributions to ICSL (preprints).

HNAI = Handbook of North American Indians, ed. William Sturtevant. Washington, D. C.: Smithsonian Institution.

ICSL = International Conference on Salish Languages. (Location given; pages in preprint cited where applicable.)

IJAL = International Journal of American Linguistics.

JanL = Janua Linguarum. The Hague: Mouton.

Lg. = Language.

NCSC = Northwest Coast Studies Conference. Burnaby, B. C.: Simon Fraser University.

SAS-P = Sacramento Anthropological Society Papers. Sacramento.

UCPL = University of California Publications in Linguistics. Berkeley and Los Angeles.

UH WPL = University of Hawaii Working Papers in Linguistics. Honolulu.

UW = University of Washington.

VCNL = Victoria Conference on Northwestern Languages Proceedings, ed. Barbara S. Efrat. Victoria: British Columbia Provincial Museum.

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Wakashan Comparative Studies

William H. Jacobsen, Jr.

Urheimat

The Wakashan family of the Northwest Coast provides an example of a group that is potentially tractable to historical studies, but where a very uneven distribution of descriptive work among its members has put severe constraints on what has been possible. The family centers on Vancouver Island, occupying also a considerable area of the mainland east and north of there, and also extends south to the northwest tip of Washington State at Cape Flattery.¹ Its Urheimat most likely lies within its present area, although conceivably in part within adjacent Coast Salish territory.

The specialized vocabulary, and even grammar, of these languages appropriate to the associated maritime culture has several times been remarked upon, as implying a long period of development. Franz Boas (1931:164) mentions the rich terminology of the Kwakiutl relating to fishing, canoeing, wood-working, and the potlatch, involving many primary stems, and he gives examples of 11 verbs for fishing with different implements or for different fish. Edward Sapir (1912:228-229) mentions the elaborated vocabulary of Nootka for many species of marine animals, and also points out (238-239) the existence

of suffixes in Kwakiutl and Nootka locating activities on the beach, rocks, and sea, and in Nootka of suffixes relating to buying, giving feasts, potlatching, and gift giving at girls' puberty ceremonies. Elsewhere (1916, reprint 1949:444) he again points out the existence of several Nootka suffixes relating to aspects of the potlatch as demonstrating the great age of this institution among this group.

One also notes Morris Swadesh's suggestion (1948:106) that the strongly suffixing structure of Wakashan and Chimakuan suggests that they were formerly part of an all-suffixing language area along with Eskimo-Aleut, before the intrusion of Tlingit and Haida, a suggestion which he apparently later abandoned in favor of a genetic relationship between Eskimo-Aleutian and Wakashan, but along with several other families (1962:1266, 1289).

In similar vein, a comparable conclusion can be drawn from the occurrence of a first person inclusive/exclusive distinction only in Shuswap among the Salish languages (apparently alluded to by Boas [1911a:81]). The only other languages of the large area north of Chinook and Sahaptian and west and north of Algonkian to exhibit this distinction are the Kwakiutlan languages. This is a category that has shown itself available for diffusion elsewhere in North America, notably in the Great Basin (cf. Jacobsen 1972). Kwakiutl and

Shuswap are at present separated by Athapaskan Chilcotin. Hence the sharing of this category may point to a former contiguity of these languages, before their separation by Athapaskan intrusion from the north.

Relationship Between Branches

Wakashan is sharply divided into two branches, formerly usually referred to as Kwakiutl and Nootka (e.g., Boas 1911b: 427), now usually as Kwakiutlan (Kwakiutlic) and Nootkan to avoid confusion with single language members of each branch. Rath (1974:42) prefers the terms North-Wakashan and South-Wakashan respectively, to avoid giving arbitrary primacy to one over another language within each branch. The former is located on the northeastern portion of Vancouver Island and on the British Columbia mainland; the latter, along the west coast of the island and at Cape Flattery.

The relationship between the two branches was discovered by Boas in 1889. In a letter he commented: "I am very happy now because I achieved good results in the past days, in my opinion. I made the interesting discovery that Nutka [Nootka] and Kwakiutl belong together. This is even clearer than the connection between Haida and Tlingit," and again, "I am positive now that Nutka and Kwakiutl belong together" (Rohner 1969:111, 112). This discovery was announced officially a

year later, and published in 1891 (Boas 1891:678-679). This report mentions the far-reaching structural similarity of the two languages, and compares 26 suffixes and 26 words. These findings became known in time to be included in the classification of J. W. Powell (1891), to which we owe the application of the term Wakashan to the family, this having been resuscitated from its earlier use referring primarily to Nootkan groups.

Statements vary about the time depth separating these branches. Sapir compared them to two separate branches of Indo-European, Slavic and Latin (1911:15) and Russian and German (1938:254, fn. 3a), which is certainly too great a difference. Swadesh (1948:106) drew the analogy with that of English and Scandinavian, which may be too shallow. His later calculation (1953a:26, 41) of the time depth between Nootka and Kwakiutl as 29 centuries seems plausible.

It is interesting to note, in terms of Kloss's 'recognizability' criterion (1967:36-37, 41) that there are two words in Nootka for speaking a foreign language. The stem kicuq- gives rise to ki·ki·cuq^wa for speaking Nitinat, Makah, or Kwakiutl (i.e., another Wakashan language), whereas for other aliens, especially Salish, formations on the stem !u·sap- are used. The Nitinat cognate of the latter, !u·sap- in !u·sap^tx, refers to the Cowichan, and the Makah cognate

qu·sap- refers to those of strange language, Salish, and especially Clallam. This native "ethno-linguistic" distinction is doubtless reinforced by the sharp cultural cleavage between Nootkan and Salish peoples.

These languages are idiosyncratic in structural type, being polysynthetic with complex morphophonemics, and strongly emphasizing suffixation, there being a large number of suffixes with quite specific lexical reference, and they exhibit a rather fuzzy differentiation of parts of speech (cf. Jacobsen 1976b).

Comparative Studies

Even today, there are just two languages of the family that are well described in print, (Southern) Kwakiutl (or Kwakwala) and Nootka. The former is attested in numerous publications by Boas, including copious texts collected in large part by his native collaborator George Hunt (especially Boas 1893, 1900, 1910, 1911b, 1921, 1931, 1934, 1935-43, 1947; Boas and Goddard 1924; Boas and Hunt 1902-05, 1906; cf. also Levine 1977). Nootka was worked on at first by Edward Sapir, joined later by his student Morris Swadesh (cf. Swadesh 1939). There are also copious texts available for this language, due in large part to the collaboration of native speaker Alex Thomas (Sapir 1924; Sapir and Swadesh 1939, 1955).²

Most of the published comparative work involving these two languages is due to Sapir. His first contribution (1911: 15-20) appeared shortly after his first 1910 field trip to the Nootka. It gives a useful compact statement of phonetics and sound correspondences, notes structural similarities, and lists 26 apparently cognate suffixes and 12 such stems.

Sapir's other (1938) contribution to comparative Wakashan turns out to be the last study that we have that compares members of the two branches of the family. Written after the author had attained a detailed knowledge of Nootka, this deals with the secondary origin of glottalized resonants in pre-Proto-Wakashan, including a sophisticated consideration of the morphophonemic processes called 'hardening' and 'softening' by Boas (e.g., 1900:710-711) and presenting numerous comparisons and reconstructions.

Swadesh (1953a:35) gives a chart of Proto-Wakashan phonemes, which seems reasonable enough but is not backed up by actual comparisons and reconstructed proto-forms. This includes the voiceless stops and affricates $p \ t \ \lambda \ c \ k \ k^w \ q \ q^w$, a corresponding voiced series $b \ d \ \lambda \ z \ g \ g^w \ g \ g^w$, a corresponding glottalized series $p' \ t' \ \lambda' \ c' \ k' \ k'^w \ q' \ q'^w$?, the voiceless fricatives $\underline{s} \ \underline{x} \ x^w \ x'^w \ h$, the voiced resonants $\underline{m} \ \underline{n} \ \underline{l} \ \underline{y} \ \underline{w}$, and corresponding glottalized resonants $\underline{m}' \ \underline{n}' \ \underline{l}' \ \underline{y}' \ \underline{w}'$. There were three vowels $\underline{a} \ \underline{i} \ \underline{u}$ occurring long (or doubled) and short.

Both Sapir and Swadesh mention some additional pre-Proto-Wakashan consonants that are suggested by the morphophonemics.

Swadesh has also described (1948) the development of suffixes in Nootka from former stems under areal impetus.

Northern Wakashan

Within the Northern or Kwakiutlan branch of the family, I am not aware of any comparative work in the usual sense. Boas's often repeated division into three branches, Kwakiutl proper (in several dialects), Heiltsuk (or Bella Bella), and Kitamat (or Haisla) (e.g., Boas 1893:34; Sapir 1938:253, fn. 4; Thompson 1973:981), has now been called into question to some extent (Rath 1974:40-42). The relationships among Heiltsuk and the languages of Rivers Inlet and Kitamat seemingly need further clarification. The Kwakiutl language is now often referred to as Kwakwala (Kwakwala) (e.g., Levine 1977), which is based on the native term for the language rather than for the group.

Boas's early vocabulary (1893) displays many lexical differences among the three branches, including some more localized groups, but with inconsistent coverage. Bach and Bates (1971:4-6, sec. 3) show some differences and correspondences between Haisla (Xa'isla) and Kwakiutl.

The attestation of Kwakiutl and Bella Bella (especially

Boas 1928, 1932a) is early enough that direct historical studies of possible changes should now be possible, a topic that Boas barely adumbrated in a note (1932b). At least Kwakiutl, like Nootka, should lend itself to systematic dialectological studies.

One of these languages, Heiltsuk, has now been shown to have tones, or more accurately, tonal accents (Kortlandt 1975). Although the describer thinks that this is an archaic feature in this language, it seems likely to turn out to be an innovation. Perhaps it is somehow connected with the loss of first-syllable vowels to give initial consonant clusters in this language that were certainly not present in Proto-Kwakiutlan.

The languages of the Northern branch are in proximity to languages of several other families: Tsimshian, Athapaskan (Carrier, Chilcotin), and Salish (both Bella Coola and northern Coast Salish). Swadesh (1953a:39-40, sec. 9) made some observations concerning lexical borrowing among these languages. He notes that (Salish) Comox waxáci 'pipe' must be a recent borrowing from Heiltsuk because of being analyzable in the latter, not being found in more distant Salish areas, and referring to a culture item. Conversely, Kwakiutl mtus 'kidney fat' is connected as a borrowing with words for 'kidney' in various Coast and Interior Salish languages.

More recently we have two important studies of lexical diffusion centering on Bella Coola, a geographically and linguistically separate Salish language, which show clearly that Bella Bella (Heiltsuk) and Kwakiutl have been much more donors than recipients in lexical interchange. Newman (1974) examined the provenience of a Bella Coola 'ecological' vocabulary of 279 items referring to animals, plants, and related technological items. Apparently the majority of the terms had no clear etymologies, and he found evidence for retention from Common Salish for only 19 of them. On the other hand, 32 items were borrowed from Wakashan, of which, with overlap, 30 occur in Bella Bella (probably the immediate source in most cases), 26 in Kwakiutl, and 6 in Nootka. Over half of these words concern maritime items. Other families were not correspondingly significant as sources of words; only two words each were borrowed from Tsimshian and Athapaskan. In a 165-word basic vocabulary, the percentage of borrowing was much less, three of the apparent four borrowings belonging also to the ecological vocabulary. Borrowing by Wakashan from Salish was much less extensive. From the list of the Bella Coola 19 words with Salish cognates, 3 or 4 ('beaver', 'fat', 'raccoon', perhaps 'seal') had been borrowed into Bella Bella, 2 or 3 ('hawk', 'raccoon', perhaps 'fat') into Kwakiutl, and 2 ('gull', 'potato') into Nootka (probably from Coast Salish

rather than Bella Coola).

Nater (1974) has drawn up a list of 146 lexical parallels between Bella Coola and geographically adjacent languages. Over three-fourths of these comparisons were to words shared by more than one Wakashan language or otherwise thought to be indigenous to Wakashan. Evidence could be found to show that 65 of these were likely to be of Wakashan origin, with a few more also probable. Additionally, 40 comparisons were made to words in single Wakashan languages, Heiltsuk or Bella Bella, and 19 of these were also thought to be of Wakashan origin. A few more comparisons involved Wakashan along with Tsimshian.

Southern Wakashan

The Southern or Nootkan branch of Wakashan is composed of three languages: Nootka, spoken in several dialects along the west coast of Vancouver Island; Nitinat (Nitinaht), in a more restricted area just south of this; and Makah, at Cape Flattery across the Strait of Juan de Fuca. To avoid giving arbitrary priority to the dialect of Nootka Sound, Nootka is also referred to nowadays as the West Coast Language, which term seems sometimes also to subsume Nitinat. The variety of Nootka described by Sapir and Swadesh is primarily the Tsishaath (now often Tseshaht) (ciša'ʔath) dialect spoken near the town

of Alberni. Nitinat text analyses with ancillary data have been presented by (Haas) Swadesh and Swadesh (1933) and Touchie (1977). Makah is a separate language from Nitinat, with the time depth separating them apparently being in the vicinity of 1000 years.

There has been a fair amount of lexical borrowing within Nootkan and between the branches of the Wakashan family. For example, Makah na'ni /na'ni/ 'grizzly bear' (one of few stems in this language containing nasals) must be borrowed in the first instance from Nootka na'ni, na'na 'id.', but this is matched also by similar forms in Northern Wakashan and Bella Coola (cf. Newman 1974:209; Nater 1974:4, no. 58).

Among the closely related Nootkan languages, data from one can sometimes be used to clarify forms in another, in cases either of borrowing among them or of loss of related stems. For example, Nootka kaca'yak^w 'counting stick used in hand game and some other games' has no clear literal meaning, but this is furnished by the Makah stem kac- 'to measure'; hence it is probably a borrowing from Makah kaca'yak^w 'counting stick for bone game, ruler, yardstick, tape measure', also 'snake' (with a metaphor like that in English inch-worm). Nootka si'ił 'fire-drill, match' is shown by the existence of Makah si-, momentaneous sičičiλ 'to stir (once); to strike a match', repetitive si'λsi'ya 'to stir' (and si'ił, si'iłyak^w

'match') to have meant etymologically 'stirring on the floor'. An intermediate stage is shown by the specialized meaning of Nitinat si-, momentaneous sičičiλ 'to strike fire (with match or fire drill)'.³ Makah λata'wačak^w 'paddle' no longer has a related stem, but this is attested by Nootka λatwa- 'paddling steadily'.

The languages of this Southern branch are in proximity to languages belonging to several branches of Coast Salish, and Makah is in contact with Chimakuan Quilleute to its south. Klokeid (1968) gives a preliminary report on lexical innovations in Nitinat, including both borrowings and neologisms.

The primary consonantal changes that differentiate Southern Wakashan from the parent language are the development of a č-series of consonants corresponding to the palatal k^y-series of Kwakiutlan, and the apparent merger of voiced and voiceless series of stops into one voiceless series. Some of the other changes that Sapir described as between Kwakiutl and Nootka are now seen to have taken place subsequent to Proto-Nootkan, namely the development of pharyngeals and the loss of *1.

Comparative work has been done among the three Nootkan languages by Haas and Jacobsen. The general phonological correspondences are understood, but certainly not all of the details, as the synchronic phonologies of these languages have

not been completely described. The most convenient tabulation of the sound correspondences, with emphasis on Nootka and Nitinat, is Haas 1969:115-124, sec. 6. Her examples were drawn from a list of 181 cognate pairs for Nootka and Nitinat, for 40 of which a Makah cognate was also available, although they actually exist for the great majority of sets.

The following changes of consonants have been of interest. The Proto-Nootkan nasals *m and *n have become voiced stops b and d in Makah and Nitinat. This is an areal feature that is shared with Quileute of the Chimakuan family; it is difficult to decide which of these families is the innovator, as structural prerequisites, namely the absence of a voiced series of stops, were common to both (cf. Haas 1969:112, fn. 16; Thompson and Thompson 1972; Powell 1975:42-50, sec. 3.121). In these same two languages, glottalization of resonants has been lost, with compensatory lengthening of preceding short vowels (Haas 1969:117-118, sec. 6.15). This change has been carried through completely in Makah so as to eliminate glottalized resonants as a type; this is discussed by Jacobsen (1968) as a problem in internal reconstruction in connection with the 'hardening' process. In Nitinat the loss took place earliest in initial position, and has been continuing in the last decades; this is discussed by Gamble (1973) as a presumed case of gradual diffusion through the lexicon. This change is

again shared by Quileute, and is probably not unrelated to the loss of nasals, b and d (from *m and *n) probably being unstable sounds that might trigger a general loss of glottalization.

Nootka and Nitinat have developed a pharyngealized glottal stop (ʔ) from earlier *q and *q^w, retained in Makah; and Nootka but not Nitinat has also developed a pharyngeal fricative (h) from earlier *x and *x^w. Jacobsen (1969a) has described in detail factors pointing to these sounds being an innovation rather than a retention in these languages: economy in family tree, loss of contrasts, morphophonemics, and secondary origin of apparently unchanged phonemes.

Distributions of the labialized dorsal phonemes have been discussed by Jacobsen (1969b; cf. also Klokeid 1977), which showed that some apparent discrepancies among these languages reflected only differences in analysis, so that labialization has been a fairly stable property of the dorsals in certain morphemes, even though it is often neutralized.

Proto-Nootkan probably had three vowel qualities, a i u, occurring short and long. All the languages have developed two more vowels, e o, more widespread in Makah and Nitinat than in Nootka. Makah and Nitinat show rather complicated patterns of vowel insertion and loss, whose synchronic description must largely coincide with their actual history.

For example, Makah has lost final short vowels, but these are still morphophonemically present in the basic forms of both stems and suffixes (cf. Jacobsen 1971). Thus Swadesh (1953a: 34) derives Makah wi' (wii) 'three' from Proto-Wakashan *waya, but the Makah basic form is wi'yu, which may suggest a change in at least the final vowel of the reconstruction. However, in some cases basic -a has been analogically added. Nitinat, but not Makah, has lost short vowels before final consonants (e.g., Nootka -kuk, Makah kuk^w, Nitinat -kk^w [final allomorph] 'resembling ...'). These sorts of alternations raise acutely the problem of the appropriate level of abstraction of the forms to be compared. For example, Haas (1969:122, s.v. INSTRUMENT) compares a Nitinat form -eyk of the suffix meaning '... device, instrument' to the Nootka -yak^(w)-, but the basic form of this suffix in Nitinat is apparently -yak^w, just like the Nootka (so Nootka 'akyak and Nitinat 'akeyk 'knife' would be basically 'ak^wyak^w, while Makah qaka'yak 'id.' would be qak^wyak^w).

All Nootkan languages have variable-length vowels, which are long if in the first or second syllable of a word, but short if in a later syllable. The recent paper by Klokeid (1975; cf. also Jacobsen 1976b, fn. 3) points the way to what I am sure is their historical explanation. These variable-length vowels are the regular, unmarked case. There has been

a pre-Nootkan process of general shortening of long vowels in the third or later syllable. Vowels that remain long in this position would represent a later development, especially, in Nootka, **ay* > *i* and **aw* > *u* (cf. Haas 1969:118, sec. 6.16), and, in Makah, lengthening before glottalized resonants (e.g., *-a'diɬ* 'along something' < **-anuɬ*).

Contributions to comparative Nootkan morphology are limited to discussions of consonantal 'stem-extendors' by Haas (1969:118-119, sec. 6.21; 1972) and Jacobsen (1969a:149-151, sec. 6.11-6.16), an analysis of the complicated pronominal suffix paradigms by Haas (1969:108-115, sec. 1-5.2), and a note by Jacobsen (1976b, sec. 8) on differential development of nominal markers in Nootkan languages.

A possible genetic relationship to, and lexical interchange with, Chimakuan are discussed in my paper on that family.⁴

As renewed field work is now under way in most of the Wakashan languages, the prognosis for future advances in our historical understanding of this family is favorable.

Notes

1. Some of the material herein originally appeared in Jacobsen 1976a.
2. For additional bibliography on descriptive sources see

Adler 1961:207-210 and Freeman 1966:82, 213-216, 228, 256, 257-259, 380, and for recent general surveys, Haas 1973:680 (Salishan, Wakashan, and Chimakuan), 696-697 (Wakashan), and Thompson 1973:981, 997-1000.

3. Cf. Haas 1972:86-87, sec. 3.1; 90, sec. 4.1; suggesting si- 'pointed stick-like object'.

4. On Wakashan and Salish, note also Swadesh 1953b and Klokeid 1969.

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Chimakuan Comparative Studies

William H. Jacobsen, Jr.

Introduction

Chimakuan is a small family which must have been located in the northern part of the Olympic Peninsula of western Washington State before the intrusion from the north of Nootkan Makah or the Clallam dialect of Straits Salish, although just how much of this area was held seems impossible to say. The family contains just two languages. Chemakum was located in the northeastern corner of the peninsula, in the vicinity of Port Townsend, and has been extinct for some fifty years. Quileute is found on the west coast south of Makah, and now has about ten speakers. The distinctiveness of Chemakum from the surrounding Salish languages was noted by George Gibbs (1855:431). The name for the family, adopted by J. W. Powell (1891) in his influential classification, is due to Albert S. Gatschet. The time depth of the family seems to be roughly comparable to that of either of the two branches of Wakashan.¹

Descriptive Sources

Data on Chemakum comes primarily from a vocabulary collected by Franz Boas in 1890 (Boas 1892). Fuller material on Quileute was collected by Leo J. Frachtenberg in 1915 and

1916 and by Andrade in 1928 (cf. Andrade 1931, 1933). In recent years Quileute field work has been carried out by Eric P. Hamp, James E. Hoard, and J. V. Powell. Powell has contributed a study of Quileute deictics (1971), and has collaborated in the presentation of Quileute place names (Powell, Penn, and Others 1972; also Powell and Woodruff 1976:488-496, Appendix 1; Powell and Jensen 1976:61-67). A dictionary has recently been published (Powell and Woodruff 1976).

Comparative Studies

Brief notes on the relationship between Chemakum and Quileute by Manuel J. Andrade were published posthumously (1953b). Morris Swadesh (1955) published most of Boas's Chemakum data in a normalized orthography in a list of 664 items. He was able to match Quileute forms to 246 (37%) of them. By way of illustrating possible cases of suffixes deriving from former stems, Swadesh (1948:116-118, sec. 4) presented comparisons within and between the Chimakuan languages, and also to Wakashan languages.

Powell's dissertation on comparative Chimakuan (1975) represents an exemplary reworking of the data, going back to the original transcriptions for Chemakum. It contains a lexicon of 286 comparative sets that are considered conservative, and 48 that are more problematical. He had previously (1972)

offered a partial treatment of Chemakum grammar approached from the point of view of a knowledge of Quileute, and treats comparatively of selected grammatical problems in this later study: stem formation, classifier vowels, lexical suffixes, and relational and modal suffixes.

Phonology

Both Swadesh (1953a:35; 1955:60) and Powell (1975:38) have presented charts of Proto-Chimakuan segmental phonemes. The consonants were probably the voiceless stops and affricates \underline{p} \underline{t} \underline{c} \check{c} \underline{k} \underline{k}^w \underline{q} \underline{q}^w , the glottalized stops and affricates $\overset{\cdot}{p}$ $\overset{\cdot}{t}$ $\overset{\cdot}{\lambda}$ $\overset{\cdot}{c}$ $\overset{\cdot}{c}$ $\overset{\cdot}{k}$ $\overset{\cdot}{k}^w$ $\overset{\cdot}{q}$ $\overset{\cdot}{q}^w$?, the voiceless fricatives $\underline{\pm}$ \underline{s} \check{s} \underline{x} \underline{x}^w $\underline{\underset{\cdot}{x}}$ $\underline{\underset{\cdot}{x}}^w$ \underline{h} , the voiced resonants \underline{m} \underline{n} \underline{l} \underline{y} \underline{w} , and corresponding glottalized resonants $\overset{\cdot}{\underline{m}}$ $\overset{\cdot}{\underline{n}}$ $\overset{\cdot}{\underline{l}}$ $\overset{\cdot}{\underline{y}}$ $\overset{\cdot}{\underline{w}}$. Powell (1975:50-62, sec. 3.122) presents evidence to suggest that the palatal consonants \check{c} $\overset{\cdot}{c}$ $\overset{\cdot}{c}$ $\overset{\cdot}{s}$ have arisen from earlier labiovelars \underline{k}^w $\overset{\cdot}{\underline{k}}^w$ $\overset{\cdot}{\underline{x}}^w$ which preceded front vowels. He also makes likely (1974; 1975:42-50, sec. 3.121) the presence of the glottalized resonants, which do not survive as such in either of the daughter languages, although these might pertain to a slightly older stage than the proto-language. Consonantal sound changes in Chimakuan include loss of nasals and of glottalization of resonants in Quileute, just as in Nootkan Makah and Nitinat (cf. Haas 1969:112, fn. 16; Thompson and Thompson 1972). Palatal affri-

cates and fricative have coalesced with corresponding alveolars c c s in Chemakum, and new palatals have come from older velars *k *k *x here. In this language also, semivowels *y and *w have become before stressed vowels č and k^w respectively, merging with other phonemes.

Powell has noted (1975:24-25, sec. 2.12(h); 40-41, sec. 3.11) that two Quileute phonemes have been introduced in borrowings, λ primarily from Wakashan (subsequently added to through coalescence of t and ɬ) and infrequent g from English and perhaps Salish Quinault (cf. also Hamp 1977:282).

There were three vowels in the proto-language, a i o (or u). Powell (1975:120-121, sec. 3.24) notes factors that have given rise to differential vowel length, but it is uncertain whether this was already present in Proto-Chimakuan, as Swadesh thought. There was probably also at least one phoneme of stress. Quileute has developed an additional vowel e.

Lexical Diffusion

There have been some lexical borrowings between Chimakuan and Wakashan, primarily between Quileute and Makah. Some examples were noted in Andrade 1953a, partly by the editor Swadesh. Jacobsen (1976) discussed over 40 words that seem to have been borrowed. The majority seemed to have gone from Makah to Quileute, but the possibility of borrowing between

Proto-Nootkan and Proto-Chimakuan must be kept in mind. Some 16 of these words pertain to fish and fishing, and sea mammals and their hunting. Some place names have also been borrowed in both directions.

Future progress in historical Chimakuan studies will presumably have to arise from continued study of Quileute and from additional comparisons to other nearby languages.

External Relationships

The possibility of a genetic relationship between Wakashan and Chimakuan has long been thought of, in part as members of a Mosan group of languages along with Salish. (The term Mosan is a coinage based on similar words for 'four' in these languages.) These families show considerable structural similarities, such as extensive use of suffixation and the potentiality for most words to act as predicates. The evidence for relatedness has been most thoroughly studied by Swadesh (1953a, 1953b).² Swadesh (1953a:41-42, sec. 10) calculated a time depth for the Wakashan-Chimakuan relationship of about 6500 years (i.e., greater than that for Indo-European), and for Mosan as a whole of about 9000 years (1953a:26, sec. 0). In Swadesh's comparative Mosan vocabulary (1953b), 171 of the 261 sets contain representatives of these two families. Powell (1976) has taken up this question again and presented

154 sets containing Quileute and/or Chemakum forms compared to Nootkan and/or Bella Bella ones. This demonstration does not seem completely convincing, partly because of the possible presence of loan words between these two contiguous families, partly because of some considerable semantic shifts assumed, and partly because the sound changes recognized are not as thoroughgoing as they perhaps should be, allowing for the necessarily great time depth involved. (Most suggestive here is Chimakuan $\underline{\pm}$: Wakashan $\underline{\lambda}$, $\underline{\lambda}'$ [beside $\underline{\pm}$: $\underline{\pm}$, $\underline{\lambda}'$: $\underline{\lambda}'$]). This relationship thus remains a very attractive possibility.

Going farther afield, Mary R. Haas (1960:980-983) has presented a list of 24 comparisons between the two Chimakuan languages and Proto-Central Algonkian or Proto-Central-Eastern Algonkian -- the first evidence ever presented for Sapir's "Algonkian-Mosan" grouping.

Notes

1. See especially Powell 1975:1-12, Chapter 1, for fuller information on descriptive sources and historical studies. For bibliography, see also Adler 1961:199-200 and Freeman 1966:107-108, 325-327, and for recent general surveys, Haas 1973:680 (Salishan, Wakashan, and Chimakuan), 681-682 (Algonkian-Wiyot-Yurok and wider connections), and Thompson 1973: 981, 1000-1002.

2. See Swadesh 1953a:27-28, sec. 1, for a bibliography of previous comparisons.

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Na-Dene and Eskimo-Aleut

Michael E. Krauss

Introduction

The present paper is a report on the work carried out during the period approximately 1970-1977 in the fields of Na-Dene and Eskimo-Aleut linguistics. The basic purpose is to supplement the reports I finished on these subjects in 1971, concentrating on the period 1945-1970, published in 1973 in Volume 10 of Current Trends in Linguistics.¹ The coverage here will necessarily concentrate this time more on Alaska and less, touching only some of the high points that have come to my attention, in research in these language groups in Canadian and Greenlandic Eskimo and in Canadian and Apachean Athabaskan. I shall not attempt, as I did in 1973, particularly in the Eskimo-Aleut report, to present an exhaustive bibliography of all materials in or on the languages. For one thing, as I correctly predicted in 1973.803, there has been a geometrical increase in the amount of publication, especially of school texts for bilingual education programs, such that cataloging the Eskimo section alone would require a sizeable volume. The specific bibliographical references here will concentrate on the major published academic contributions. (An exhaustive catalog of

all known materials, published and unpublished, academic, pedagogical or popular, on or in any Alaskan native language, is now being prepared by Krauss for a separate volume that will include several thousand entries.)

The Position of Alaska

For both the Na-Dene and Eskimo-Aleut language groups Alaska is of very special importance. I hear that it is fairly well agreed in archaeological and ethnohistorical scholarship (none of which I am in any way responsible for!) that Alaska is the original American home of the common ancestral languages involved in each of these groups (the precise definition of Na-Dene I shall discuss later). I believe that the linguistic evidence also clearly bears this out. In both cases by far the greatest diversity is found within the borders of present-day Alaska (Aleut, three varieties of Yupik Eskimo, and Inupiaq Eskimo are all found in Alaska; Tlingit and Eyak are found mainly or only in Alaska, along with ten of the Athabaskan languages).

It is very interesting to note that there are no detectible forms that might be originally loan words from Eskimo-Aleut in, say, Navajo, nor are there any forms detectible as loan words from Athabaskan in, say, Greenlandic Eskimo. Both Apachean and Greenlandic represent relatively recent expansions of these language

groups. In any case, if there had been a significant number of Athabaskan loans in Proto-Eskimo, or Eskimo loans in Proto-Athabaskan, we would expect to see evidence of them in the spread. I believe that one must conclude from this that the Proto-Athabaskan and Proto-Eskimo, or at least those sections of them which have survived, were not in contact, although they both were in Alaska. It is also probable (on the same bases as mentioned above: archaeological, ethnohistorical, and linguistic) that the Urheimat of Proto-Eskimo(-Aleut) was in western coastal Alaska ("Beringia"), whereas the Urheimat of Proto-Athabaskan-Eyak(-Tlingit) was in eastern Alaska, interior, perhaps extending into Canada already. What there was in between we shall almost certainly never know-- languages perhaps related to one or both, or perhaps languages of families totally extinct today. So much concerning the prehistory of these language groups in Alaska.

Another point of very great interest, in perspective too often neglected, is the fact that both of these language groups are today amongst the most successful in the perpetual struggle for survival amongst the world's languages. There are undoubtedly many more speakers today of both the Na-Dene languages and of the Eskimo-Aleut languages than ever before in the history of mankind, and the numbers continue to increase. One tends to lose track of this simple fact, which seems to go along with "the vanishing

Indian." The success within these language families is very uneven, however. While there are now only three speakers of Eyak, there are about 200,000 speakers of Athabaskan. Three-quarters of these speakers of Athabaskan, however, are Navajos. Therefore, were it not for the spectacular success of Navajo, Na-Dene languages might perhaps not be spoken by larger numbers than ever. Yet there are several other Athabaskan languages, in Canada, with increasing numbers of speakers. One pattern seems clear enough in this case, at any rate: the farther from Alaska, the better the chances seem for survival. It almost appears as if this theory is borne out in the case of Eskimo-Aleut as well. The number of Eskimo-Aleut people is approaching 100,000 now, and the number of speakers of Eskimo-Aleut languages 85,000. Although Central Yupik and Siberian Yupik are still doing well in Alaska, and Inupiaq in Canada, the most spectacular success here is again the most recent and farthest-flung export, Greenlandic Inupiaq, now spoken by about one-half of the speakers of the Eskimo-Aleut language family.

On Linguistic Survival

This report will not dwell on the question of the survival of languages, tantamount to the survival of cultures, of nations. Every time a language dies, it is certainly a tragedy for human history, yet human history is made up of such tragedies, and

survivors are the exception, not the rule. I will not go any further into the philosophy of this at this point, nor into the many important considerations that continually preoccupy our work in Alaska, for the development, maintenance, or revival, or simply documentation, of the languages still alive. These should be the subjects of several books, and I am glad to see that they are the subject of an important developing branch of linguistics, sociolinguistics and language planning. It is not the purpose of this presentation to discuss the possibility or desirability of affecting this flow of human history by tampering with the "survival of the fittest" by maintaining or reviving languages that are sociologically headed for extinction. I do not, in fact, believe that it is ever a question of linguistic fitness, but rather a question purely sociological, political, and technological.

What I wish here is, for our scientific purposes also, simply to call attention to the fact that survival is the exception, not the rule. When we speak of a language family, which we often perceive as a branching tree diagram, we must not lose track of the fact that in most instances the branching is only an illusion. As often as not, the blank spaces in between the branches represent extinct languages and dialects. Even where there is clear-cut branching--this is itself less than usually the case!--that branching is more often than not the result of the disappearance of

intermediate languages or dialects than of physical geographical separation. In the case of some language spoken only in two dialects, each on a separate island, branching may indeed be probably due to true geographical separation, but not so for e.g. Eskimo and Aleut; the process here is probably that Eskimo-Aleut was at one time a dialect continuum of some sort along the shores of the Bering Sea and that some northerly variety of it and some southerly variety of it each assimilated the dialects in between until they met at what is now the abrupt Eskimo-Aleut border. Thus, only two dialects of Eskimo-Aleut survived, Proto-Eskimo and Proto-Aleut, and only certain dialects of those have since survived, and so on.

I submit this for what it is worth, namely, that even valid branchings are usually only illusory as such. It then follows, for example, that dating "separations" that never were separations should be taken less literally than ever. One might still say that Eskimo and Aleut are 4,000 years "apart," but such statements should usually be introduced with something like "it is as though"; or is even that much true? We have no idea when the last speaker of intermediate languages died; perhaps it was in 1491, or perhaps the day before the first linguist set foot.

There are probably other fallacies that follow from the illusion of branching. What I wish to get back to here, however, is that we usually lose track of the fact that we are dealing here

with only small exceptional fragments of language families that have come down to us, the survivors in the continual and world-wide process of language extinction. Just because it is a passionate interest of mine that I want to see survive those languages that I see alive around me at this moment in human history, does not mean I should lose perspective on the history of what has come this far.

I shall now report on each language family with a basic statement about the genetic relations within it, the status of the languages within it, the recent work on those languages, and comments on some of the more urgent needs for research. However, I stress again at the outset here that a highest priority is increasing involvement of native speakers in the documentation of and research on their own languages as linguists.

Eskimo-Aleut

The basic nature of the dichotomy between Eskimo and Aleut has already been mentioned in the Introduction to this report. Here as probably elsewhere very little more has been said about the glottochronology than I already reported on in 1973.²

Aleut

Fewer than forty speakers of the Western Aleut dialect survive

amongst perhaps 400 Aleuts living on the Commander Islands of the USSR, whither they were transplanted--Atkans to Bering Island and Attuans to Copper Island--by the Russian-America Company. The Attu-Copper dialect, very Russianized, may be by now all that remains of Attuan. Its end will be further hastened by the fact that Copper Island was evacuated to Bering Island in the 1970's. No further Soviet fieldwork is reported during the 1970's, but Menovshchikov's rehearsings in the 1960's of Veniaminov's 1846 vocabulary are reportedly forthcoming. Also, the Aleut primer that was submitted for publication in 1932 is reported to be forthcoming finally, now as a scientific document. The original editor of that, E. P. Orlova, died in 1977. It is to be hoped that Aleut fieldwork will soon be renewed in the USSR.

The Aleut language is spoken in the US by a continually dwindling number of approximately 700 of the 2,000 Aleuts. Aleut is basically one language with a strong dialectal difference between Western (Atkan and Attuan) and Eastern (all the rest). There are perhaps 100 speakers of Western Aleut in the US, Atkan only, Attuan being by now virtually extinct or assimilated (except for Copper Island in the USSR). The few surviving Attuans were repatriated to Atka, not Attu, after World War II. Atka is definitely the only place now where small children speak Aleut. These few children are also bilingual in English, but the school bilingual

program begun in Atka in 1972 may help Aleut to survive as a living language.

Certainly a major event in Aleut linguistics has been the return of Knut Bergsland in person in four trips to Alaska since 1971. In 1972 Bergsland with the bilingual teachers Moses Dirks and Nadesta Golley produced a series of 18 school texts, including e.g. simple points of Aleut grammar written in Aleut, as well as an excellent primer, traditional texts, etc.; they serve as a startling demonstration of what can be done in such a language by dedicated and competent workers. Since then Dirks, Golley, and other Atkans have produced many more school texts. At this writing Bergsland is completing a dictionary specifically of Atkan, and Dirks, who has studied Aleut linguistics with Bergsland, an Atkan school dictionary. Bergsland has also continued his academic publication with an article³ on the Aleut demonstrative system, and has included some fieldwork in his recent trips.

The 500 speakers of Eastern Aleut include virtually no children. Eastern Aleut linguistics was revived somewhat with the visit of Knut Bergsland to St. Paul in 1973, where Bergsland re-edited some of the Jochel'son materials from 1910 with Sergey Sovoroff of Nikolski. Bergsland has since published one volume of his re-edition of the Jochel'son texts⁴ for Eastern Aleut use. About two dozen elementary school texts have been produced for

Eastern Aleut bilingual programs, including the work of Olga Mensoff, Father Michael Lestenkoff, Iliodor Philemonoff, Agafangil Stepetin, Father Michael Gromoff, Platonida Gromoff, Alexandra Gromoff Tu, Ray Hudson, and the late Anfesia Shapsnikoff. Philemonoff, Stepetin, and Minoru Oshima, a student from Otaru University, have fortunately done recording and fieldwork with Bill Tcheripanoff of Akutan, probably the best storyteller and one of the most eloquent surviving speakers of the language.

It also came to light during the 1970's that the cylinder recordings made by Waldemar Jochel'son in 1909-1910 in Attu, Atka, Nikolski and Unalaska survived the siege of Leningrad and remain in something like audible condition. These were carefully cataloged at the Leningrad Fonogramarkhiv by N. B. Vakhtin and transferred to taped copies; copies of these were obtained by the Alaska Native Language Center through the courtesy of the Soviet Academy of Sciences in exchange for the surviving Jochel'son transcriptions from the New York Public Library collection. Unfortunately, the NYPL transcriptions by Jochel'son are derivative and only a part of his original collection of transcriptions from these recordings. As those original transcriptions are unfortunately lost, these old cylinder recordings are the only surviving versions of most of what we ever shall have of traditional Aleut folklore. It remains to be seen to what extent it is possible

still to transcribe these recordings. They certainly present a major challenge to Aleut speakers and linguists.

One is reminded here of a present need rather peculiar to Aleut, or greater in the Aleut case, the need to collect old manuscript material, at least to Xerox it before it disappears. There is probably still a certain amount of this in the form of old religious manuscripts or personal journals from the days, lasting well into the twentieth century, when literacy in Aleut was very widespread. This tradition was deliberately destroyed by the American school system, but the vestiges of it are by no means yet entirely obliterated; they deserve some preservation effort.

Eskimo

As is well known by now, the Eskimo language family is rather clearly split into two branches. Yupik, and Inuit or Inupiaq⁵. The modern border between the two "branches" is at Unalakleet on Norton Sound, again the result of elimination of all intermediate forms of Eskimo by a southwesterly dialect, Proto-Yupik, and a northwesterly dialect, Proto-Inuit, which finally met at Norton Sound.

Less well known is the fact that Yupik itself is a language family with some fairly deep language differences, taxonomically classifiable as follows:

- I. Alaskan Yupik branch
 - A. Pacific Gulf Yupik language
 - 1. Chugach dialects
 - 2. Koniag dialects
 - B. Central Alaskan Yupik language
 - 1. Yukon-Kuskokwim dialects
 - 2. Hooper Bay-Chevak dialect
 - 3. Nunivak dialect

- II. Siberian Yupik branch

- A. Chaplino-Naukanski language
 - 1. Naukanski (East Cape)
 - 2. Central Siberian Yupik (Chaplinski, St. Lawrence Island)
- B. Sireniksi language

The Yupik languages will be taken up individually in that order.

Pacific Gulf Yupik

This group of dialects deserves the status of a separate language from Central Alaskan Yupik, though there is much mutual intelligibility between the border dialects on the Bristol Bay coast of the Alaska Peninsula. There are several important isoglosses at the border, and certainly there is little mutual intelligibility between the Chugach dialects and the central dialects of Central Yupik.

Naming this language presents a problem. Popularly the people are called and now call themselves Aleuts, an inheritance from Russian days. Along with the name they also share with the Aleutian Aleuts the Russian religion and Russian surnames as part of their identity. Their adaptation of the term in their language is Alutiiq [alú·tíq], which according to the consensus of local opinion is perhaps the best term for the language. Another is Sugcestun [súxtstun], their own (adverbial) term for their language (< 'like people'). Used by Krauss on his 1974 map of the native peoples and languages of Alaska⁶ was Sugpiaq, parallel in construction to Yupik and Inupiaq, but the people in question often disapproved of the term as a name for themselves because it is now obsolescent in that idiomatic sense, meaning now only 'genuine people'. Other terms sometimes used in the literature are Suk (local form of the shibboleth, for 'person'), and the obvious Pacific Gulf Yupik, though the people do not readily accept identification with Yupiks or Eskimos.

Of about 3,000 people who belong to this group, only about 1,000 speak the language. Almost everywhere the children speak English only.

The language, for which a promising printed Cyrillic church literature began in 1848, suffered the lapse of a century of nearly total silence in the literature until work began in 1971 by

Derenty Tabios of Port Graham and the linguist Jeff Leer. By that time, as in the case of Aleutian Aleut, in only one small village, English Bay on the Kenai Peninsula, were any small children still speaking the language. By 1978 even this is only marginally true. Since the beginning of bilingual education programs there in 1972, after the establishment of a practical Roman orthography by Leer and Tabios, Carl Anahonak, Mike Sam, Doris Lind, Thomas Phillips, Steven Tanape, Feona Sawden, Arthur Moonin, and others have produced about 40 school texts in the language, some in the Koniag dialect, but more in the Chugach.

Since 1971 Leer has carefully studied all the dialects of this language and has amassed much excellent material on it, the first documentation that has been truly adequate even observationally at any significant phonological level for the complex and subtle prosody of the language, dramatically enough exemplified by the spelling of the name Alutiiq [alú·tíq] (the vowel of the second syllable is long because the syllable is open and stressed because of its position; the third syllable is stressed because its vowel is underlyingly long). Leer has prepared phonological statements, morphological tables, and school dictionaries for the Kenai Peninsula Chugach and Alaska Peninsula Koniag dialects. He is at present compiling a major academic dictionary of the language at the Alaska Native Language Center, Fairbanks.

Central Alaskan Yupik

Now known in Alaska simply as Yup'ik [yúp·ik], this is still spoken by perhaps 15,000 of 17,000 people, more by far than any other native language in Alaska, and more than any other form of Yupik. Its identity as a single language is unquestionable, the extreme dialects being fairly easily mutually intelligible. The use of the 'person' shibboleth Čux as a label for the Nunivak dialect greatly exaggerates the distance between that and the mutually intelligible Yuk (standard Central Alaskan Yupik); it would also give an inadequate impression of the difference between Yuk and Yuuk, for Siberian Yupik, not mutually intelligible. Classification of Yupik languages and dialects by the 'person' shibboleth further fails to show that the Hooper Bay-Chevak dialect is nearly as aberrant, in other ways, from the Central Alaskan Yupik norm as is Nunivak.

The development of a unified standard orthography and beginnings of a modern school literature in Yup'ik at the University of Alaska were detailed in Krauss 1973.823-827; by that writing already about 50 school text titles were available in Yup'ik. With the move of the Yup'ik Language Workshop to Bethel in 1973, Irene Reed and her staff had produced by 1975 over 100 more texts. Some of that effort was then taken over by the Bureau of Indian Affairs. The total by now exceeds 200. Some of the major writers are Joseph

Coolidge, Marie Nick Blanchett, Sophie Manutoli Shield, Paul Ilutsik, and Nellie Coolidge.

The continued success of the Yup'ik bilingual education program, now in its eighth year, is producing a new generation of Yup'iks schooled in their own language. Literacy in Yup'ik and the use of the language in print and media are spreading at a healthy rate. The Russian Orthodox, Moravian, and Catholic churches are also all moving toward gradual acceptance of the unified standard orthography. These institutions as well as the schools and other agencies are producing written materials in Yup'ik, thus on its way to becoming a literary language, and a language with a healthy chance for survival in the modern age.

Osahito Miyaoka, now resident at Kuskokwim Community College in Bethel, has continued his linguistic research in the language, has published an article ⁷ on Eskimo morphology, in Japanese, and above all, an important sketch of Yup'ik in English for the forthcoming Smithsonian handbook.

The year 1977 saw the publication of the Yup'ik Eskimo Grammar⁸ by Irene Reed, Osahito Miyaoka, Steven Jacobson, Paschal Afcan and Michael Krauss, preliminary editions of which had been in circulation since 1971. This work is the result of many years of labor by this group, and is certainly a major event for Yupik linguistics.

Jacobson is currently at work on a full dictionary of Central Yupik, with appendices for postbases, inflectional tables, demonstratives, lists of Russian loan words, specialized semantic realms such as parts of sled, etc., with an English-to-Yup'ik index.

Jeff Leer has extended his research on Yupik prosody across the entire spectrum of Alaskan Yupik, tracing the isoglosses in this complex development, showing the highly evolved systems in the Pacific Gulf Yupik dialects, the Central Alaskan Yupik system with a slightly less evolved variant in especially the Kotlik area, and the close relationship of that to the causes underlying the development of consonant weakening in the Wales dialect area of Seward Peninsula Inupiaq.

A sad event in Eskimo linguistics was the death of L. L. Hammerich in 1975. There appeared posthumously a study by Hammerich on the interesting Yupik hieroglyphic writing tradition as practiced by Edna Kenick of Nunivak Island.⁹ The significance of Hammerich's contribution is further revealed in the enormous volume of his unpublished field notes on the Nunivak dialect, a specialized area of Central Yupik which is badly in need of research.

John H. Koo of the Department of Linguistics and Foreign Languages of the University of Alaska, not associated with the Alaska Native Language Center, has written several short articles¹⁰ on Yupik languages and a book¹¹ on Central Yupik. In the opinion of

the present author these works are of little value.

Siberian Yupik

Siberian Yupik, which was once spoken for some distance along both the northern and southern shores of the Chukchi Peninsula, now survives in at least two forms which deserve the status of different languages. The first of these is the Chaplino-Naukan, which survives in two enclaves, the Naukanski of East Cape and the Chaplinski of the Chaplino (Indian Point, Ungaziq) area and of St. Lawrence Island, Alaska, 42 miles away. Naukanski is itself rather far removed from Chaplinski, with by no means full mutual intelligibility. G. A. Menovshchikov published in 1975 a very welcome book¹² containing the first extensive grammar, texts, and dictionary of this important variety of Eskimo. More information is still needed on the language, however, especially phonological, morphophonemic, lexical, and textual. It is reported that in spite of their removal from East Cape in 1958 and dispersal, the Naukan Eskimos still strive to maintain their language and sense of community.

For the Chaplinski dialect on the Soviet side, there is the good news to report that publication of materials in the language for the schools resumed in 1974 after a serious lapse during the 1960's, when there was an assimilationist language policy, fortunately temporary. A new edition of the Primer by Anal'kvasak and Aynana¹³ and a new preparatory year language arts manual¹⁴ by

Menovshchikov appeared in 1974, indicating, we may hope, a new beginning in Soviet Siberian Yupik language development. G. A. Menovshchikov continued to publish articles on Siberian Yupik, but his research during the 1970's has concentrated on the Inupiaq dialect of Big Diomede. The Leningrad group was joined in the 1970's by a promising new scholar in the field, N. B. Vakhtin, who wrote three articles¹⁵ and a dissertation¹⁶ on the syntax of the verb. The third member of the Leningrad group, N. M. Emel'yanova, has also continued her linguistic research in a lexical survey of all Siberian Yupik dialects. Her coverage happily includes not only Chaplino-Naukanski, but also Sirenikski, the now nearly extinct dialect of Sireniki, the westernmost of the Siberian Yupik villages on the south coast of Chukotka, and the only surviving variety of what was no doubt once a series of dialects spoken still farther to the west. Further research in Sirenikski is badly needed for comparative Eskimo studies.

The dialect of St. Lawrence Island, Alaska, is nearly identical to that of Chaplino, so much so, in spite of the fairly difficult 42-mile strait which by no means permits year-round travel, that one wonders if in fact it is not a very recent importation there. Since the establishment of a new modern American orthography for the language of St. Lawrence Island in 1972 and the beginnings of bilingual education there, the program has taken firm

hold in the Island schools. The Bureau of Indian Affairs Bilingual Resource Center in Nome and the Alaska Native Language Center have by now published a total of about 90 school texts in the language. The latter's production, edited by Vera Oovi Kaneshiro, has included a series of traditional texts and also a series of accounts of visits by Islanders to Soviet Siberia. These materials are of great interest too to the Soviet Eskimos. Active in writing materials both for ANLC and BIA publications have been Kaneshiro, Adelinda Womkon Badten, Sharon Pungowiyi Satre, Grace Slwooko, Raymond Oozevaseuk, Linda S. Gologergen, Henry Silook, Christine Alowa, Jenny Alowa, and Estelle Oozevaseuk. David Shinen of the Summer Institute of Linguistics, working with Elinor Oozeva, continued the production of religious translations in the language, including the Gospel of Mark in 1974.

Traditional visits between St. Lawrence Island and the Soviet mainland continued for a generation beyond the October Revolution, until about 1947, when the Cold War completely cut off this close relationship. Exchange of language materials between the two sides has now begun, as has some correspondence between Eskimo bilingual teachers. In early 1978 the Soviet Chukchi novelist and journalist from East Cape, Yuri Rytkeu, came to Alaska, the first visitor from those shores in over 30 years. Both sides have great hopes that Rytkeu may be "the first bird of a new spring" in warmer

relations between Alaska and Chukotka. The Siberian Yupik people stand most to benefit from this.

Krauss published an extensive article on the phonology of St. Lawrence Island Yupik¹⁷ concentrating especially on the prosodic system, to identify once and for all underlying vowel lengths, stress rules and vowel lengthening rules, closely related of course to those of Alaskan Yupik. The article also covers in some detail the history of the development of the writing systems on both Soviet and American sides.

In 1976 Steven Jacobson, working with Vera Oovi Kaneshiro of Gambell, wrote a preliminary grammatical sketch of the language¹⁸, based by now on an adequate phonological analysis, including many points, especially morphophonemic, that are not developed in the Soviet literature. Jacobson is presently working on the production of a major academic dictionary of Siberian Yupik, building on Rubtsova's 1971 dictionary and adding much from St. Lawrence Island.

Population figures for Siberian Yupik are about 1,200 in the USSR and nearly 1,000 in Alaska. Of the 1,200 in the USSR perhaps 800 speak Chaplinski and 200 Naukanski, and 10 Sireniskii. Of the 1,000 in Alaska, nearly all speak the language (Central Siberian Yupik, the same as Chaplinski).

Inupiaq

The term Inupiaq (or Inuit) refers to the more or less unbroken chain of dialects stretching from Unalakleet on Norton Sound around Seward Peninsula north and east across the entire Alaskan and Canadian Arctic, to the coasts of Labrador and Greenland. The total number of these Inuit is about 73,000 (12,000 in Alaska, 18,000 in Canada and 43,000 in Greenland; also perhaps now a dozen Big Diomed Islanders in the USSR, evacuated to Naukan in 1948, further evacuated and dispersed with the Naukan people in 1958). Of this total, perhaps 63,000 speak the language (5,000 in Alaska, 16,000 in Canada, 43,000 in Greenland). The status of the language is obviously weakest in Alaska, where its survival is in grave question, as there are only a few villages in Alaska now where the children speak the language. In Canada there are only a few settlements where they do not, especially those in the West, near Alaska, and in Greenland the status of the language appears stronger than ever. With improving communications, organization, economy, and education, there is an increasing internationalism developing in Inupiaq awareness. There is some dim hope that this may mature in time to help Alaskan Inupiaq survive its eleventh hour.

Alaskan Inupiaq Even though very few children know the language in Alaska, there has been an enormous output of school texts (about 400!) in Inupiaq since 1972, by about eight agencies, far too vast

a literature to begin to catalog here. Within Alaska there are four major dialects of Inupiaq: Wales (tip of Seward Peninsula, Diomedede, King Island, Shishmaref); Qawiaraq (south coastal shore of Seward Peninsula, including Nome); Malimiut (Unalakleet across the neck of Seward Peninsula, Kotzebue Sound, Kobuk Valley, Noatak, Kivalina); and North Slope (from Kivalina around the Arctic coast to the Mackenzie Delta, including the Inland).

The Wales dialect is particularly interesting for its phonology, with consonant weakening and gradation related in origin to the prosodic system of Yupik, and in some subdialects with the Proto-Eskimo fourth vowel, ə , still overtly contrasting with i , also as in Yupik. A striking example of the former is the minimal pair, *manni-qaq-tu-gut* 'we have eggs' and *mani-qaq-tu-gut* 'we have money' in North Slope dialect, in Wales *manni-g̃aq-tu-ut* and *mani-qaa-tu-gut*, respectively. The Seward Peninsula dialects were finally surveyed and preliminarily described in 1974 by Jeff Leer. Significant research on the Wales dialect phonology has been continued since then by Leer and Krauss, and especially Lawrence Kaplan. About 30 of the school texts are in varieties of the dialect, with significant work especially by John Sinnok, Johnson Eningowuk, and Stella Weyiouanna of Shishmaref. The first major new study likely to be published will be Menovshchikov's work on the Big Diomedede dialect in the USSR. Detailed documentation of this dialect

group is still badly needed.

Least well documented of all Alaskan Inupiaq dialects by far is the Qawiaraq group, also that with the fewest speakers, none very young. About 15 of the school texts are in Qawiaraq; there is still no scientific research worth reporting beyond Leer's preliminary 1974 survey.

The Malimiut dialect group is by now abundantly represented in the ephemeral school text literature, with about 200 titles, about enough to fill a three-foot bookshelf, by Susie Sun, Minnie Gray, Oscar Swan, Evans Thomas, and many others. Hannah Loon is preparing a school dictionary, but detailed lexicographic work is still lacking for this area.

In the North Slope dialect area about 150 school texts have been produced, 100 of these by the Barrow School alone, some of exceptionally high quality, by Martha Aiken, Harold Kaveolook, Emma Bodfish, and many others. The Alaska Native Language Center has also produced several traditional texts. By far the most important scientific work on Alaskan Inupiaq in the 1970's has concentrated at ANLC on the Barrow dialect. Edna Ahgeak MacLean of Barrow has taught the language at the University of Alaska for several years and has in advanced stages of preparation a pedagogical grammar and several other works, most notably an extensive study of post-bases. MacLean, Leona Okakok, and Lawrence Kaplan have worked

systematically for several years on the accumulation of a lexical file now of about 7,000 major entries, from which a preliminary dictionary will be published in 1978, to be followed by a major academic dictionary in 1981. Kaplan is at present writing a dissertation on Inupiaq phonology.

Canadian Inuit Inuit dialectology in Canada is fairly complex. There is probably very little mutual intelligibility between the extremes of the Mackenzie Delta and Labrador, but in between the texture of the dialect complex is more or less a continuum. A good survey and statement on Canadian dialects is in fact badly needed, and might even be fairly well pieced together from a good collection of the extant literature. Still the best general review of Canadian dialects is the survey made by the Alaskans Webster and Zibell in 1968.¹⁹

Imposed on the underlying dialect diversity are several types of additional external complexity, e.g. in the different writing systems used by different churches and traditions in geographical patterns by no means simple; the political division of Inuit Canada into the Northwest Territories (three districts thereof), the provinces of Manitoba, Quebec, and Labrador (Newfoundland), each with their own administrations and educational systems with differing policies and practices, and in which the churches and federal government also play some role. More recently the Inuit

themselves have been organizing together nationally across these lines, especially in the Inuit Tapirisat of Canada and the Inuit Cultural Association, and regionally, e.g. the Northern Quebec Inuit Association and the Labrador Inuit Association. These organizations and the federal government continue to publish an increasing periodical literature in Inuit, usually syllabic, sometimes Roman, and usually bilingual with English. At this time there are probably over 20 periodicals (including newspapers and newsletters) regularly published in the language, demonstrating the firm base of the literacy tradition. The churches continue to publish religious periodicals and materials in the language also. It is uncertain, however, to what degree there is formal education in the language in the different areas; no abundant evidence of school text publication has come to my attention, though much of it may be ephemeral and local, as in Alaska.

Writing system standardization in Canada remains a serious problem, and meetings have been held with increasing frequency (e.g. by Inuit Tapirisat) concerning it. The syllabic system remains firmly entrenched. Proposals for revising it to allow for the contrasts k/q and ŋ/g are being seriously considered. The official and phonologically adequate standard Roman orthography is gaining acceptance only very slowly even as a second writing system, and publication by churches remains largely in parochial church

orthographies. It is to be hoped that when important decisions are made concerning orthography, the scope of the considerations will be not only national, but also international, including Alaska and Greenland.

In addition to the periodicals, there have been considerable publications in book form, especially folklore, by the late Oblate priest Maurice Métayer²⁰, by Paulusie Sivuaq of Povungnituk²¹ and several others.

Important pedagogical works for Inuit as a second language have been developed especially by S. T. Mallon²².

Canadian Inuit dialects can be roughly divided by area from west to east, as Mackenzie, Copper, Caribou, Central-Northern (Netsilik, Aivilik, various Baffin), and Ungava (Quebec, Labrador). Though Métayer and Mallon deal with Copper and Caribou dialects, almost all the published academic linguistic research in the 1970's has concentrated in the east; no evidence of such activity has come to my attention from the west, the first three abovementioned dialect areas. The eastern work has been based mainly in three centers, the University of Ottawa, Université Laval at Quebec, and Memorial University of Newfoundland.

At Ottawa Jean-Pierre Paillet and T. R. Hofmann have written several articles, mostly unpublished, on various aspects of Canadian Inuit linguistics. There Anne-Marie Willis wrote an M. A.

dissertation²³ on Ungava phonology, morphophonemics, and inflections, and Jean-Marie Massenet an M. A. dissertation²⁴ on verbal postbases.

At Laval there is a very active group of some stability known as Inuksiutiit Katimajit, consisting of Bernard Saladin d'Anglure, Louis-Jacques Dorais, and others. Dorais has continued to be especially active in publishing a number of articles and also grammatical sketches of Ungava²⁵ and Southeast Baffin Island²⁶ dialects. These contain mainly inflectional tables, lists of postbases, Inuit-French/English lexicon, and lexicon organized by semantic division. Inuksiutiit Katimajit has begun a journal, Etudes/Inuit/Studies (editor-in-chief Monique Vézinet). Volume I, number 1, issued in 1977, includes several articles on Inuit linguistics, a promising beginning.

One of the articles²⁷ in Etudes/Inuit/Studies is by Ivan Kalmar and refers to Kalmar's Ph.D. dissertation²⁸, also on basic Inuit syntax. Kenn Harper also published a grammatical sketch²⁹ of two eastern dialects, mainly inflectional.

The grand old man of Ungava linguistics, Fr. Lucien Schneider, has continued his grammatical publication since 1970 in the five-volume series Inuktituorutit³⁰.

The Labrador dialect area, once the isolated realm of the Moravian church, has become an area of renewed language development,

less isolation, and the subject of one of the liveliest Inuit language research centers in Canada, Memorial University. There another missionary of long experience, F. W. Peacock, retired from active church service, published readers, studies of word and sentence construction, a grammar, a dictionary of postbases, and three major dictionaries³¹. At Memorial University also the ethnologist Jean Briggs wrote on various aspects of the Labrador dialect³². More in the tradition of academic linguistics are the works of Lawrence R. Smith at Memorial University, including articles on phonology³³, morphophonemics³⁴, on postbase joining, and unpublished manuscripts on noun and verb inflectional morphophonemics; a grammatical sketch on phonology and inflection³⁵; and, with Sam Metcalfe, lexical studies³⁶. A most startling phonological development revealed in Smith's work, not evident in the Moravian, is that Labrador, probably alone of all Eskimo-Aleut, has merged g and r (ǵ) as g; and k and q as k morpheme-finally (q > x elsewhere). In 1974 Leila Clase wrote at Memorial University a specialized and detailed study on pronouns and demonstratives³⁷. Most recently, and most encouragingly of all, a dedicated group of Labrador Inuit under the able leadership and editorship of Rose Jeddore at Nain, the Labrador Inuit Committee on Literacy, published a major Inuit-English dictionary³⁸ in 1976. The orthography of this dictionary is new, based on Smith's analysis of the

contemporary language. "It is the first dictionary, to our knowledge, produced solely by Inuit people."³⁹

Greenlandic Greenland is the largest and strongest Inuit nation of all, with a population of 43,000, all Greenlandic-speaking. Though there may be some Greenlanders who speak more Danish than Greenlandic, especially at Godthåb, the capital, where most of the Danes in Greenland live, the vitality of the Greenlandic language is very obvious. This is partly due to a relatively enlightened Danish colonial policy, partly to the isolation of Greenland, and undoubtedly also to the long Greenlandic literacy tradition, going back to the early missionary period over 200 years ago. Books and periodicals in Greenlandic would by now fill a large room, and production continues impressively. This includes books printed as handsomely as in any advanced nation, since the printing art itself is by now venerable in Greenland and Danish support is strong. The major publishers are locally Kálatdlit-nunãne Nakiterisitsissarfik/ Det Grønlandske Forlag in Godthåb; and in Copenhagen, Ministeriet for Grønland⁴⁰.

During the 1960's, there was a movement in the Greenlandic schools to teach Danish more effectively and to replace native Greenlandic teachers with Danish ones on the grounds that the latter were better qualified for Greenlandic needs. Resistance to this policy and its threats had increased by the mid-1970's to the

point that Greenlanders are now beginning to insist on an explicit policy protecting the status of Greenlandic as the primary language of Greenland, including the schools.⁴¹

In 1973 the Greenlandic Landsråd officially adopted a radically reformed orthography, to replace the Kleinschmidt orthography in general use for over a century, a momentous decision for Greenland. Kleinschmidt's orthography was partly morphological, showing unassimilated clusters, e.g. igdlo [iɖɬu] 'house', kingmek /qimmiq/ 'dog', now illu, qimmeq. Also replaced are Kleinschmidt's $\acute{V}C$, $\hat{V}C$, $\tilde{V}C$, with VCC, VVC, VVCC. His e and o are changed to i and u word-finally, but not changed before uvulars, a deliberate concession to the traditionalists, as in mêrkat 'children', now meeqqat /miiqqat/. Aside from that, the new Greenlandic orthography is, not surprisingly, quite similar to the recent Canadian Roman standard. The international implications may become important; there is considerable difference between Eastern Canadian and West Greenlandic, but not enough to prevent strongly motivated communication. The new orthography, designed under the direction especially of Robert Petersen, is being implemented slowly, the first step being the production in it of the schoolbooks by the Ministeriet for Grønland.

An interesting paper on Greenlandic language development, particularly problems of new coinage, was also written by Robert

Petersen.⁴²

A number of new materials have been published for learning Greenlandic as a second language, most notably a grammar in two volumes by Keld Thor Pedersen⁴³, also a grammar by Karl-Peter Andersen⁴⁴, phrase book by Rasmus Bjørgmose⁴⁵, and a set of dialogues with tape⁴⁶.

The major new lexical work is a Greenlandic-Danish school dictionary by Chr. Berthelsen, Inge Kleivan, Frederik Nielsen, Robert Petersen, and Jørgen Rischel⁴⁷, with about 14,000 entries, including postbases, in the new orthography.

By far the most important scientific work in Greenlandic linguistics during the last two decades, however, is Jørgen Rischel's monumental dissertation⁴⁸ on the morphophonemics. Rischel, who had already thoroughly studied West Greenlandic phonetics, here offers an extensive analysis of the phonology of the language in the broadest sense, with thoroughness, accuracy, and much insight, so much so that the book is of great significance for all Inuit linguistics. Since 1974 Rischel has done considerable fieldwork on West Greenlandic dialects, and in 1976 he began fieldwork also on East Greenlandic, a most unfortunately neglected field.

In the United States Robert Underhill has continued his work on Greenlandic phonology, in two published articles⁴⁹. Jerrold M.

Sadock has published on this subject also⁵⁰, as has D. Gary Miller⁵¹. The most important new name to appear in this country in Greenlandic studies is that of Anthony C. Woodbury, who wrote a promising Master's Essay at the University of Chicago on Greenlandic syntax⁵², an article on the transitive verbal postbase -ut-⁵³, with important bearing on the syntax, and a study of the syntax of complex sentences⁵⁴. At this level, of course, Woodbury's work is of interest to Eskimo linguistics more broadly than just Greenlandic.

Of the 43,000 Greenlandic speakers, it should be mentioned that only about 40,000 of these speak West Greenlandic, the subject of all the abovementioned studies. There are two minority dialects, nearly languages, of Greenland, neglected both in the Greenlandic educational and literary effort and in linguistics. North Greenlandic (Thule, Polar Eskimo) is quite different from Western, resembling somewhat Central Canadian, and East Greenlandic is even more aberrant, rather little mutually intelligible with West Greenlandic. The number of North Greenlandic speakers is approaching 1,000 and that of East Greenlandic 2,000. Neither enjoys literary or educational status, the children using West Greenlandic books in school, yet both dialects (or languages) show strong resistance to levelling or assimilation to West Greenlandic. Except for the very welcome fieldwork by Rischel in East Greenland

in 1976, no recent linguistic research in either has come to my attention.

It is a problem of some moral and cultural significance for Greenland, struggling to maintain Greenlandic, in a very real sense itself a minority language within Denmark, whether it can or should struggle also to maintain its own minority languages within itself.

General and Comparative

A major event, covered already in the 1973 report, was the Conference on Eskimo and Aleut Linguistics at the University of Chicago in 1970. The papers from this conference finally appeared in 1976⁵⁵, a publishing event which will renew the impact of the conference. In this were published the papers of Afcan, Bergsland, Cearly, Hammerich, Hamp, Heinrich, Fr. Innocent, Landar, Mallon, Menovshchikov, Mey, Miller, Miyaoka, Sadock and Olsen, Saladin d'Anglure, Teeluk, Underhill, and Webster and Zibell.

Landar's bibliographical contribution therein⁵⁶ gives for the first time a preliminary if not accurate description of the very considerable Jesuit manuscripts on Central Alaskan Yupik and Inupiaq, from about 1889 to 1940. That valuable collection is at the Gonzaga University archives at Spokane, Washington, where it was microfilmed in 1976 and became thus available to the general public.⁵⁷

My own catalog in progress for the Eskimo and Aleut language

collections at the ANLC archive, for all locatable materials in or on Aleut, Yupik, or Alaskan Inupiaq, requires about 2,000 main entry cards. An equally complete catalog for Canadian might require 1,000, and for Greenlandic it would be many times that number. Serious bibliographic work is badly needed in both nations. The Greenlandic Landbibliothek presently takes responsibility at least for keeping published materials (in spite of fires and shipwrecks), but for Canada I know of no library or archive so far that seriously attempts to collect published materials for the whole range of Canadian Inuit. Some organization such as Inuit Tapirisat, Inuit Cultural Association, or Inuksiutiit Katimajit, should take the initiative to establish such an archive.

There has been a modest amount of work of various types and scope on comparative Eskimo, but since Underhill's comparison of some Greenlandic and Yupik morphophonemics of 1970⁵⁸ nothing of significant value has been published.⁵⁹ Leer's work, mentioned above, on comparative Yupik prosody and Wales Inupiaq consonant gradation, is of the greatest importance for that whole area.

Important work is also proceeding at the Alaska Native Language Center on the "comparative" study of the terminology that has been used in the different uncoordinated schools of Eskimo grammar with a view to promoting some international coordination and agreement to standardize labels, e.g. for the verb-ending set

-luni "subordinative" (or "appositional[is]", "consequential", etc.).

In the field of comparative Eskimo-Aleut I know of no new publication. Bergsland continues to develop his file on that, where certainly the most advanced work on the subject is to be found. On relationships of Eskimo-Aleut to Old World languages, René Bonnerjea recently published three articles⁶⁰ claiming to demonstrate Eskimo-Aleut relations with Ural-Altaiic (and also Indo-European), examining these long-held hypotheses, but claiming Eskimo to be the origin for some of the forms in question. Menovshchikov also entered this arena in a 1974 article⁶¹ examining similarities between Eskimo-Aleut and a wide range of Asiatic languages.

Na-Dene

Haida

The term Na-Dene will be here used to include Haida, but in this use it stands only for a conventional grouping and most definitely not a genetic family, since there is no detectible genetic relationship between Haida and the others in the group, Tlingit and Athabaskan-Eyak. It would perhaps have been better to redefine Na-Dene more narrowly as the problematical genetic grouping of Tlingit and Athabaskan-Eyak, excluding Haida, or to discard the term entirely, as standing for an untenable hypothesis.

There may be today about 1,700 Haidas: 1,200 on the Queen Charlotte Islands, British Columbia, and 500 in Ketchikan and Hydaburg, Alaska. Of these about 1,400 are Northern Haidas (the Alaskan and Masset people, representing amalgamations of Northern Haida dialects), and 300 are Southern (Skidegate, the amalgamation of the Southern dialects). The difference between Northern and Southern Haida is rather great, allowing only partial mutual intelligibility without practice, perhaps like Swedish and Danish, or German and Dutch. Nowhere do children speak Haida. There may be a few speakers in their forties, but certainly most speakers are over 50. A high estimate would thus be 100 speakers in Alaska and 175 at Masset for the Northern dialect, and 50 for the Southern. The actual numbers may be half of those.

The 1973 report was written on the eve of a great increase in Haida language work. In the spring of 1972, Krauss and others working with Hydaburg speakers made the first adequate phonological analysis of Northern Haida and developed a practical orthography for it. Haida was revealed to be a tone language, with high or low tone for every syllable; another interesting development is that the uvular G and ɣ (but not q and q') have become pharyngeals in northern Haida: the fricative in Masset is like Semitic ḥ, but in Hydaburg it is a hoarse pharyngeal trill; the G in Masset is like Semitic ʕ, but in Hydaburg it is an affricate, glottal stop

followed by the hoarse pharyngeal trill, a phenomenon I have not seen documented in phonological literature.⁶²

In workshops beginning in 1972, a group of Alaskan Haida speakers, including especially Erma Lawrence and Charles Natkong, Jr., using the new orthography, began the first transcription (to my knowledge) of sustained Haida text in over 60 years. Since that time the Alaskan Haida group has published a fair number of local materials, texts, wordlists and dictionaries, especially the work of Erma Lawrence. I have not seen evidence that there has been a comparable development of a new literature in Masset or Skidegate.

Since 1972 there have been two major linguistic works produced on Haida, one on Alaskan by Jeff Leer and Erma Lawrence, and the other on Skidegate by Robert Levine. The Leer-Lawrence work⁶³ contains two parts, a substantial grammatical introduction by Leer, pp. 12-155, and a Haida-English Dictionary compiled by Lawrence, edited by Leer, arranged by Haida stem, about 2,000 entries, with English-Haida index. The dictionary, though very far from being exhaustive, is by far the best presently available by being an adequate transcription, with the necessary information on verb and noun stem variation ("principal parts"). Leer's grammatical introduction provides for the first time a good insightful grammatical sketch of Northern Haida.

Robert Levine began his research on Skidegate in 1972 and finished his dissertation⁶⁴ on it in 1977. Skidegate phonology presents certain problems, probably due to dialect amalgamation, that Levine's dissertation does not claim to solve, particularly tone and the status of vowel-length contrasts. The work is of course a major contribution to Haida linguistics and provides, together with Leer's sketch, for the first time a clear account of many aspects of Haida grammar.

Krauss in his first actual contact with Haida became swiftly convinced that Sapir's claim of genetic relationship with Tlingit, etc., was based on illusion: e.g., many of the "correspondences" are based on mistranscription, misanalysis, mistranslation, and/or misinterpretation; the verbal tense-mode inflection by tightly bound prefixes in Tlingit and Athabaskan-Eyak, is by loose suffixes in Haida; the st'-, ɪq-, etc. initial clusters are phonotactically canonic morpheme-initials, there being no evidence whatever that they are prefixal, even fossilized (as e.g. the Indo-European s-). These points and more are now obvious from the work of Leer and Levine, but we owe it to Levine in a recent paper⁶⁵ for debunking once and for all the claim that Haida has been demonstrated to be genetically related to Tlingit, etc. Rather than the purely negative goal of pointing out errors, or foolishly attempting a negative proof, Levine's paper concentrates constructively on

anatomizing the genesis of the illusion, the result of the compounding of specific errors of Swanton by Sapir. Even if Sapir was superhuman, supernatural he was not.

The appearance of two important works on Haida must not mislead us into thinking that the urgent need does not continue for more work on Haida. For example, tone in Southern Haida is not understood, lexical coverage even in Northern Haida is only partial, and there are few adequately transcribed texts. Furthermore, there are important old materials, such as Harrison's 1910 ms. Masset dictionary, Swanton's published Masset texts, and his published (and unpublished) Skidegate texts that could not be elicited today, but which re-elicited and re-edited would greatly improve the documentation of Haida. The same would be true of a transcription of the Skidegate texts recorded by Bursill-Hall ca. 1964.

Tlingit

Of about 10,000 Tlingits, perhaps 2,000 at most speak the language. The youngest speakers are a very few in their twenties, and most must be over forty. Almost all live in southeastern Alaska, with about 500 in Canada (British Columbia and Yukon Territory, perhaps 200 of these speakers of Tlingit).

A revival of Tlingit linguistic scholarship and Tlingit literacy had begun during the 1960's with the work of Constance

Naish and Gillian Story of the Summer Institute of Linguistics. Regular workshops in Tlingit literacy and linguistics for the people began in 1971, with a minor revision in the Naish-Story orthography. Some production of literature has resulted from this movement, especially by Nora Florendo Dauenhauer and Richard Dauenhauer. The Dauenhauers have published a series of traditional texts, and also a set of elementary lessons for learning Tlingit⁶⁶. Henry Davis, Jr., has also re-edited and republished the Naish-Story Tlingit Noun Dictionary of 1963⁶⁷.

The most important Tlingit publication of the 1970's so far is the verb dictionary of Naish and Story⁶⁸. The main part of the book (pp. 15-252), English-Tlingit, is followed by a shorter section (pp. 265-342) arranged by Tlingit stem, and a grammatical sketch (pp. 345-392). The coverage of stems is fairly comprehensive, though the listing of themes is far less so. The major scientific weakness of the dictionary is its failure to deal with verb stem variation. Verb conjugations, stem sets, and the entire multi-dimensional system of tense-mode-aspect-conjugation have not yet been adequately described in the published literature, in spite of the enormous contributions made by Boas, Naish, and Story.⁶⁹ Jeff Leer has been working intensively with these problems during the 1970's. A major help to Leer in this is his discovery of the Old Tongass dialect, now spoken mainly by one old couple, Frank

and Emma Williams of Ketchikan. Where all other Tlingit speakers have tone, low or high on long stem vowels (always high on short), Tongass has not tones but glottal modification of the vowels, a "fading" of energy in volume corresponding to low, but two types corresponding to high: sustained, and truncated by glottal stop. Tongass thus has three different types, where standard Tlingit has only two, having merged the sustained and glottalized as high tone; there are minimal pairs, e.g. $\text{ax}\grave{\text{a}}$ ' 'a paddle' and $\text{ax}\acute{\text{a}}$ ' 'he is paddling', both $\text{ax}\acute{\text{a}}$ ' in standard Tlingit.⁷⁰ The value of this Tongass information is very great both for Tlingit linguistics internally and for any comparison with other languages. Leer has systematically gone through the noun and verb dictionaries for the Tongass forms, and has also transcribed a corpus of Tongass texts. Tongass has of course been helpful in explanation of the complex patterns of verb stem variation in standard Tlingit. Preserved at the southern end of Tlingit country, probably under the influence of Coast Tsimshian, which has similar stem-vowel modification, the Tongass is thus significantly similar also to Eyak at the northern end of Tlingit country, which also has not tone but internal stem-vowel contrasts of the type Vh , V? , $\text{V}\cdot?$, $\text{V}\cdot$. Tongass has (by Leer's transcription) V^{v} , V? , $\text{V}\cdot$; and standard Tlingit has only $\text{V}\cdot$ and V^{v} (the latter corresponding to both V? and $\text{V}\cdot$, merged), thus proven to be an innovation from a more Eyak-Tongass-like

system (and also as postulated by Krauss for Proto-Athabaskan; I shall refrain from going further into comparative considerations at this point). Leer has currently in progress a full Tlingit dictionary, including nouns, verbs with adequate indication of stem variation, conjugation patterns, etc., and the information from the Tongass dialect.

During 1976 there was a sudden remarkable output of Tlingit bibliographical work. Krauss wrote a history of the documentation of the Tlingit language⁷¹ detailing over 100 primary sources (published and unpublished) for Tlingit from the 18th century to 1970; the Dauenhauers wrote a bibliography of the work (published and unpublished) from 1970 to 1976⁷², mostly their own and Leer's, which is again as much as all the preceding; and Heinz-Jürgen Pinnow wrote a history of Na-Dene research⁷³ which, among other things, is of considerable bibliographical interest in including and evaluating virtually all the published work on Tlingit and discussions of its possible genetic relationships. From these three works one can get a remarkably complete record of the known documentation and discussion of Tlingit.

Eyak⁷⁴

The case of the Eyak language is a strange and tragic one. For one thing, it is a rare classic case of linguistic branching

by clean split (or what looks now like a clean split), Eyak being equidistant to all Athabaskan, e.g. with identical scores on the Swadesh 100-word list for Eyak-Ahtna (its immediately adjacent Athabaskan neighbor) and Eyak-Navajo (both 32.5%). This requires total isolation of Eyak from Athabaskan for at least 3,000 years, probably with the Eyaks on the coast. Even with glaciation more extreme than today, that degree of isolation is hard to explain.

As is by now well known, Eyak is nearly extinct. There are three speakers still alive, and one or two others with a very fragmentary memory of it. The death of Lena Nacktan in 1972 was a sad loss. Mrs. Nacktan, patient, methodical, and scrupulous, with excellent memory, provided the best possible information on grammar and control for authenticity.

As mentioned in the 1973 report, Krauss spent most of his research effort in the 1960's on Eyak. By 1969 he felt he had come to a point of very much diminished returns, and had exhausted systematic methods for eliciting new lexicon, especially stems. (This included systematically going through all phonologically canonical possibilities with Mrs. Nacktan, thereby rescuing about forty new ones, to raise the total to about 1,100; all extensive Athabaskan stem lists available at the time had also been used for eliciting possible cognates from; new stems were not showing up at all in texts, even after dozens of pages.) Although it was

difficult thus to close the corpus on a dying language, the press of other responsibilities forced the decision.

After his return from MIT in 1970 Krauss spent a last field visit checking on some final points and attempting to explore more complex syntactic problems. He found he could predict that the conservative speaker, Mrs. Nacktan, would reject various types of sentences which the most creative speaker, Anna Nelson Harry, would accept, even like. Perhaps another linguist can still do more Eyak fieldwork, but Krauss's main concern now is to find time some day to finish writing the Eyak grammar already documented.

During the 1970's Krauss has transcribed about 100 additional pages of text from Anna Nelson Harry, the last Eyak storyteller, and a good one, from tape recordings, or in a few cases from her dictation. These will increase the corpus made available in the Eyak Texts⁷⁵ of 1970 by about 20 per cent.

Krauss has recently finished extracting a stem-list (with most basic themes) from the 1970 Eyak Dictionary⁷⁶, highly condensed, forthcoming, and has plans to edit the Dictionary into condensed form for broader publication.

Athabaskan⁷⁷

I shall not belabor yet again the point that Athabaskan is not a set of branching relationships, of "substocks," or even of

discrete languages. It is rather a (language- and) dialect-complex, with some actual language boundaries, and perhaps even a few languages that are little or not mutually intelligible with any Athabaskan neighbor, but this is certainly the exception rather than the rule. The question then still arises, however, concerning the counting and defining of the Athabaskan languages, a practice in which I myself indulge, along with other linguists. The question is more practical and sociological than it is strictly linguistic. Where there is a boundary of mutual unintelligibility (insofar as that is definable--usually not in simple terms if at all), there is definitely a language boundary. More often than not there is no such abrupt boundary, however, and/or the situation is complicated by various degrees and types of passive bilingualism and/or a loss of that where the structure of the larger Athabaskan community has been recently disrupted or destroyed. Nevertheless, because it is necessary and desirable to define languages for scientific, social, and practical reasons, one can do so by imposing certain standards, similar to those used e.g. in Europe, including sociological criteria as well as linguistic.

On the 1974 color map⁷⁸ which I published of "Native Peoples and Languages of Alaska," I defined eleven Alaskan Athabaskan languages, one more than in 1973. Such differences will be explained below. I would now estimate that by the standards mentioned

above, there are about thirty (historically documented) Athabaskan languages.⁷⁹

We shall consider these in geographic groupings for the sake of convenience only: Alaska, Canada, extinct islets, Pacific Coast, and Apachean.

Alaska

I now "count" eleven Athabaskan languages in Alaska instead of the ten of 1973. The addition is Tanacross. The languages are certainly well surveyed for the purpose of identification, evaluation of relationships, dialectology, basic phonological and morphological developments, etc. About half of them are now fairly well or very well documented morphologically and lexically (starting with the best: Tanaina, Koyukon, Ahtna, Kutchin, Ingalik) and will have fairly comprehensive dictionaries published within a few years; others are only sketchily documented in that sense (Upper Koyukon, Upper Tanana, Holikachuk, Han, Tanana, Tanacross). I shall deal with each individually, with revisions and additions to the 1973 information, including the estimates of population and number of speakers from the 1974 map.

Ahtna 200 speakers of 600 total population; youngest speakers are in their twenties. A practical orthography was devised in 1973-1974 by Leer, Krauss, Kari, and Mildred Buck of

Chitina and Glennallen. School programs for learning the language and production of school materials have been led since then by Mrs. Buck. The major publication so far is Buck and Kari's dictionary⁸⁰, a fairly comprehensive account of the nominal vocabulary of the language, organized by semantic categories, including fairly good coverage of the distribution of the terms in the dialects, about 2,800 English glosses, but 3,500 Ahtna forms, for all dialects.⁸¹ The preface defines the dialects in more detail than in 1973. Kari is now preparing a comprehensive dictionary of the whole language. He has also made excellent use of the language for comparative purposes (see under Tanaina and Comparative, below).

Tanaina 250 speakers of 900 total population; of these only about ten are children, at Lime village only. A practical orthography was established in 1972 by Krauss and Kari. There have been some Tanaina language programs in the schools since then, and a fair number of school materials published, especially by Albert Wassillie of Nondalton.

Tanaina has been the object of considerable linguistic research since 1972-3, by Joan Tenenbaum and especially James Kari. Preliminary noun dictionaries were published by Kari⁸² and Tenenbaum⁸³. Tenenbaum wrote a useful doctoral dissertation⁸⁴ covering a large part of the grammar at Nondalton (1973-6). She also

published four volumes of traditional Tanaina texts⁸⁵ with inter-linear English. Kari too has published several volumes of traditional texts.⁸⁶ One of the last speakers of the Kenai dialect, Peter Kalifornsky, learned to write the language in his sixties, in 1972-3; he has since published a volume of his own stories, narratives, creative writing, poems, and linguistic observations and exercises.⁸⁷ In 1977 Kari published a very large Tanaina noun dictionary⁸⁸, organized by semantic categories, covering all the dialects, with about 4,400 English entries and 8,000 Tanaina forms. Tanaina is spoken over a wide range of ecosystems, and there is considerable dialect divergence, though mutual intelligibility is definitive. The preface to the dictionary gives a much more detailed account of the dialect subgrouping than in 1973. Kari has kept composite Tanaina-Ahtna stem lists, using to full advantage documentation of the one for eliciting from the other; he has also published an article⁸⁹ on some aspects of the relationship between Ahtna and Tanaina. He has also used Tanaina to good advantage in comparative Athabaskan study (see below under Comparative). Note further a detailed Tanaina ethnobotany by Priscilla Russell Kari.⁹⁰

Ingalik 100 speakers of 300 population⁹¹, youngest speakers in their twenties at Shageluk, older elsewhere. Leer and Krauss did fieldwork and established a practical orthography in 1974.

No literacy, literature, or school programs had developed by 1977, but a program is due to start in 1978. Kari began the first sustained Ingalik linguistic fieldwork in 1974. He has taken particular care to survey the remains of Kuskokwim Ingalik and has found a few more speakers than expected, and remarkable variety of phonological developments in the terminal stages of the language there. Krauss had mentioned (1973, p. 946) that two Kuskokwim Ingalik brothers would no doubt be surprised to find they belong to two different Athabaskan "substocks" according to Hoijer's classification. Kari has found that these few souls speaking Kuskokwim Ingalik would belong in fact to three or four such "substocks"! Kari recently published a preliminary noun dictionary⁹² for Ingalik, with about 2,500 entries. Krauss and Leer have made important use of Ingalik in their new reconstruction of the PA sonorant system (see under Comparative), for which Ingalik apparently has preserved more distinctions than any other Athabaskan language. A certain amount of older unpublished missionary documentation of Ingalik is coming to light, by the Jesuit Perron and the Episcopalian Chapman, both in 1890-1920. Kari is currently re-editing the published Chapman texts⁹³.

Holikachuk 25 speakers of 160 total population. The estimated number of speakers is high, if anything, with perhaps none younger than forty. Krauss and Leer visited in 1974 and established

a practical orthography. No literacy, literature, or school programs had begun as of 1977. The language is partially intelligible to both Ingalik and Koyukon (mutual intelligibility between Ingalik and Koyukon is quite low). Linguistically Holikachuk is closer to Koyukon, but now sociologically (and geographically) it is closer to Ingalik. The people recognize clearly that they are different from both, and phonological developments are such that separate schoolbooks with separate orthography would be needed. A better name for the language might be "Innoko," since the Innoko River was the main area of the group. None now live on the Innoko, but none now live at Holikachuk either, having moved to Grayling on the Yukon. Kari has made several field trips since 1975, but the language remains only sketchily documented.

Koyukon 700 speakers of 2,200, none of them children; the youngest competent speakers are now in their twenties. There was a vast amount of documentation of Koyukon during the early missionary period, by several Jesuits and Episcopalians. Most remarkable was the Jesuit Jules Jetté, who worked very intensively on Koyukon ca. 1895-1915. His unpublished dictionary⁹⁴ is truly monumental, several thousand pages of the most meticulous lexical documentation (including e.g. 'the hum of the bowdrill string'). Moreover, Jetté's unpublished grammar⁹⁵, especially for the verb complex, is amongst the most insightful ever written for an

Athabaskan language and deserves attention from Athabaskanists today. Koyukon suffered nearly 45 years of complete neglect until the arrival of David Henry of the Summer Institute of Linguistics. Henry has continued his religious publication in Koyukon during the 1970's. He also produced in 1973 with Eliza Jones and Marie Hunter a Koyukon noun dictionary⁹⁶. Eliza Jones has since continued intensive research on her native language, has published several collections of texts⁹⁷, and transcribed hundreds of pages more; she has also retranscribed the Koyukon entries of the Jetté dictionary, for remarkable as Jetté was as a lexicographer, he was woeful as a phonologist.

Mary Kroul wrote a Ph.D. dissertation⁹⁸ on Koyukon grammar, but, unsupervised by any Athabaskanist or Athabaskan, the work is of little value, and is a good example of the reason for the 1976 LSA resolution against permitting doctoral dissertations in American Indian (or other "exotic") languages without the control of such a specialist on the committee. Very valuable, on the other hand, is the master's thesis⁹⁹ of Chad L. Thompson on the same subject, based on two superb resources, Jetté's grammar and work with Mrs. Jones. Jones, Kari and Thompson are now preparing a comprehensive dictionary of Koyukon, based on both Jetté and the modern resources.

There have been programs for teaching Koyukon in some of the

schools since 1972, and since then a fair number of school materials have been published, many of them by Eliza Jones.

Upper Kuskokwim 140 speakers of 150 total population, including children, but decreasingly so now. Upper Kuskokwim was erroneously considered part of Ingalik by Osgood, but defined as a separate language by Krauss in 1961, close in fact to Tanana. Ray Collins of the Summer Institute of Linguistics has done fieldwork and community language program work with this group since 1964. Betty Petruska of Nikolai has written most of the school materials (about 27 school texts). Only sketchy documentation of the language is so far available. Petruska and Collins are currently working on a school dictionary.

Tanana 100 speakers of 360 total population. Defined as Tanana in 1973, this language was the object of Krauss's first Athabaskan fieldwork (summer of 1961). Krauss finally published a preliminary noun dictionary¹⁰⁰. No literacy, new literature, or school programs for the language have yet begun, though a practical orthography was introduced by Krauss and Leer in visits in 1974.

Included with Tanana on the 1974 map are the transitional Chena, Salcha, and Goodpaster dialects, classed as "Tanana B 'Transitional' 1." in 1973. The last two known speakers of the Chena dialect both died in 1975; two speakers survive of Salcha,

and one of Goodpaster, as of 1978. Krauss and Nancy McRoy in the 1960's and 1970's had several sessions with each of these speakers, but the documentation remains inadequate.

Tanacross 120 speakers of 160 total population, including some of the children at Tanacross, but decreasingly so; the estimate is probably too high. This is the "Tanana B 'Transitional' 2." of 1973; Tanacross is hardly mutually intelligible with Minto-Nenana and certainly requires definition as a separate language both from that and from Upper Tanana (e.g. Minto-Nenana t'æʂ^r 'charcoal', Tanacross t'e's, Upper Tanana t'eah). The transitional dialects between Tanacross and Minto-Nenana are now (somewhat arbitrarily) classed with the Minto-Nenana. In 1972-76 a practical orthography, with revisions, was established for Tanacross by Nancy McRoy, Krauss, Leer, and Paul Milanowski of the Summer Institute of Linguistics. There have been sporadic school programs in the language; very few school materials have yet been produced, however. One further problem is that the Tanacross children now go to school at Tok, a non-Indian community. There has so far been no sustained fieldwork and no major publication on the Tanacross language. Documentation is very sketchy.

Upper Tanana 250 speakers of 300 total population, some of them children, but rapidly decreasing now. Paul Milanowski has continued his religious publication in this language, with the

help especially of Alfred John. There has been some revision in the orthography, especially as a result of Leer's fieldwork in 1974. The Tetlin school is operated by the Bureau of Indian Affairs, which seldom supports the school language programs, although especially since 1974 there has been some production of schoolbooks in the language, especially by Shirley David Jimerson and Alfred John, for the regionally operated school at Northway. Documentation of the language remains sketchy and inadequate.

Han 20 speakers of 60 total population in Alaska, and perhaps 5 of some unknown small population in the Yukon Territory, Canada. Except for one small anonymous vocabulary from ca. 1865, there was virtually no documentation of Han until Gordon Marsh's (unpublished) notes at Eagle in 1956. During the intervening century the Han people suffered the fate of hosting the Klondike Gold Rush. During the 1960's Krauss and Nancy McRoy began serious documentation of the language on the Alaskan side, and the ethnologist Catharine McClellan provided the first known Canadian Han data, the first ever on the language of the Klondike. In 1976 John Ritter began sustained fieldwork with the few remaining speakers of Klondike Han at Dawson, and in 1977 began work on the Alaskan side also. A practical orthography has been established, and Ritter is currently working on literacy materials and a noun dictionary.

Kutchin 1,200 speakers of 2,400 total population, about half of the population in Canada, but with more speakers (about 700) in Alaska than in Canada (about 500), as there are some children who speak Kutchin in Alaska, but none in Canada. Few of the children at Fort Yukon and elsewhere speak the language, but at Arctic Village and Venetie all the children speak it; these are then the only two villages in Alaska where all the children are still able to speak Athabaskan. There was a solid tradition of literacy in Kutchin from the missionary period, especially 1880-1920, mainly the work of the Anglican Robert MacDonald. This tradition was fading by the 1960's when Richard Mueller of the Summer Institute of Linguistics developed a practical orthography and began a modern literature in Kutchin. With the publication of a fair number of new school texts for Kutchin bilingual school programs, Kutchin now has a literature which is over a century old and which includes well over 100 publications. However, of the two villages left in Alaska where children come to school speaking Athabaskan, only in one, Arctic Village, is there consistently a bilingual program; in Venetie, the school, operated by the Bureau of Indian Affairs, currently has no curriculum involving the children's language.

There has been considerable linguistic research on Kutchin during the 1970's. Richard Mueller has continued his work with

the language. John Ritter has done some general dialectology, but concentrated more on the Canadian side, where in addition to literacy materials, he has also published a noun dictionary¹⁰¹. In Alaska, since 1972, Moses Gabriel of Chalkyitsik has written a large quantity of narratives and personal reminiscences in Kutchin. Katherine Peter of Fort Yukon has done a massive amount of work, including the transcription of many traditional texts, re-edition of the texts Sapir transcribed from John Fredson in 1923, re-edition of the extensive Arctic Village journal kept in the old orthography by Isaac Tritt (1923-1934), and has written many of the schoolbooks. Her lexical work includes a forthcoming school dictionary. Leer, in a series of unpublished papers since 1973, has made very important contributions to Kutchin linguistics: he has outlined the development of the verb prefix morphology, and also detailed the phonological development of the stem in this radically evolved Athabaskan language. Most important of all, Leer has adequately described and analyzed the intricate phonology of the tones in Kutchin, this for the first time for tones in Alaska; it will no doubt become much easier now to arrive at an adequate understanding of the tones in the others (Kutchin, Han, Upper Tanana, Tanacross, Tanana, Upper Kuskokwim, and some Koyukon; but not Ahtna, Tanaina, Ingalik, some Koyukon).

Canada

There is of course no linguistic reason for separating Alaskan and Canadian Athabaskan, which together form the great mass of Northern Athabaskan. There is much diversity within Canadian Athabaskan, as there is within Alaskan. It seems probably that the homeland of Proto-Athabaskan itself extended at least somewhat into what is now Canada, perhaps very considerably. Canadian Athabaskan languages are somewhat less well known (at least to this writer) than are the Alaskan. A definitive map of Canadian Athabaskan languages remains to be drawn. There are areas (especially around Kaska) for which this probably cannot yet be done. A fair guess of the number of "languages" in Canadian Athabaskan, by the same standards as used for Alaska, would probably be about a dozen (not counting Kutchin and Han, already counted for Alaska), as listed below. The total population may be around 25,000, and of these perhaps 20,000 speak a Canadian Athabaskan language. Some work is currently being done on population figures and definitions for a new linguistic map of Canada; the official one¹⁰² is probably good for showing band locations and populations, but rather poor for language identification. As my contacts with the Canadian field have not recently been extensive, I shall not attempt here to update the population figures I gave in 1973, and must necessarily give only much more cursory coverage of recent

Canadian work than I have of Alaskan.

For Kutchin (in Canada called Loucheux) and Han in Canada, John Ritter's recent work has already been mentioned above.

Tutchone (called "Kutchin" on the 1970 map) is a group of dialects which should probably be divided somehow into two languages, Northern and Southern. Since 1973 John Ritter has done sustained work on these; he has published noun dictionaries¹⁰³ of two Northern dialects in a practical orthography.

Quite different from the Tutchone group is the Tagish, Kaska, and Tahltan. These probably belong in some kind of grouping together, and are perhaps mutually intelligible. The only recent work I know of is the very important 1977 fieldwork by Victor Golla on Tagish, now nearly extinct. Golla has provided us with the first extensive or accurate documentation of this language, now confirmed to be more like Kaska and Tahltan than like Tutchone. Kaska, however, is still practically undocumented, though the Alcan Highway goes right through the area; it is not possible at this point to say what the relationship is between Kaska (called Nahanni on the 1970 map) and Tahltan (some varieties being identical?). Tahltan is itself far from phonologically uniform, to judge from the differences between the 1960's fieldnotes of Ken Hale and of Eung-Do Cook, the latest we have to my knowledge. There are so far no practical orthographies, literatures, or

school programs in these languages.

The "Mackenzie Drainage" Athabaskan language group was becoming better defined by 1971, thanks to the work of Robert Howren and his students. In this group are Hare, Bearlake, Mountain, Dogrib, and perhaps most (but not all?) dialects of "Slave(y)". These are all to a significant degree mutually intelligible, with Dogrib being the most divergent (not counting Slavey). The Slavey area in particular still needs more definition. Howren's work decreased in the 1970's, but important new linguistic work in the area is now that of Keren Rice. Since her arrival in 1974, Rice has concentrated her effort on Hare, starting with a Ph.D. dissertation¹⁰⁴ on the phonology. She then published a very useful grammatical sketch¹⁰⁵ of Hare and an article¹⁰⁶ on the development of stem-initial continuants. Rice has also used Fang-Kuei Li's valuable 1929 Hare fieldnotes, adding another dimension to the worth of her own. Since 1976 Rice has been assisted in the general area by Linda Ackroyd, and we have hopes that good work in that field will continue. In the way of school literature and bilingual programs in the region, unfortunately little has come to my attention. Nevertheless, Dogrib especially is reputed to be thriving and growing in vitality, spoken everywhere by children as well as adults, even in Fort Rae, a town of over 1,000. In Slavey Victor Monus of the Summer Institute of Linguistics has

continued his production of religious and literacy materials in a good practical orthography.

For Chipewyan there has been a renewal of linguistic scholarship with the work of Li's pupil Ronald Scollon, who did some new fieldwork in 1975-6 at Fort Chipewyan. Scollon published a scholarly edition with facing-page translations of Li's extensive unpublished Chipewyan texts¹⁰⁷ from Li's chief informant Francois Mandeville, a man of remarkable intellect and native linguistic talent. Scollon has also typed onto 2.800 slips Li's original notes which contain, among other things, the verb prefixes that belong with Li's famous published Chipewyan stem-list¹⁰⁸. If Chipewyan is still the Athabaskan language north of Navajo spoken by the largest number of people, soon it will not be, as it is reported that children in many places are no longer speaking Chipewyan. There is a good practical orthography in which some religious and literacy materials have recently been published by L. W. Elford of the Northern Canada Evangelical Missions; some other literacy or school materials have been published by another agency in a seemingly uncoordinated orthography.

The Beaver and Sekani areas of Canada are still relatively poorly known, as are the relationships between them and with their neighbors. David Wilkinson of the Summer Institute of Linguistics worked in Sekani 1963-1970 and began to publish literacy materials,

but the effort was abandoned in 1970, as the vitality of Sekani was reported too limited to warrant it. Marshall Holdstock of SIL has remained with Beaver since 1964, at Doig River. During the 1970's he has been assisted by Gillian Story. They have published some religious and literacy materials in a practical orthography and wrote a synchronic and historical study (unpublished) on the phonology. Story in addition has done some much needed dialectological research in the area, for a beginning at defining Beaver and Sekani.

Sarcee is a well defined separate Athabaskan language of considerable comparative interest. The number of good speakers, none of them young, is rapidly dwindling. Eung-do Cook has continued his work with the language, writing three articles on the phonology and a paper¹⁰⁹ on verb inflection. Much work remains to be done on Sarcee while there is still time, including e.g. a satisfactory account of Sarcee tones and their development.

There has been a fair amount of activity in the Carrier-Chilcotin area in the 1970's. The Babine-Hagwilgate section, from which we had some puzzling old transcriptions by James Teit, Marius Barbeau, and Diamond Jenness, proves to be a different language, rather distinct from Carrier. Henry Hildebrandt of SIL, who had worked with Babine since the 1960's, was joined in 1974 by Gillian Story. After a phonemic statement, in 1974 they

wrote a most interesting unpublished paper, "Historically oriented study of Babine (Northern Carrier) segmental phonology," in which they show how Babine vowels have shifted one way after "fortis" consonants (aspirated and glottalized stops and affricates and voiceless fricatives) and another way after lenis (plain stops and affricates, voiced fricatives, and sonorants). This is not only a unique development for Athabaskan, but it is also of great interest for phonological theory, as the resulting phonetic overlaps of the vowels forming a new pattern of distinct identifiable timbres (phonemes?) conflicts with some of the morphophonemics and the distributions, still largely but not entirely complementary. (after fortis *u>o, *ɔ>a, *æ>e, *i>ə(y); after lenis *u>u, *ɔ>e, *æ>i, *i>i; in the new pattern i e a o u, the e has two sources). James Kari also did fieldwork with this language in 1973 and 1975, in the Hagwilgate dialect. Hagwilgate differs from Babine in having still a velar k-series for PA *ḳ, whereas Babine, like all other Athabaskan languages outside Alaska (except Hupa and Wailaki) has fronted the series to tṣ̌. Kari wrote a 1975 paper (unpublished) on "Babine, a new linguistic grouping," which included orthographic recommendations for the Western Carrier (Babine-Bulkley River) language. Hildebrandt in 1977 published literacy materials in the new practical orthography (which uses c for the series which is tṣ̌ in Babine, ḳ in Hagwilgate).

The rest of Carrier seems to be one language, distinct from both Babine-Hagwilgate and Chilcotin, but with some internal dialect divergence also. Richard Walker of SIL, who has worked with Carrier since 1961, and was joined by David Wilkinson from Sekani in 1970, has begun a vigorous program of publication in the 1970's, including several religious texts. Moreover, working with local organizations and schools, the SIL linguists and a group of Carrier speakers have published a series of literacy materials and readers in a practical orthography. The major publication by Walker and the Carrier committee is a sizeable dictionary¹¹⁰, the English-to-Carrier index section of which contains about 3,500 English glosses. The usefulness of the main section is limited, however, as it is alphabetized simply from left to right, in whole Carrier words, therefore by prefixes, often capriciously. There is a useful appendix including a short grammatical sketch, a good list of kin terms, etc. Walker and the committee also published a study of placenames¹¹¹ and an ethnobotany¹¹². Most recently Ileen Austin, Nellie Prince, and David B. Wilkinson produced a sizeable set of lessons for learning Carrier as a second language.¹¹³

The Southern Carrier dialect of the Nazko-Kluskus area (also called Lower Carrier) is different enough that a separate version of two of the Central Carrier readers was published, an

adaptation by a team of four Southern Carriers, Nellie Prince, and David Wilkinson.

The Chilcotin language also saw an increase in linguistic research and activity during the 1970's. In 1968, Quindel King of the Northern Canada Evangelical Missions, who had worked with Chilcotin since 1964, wrote a phonological statement¹¹⁴ which left many important questions unanswered. Little was yet known about the strategically located southernmost of the Northern Athabaskan languages, the object of speculation, especially by Harrington, on the origin of Pacific Coast Athabaskan, Kwalhioqua-Tlatskanai, and Nicola. In 1972 Evelyn Todd tape-recorded some Chilcotin text and vocabulary. Krauss worked with tapes from King and Todd and then in the field along with Eung-Do Cook in 1975. Cook and Krauss found that the complex Chilcotin vowel phonetics were based on a distinction between "sharp" and "flat" consonants working both rightward and leftward to influence vowel phonetics. Vowels that are *i* (< **i*, **æ*), *æ* (< **ɔ*), *u* after sharp, are [^ə*i*], [*a*], [*o*] after flat, also before, except that there *i* is [*ë*]. Of the velar consonants, *k* x *ɣ* are usually flat, *g* and *k'* usually sharp, but not always. The main source of flat consonants, however, is the PAE **ts* series, now phonetically identical with the PAE **tš* and **k^w*, except for the striking difference in the vowels. The leftward influence of the flat sibilants but not velars

optionally extends indefinitely such that the only acceptable phonemic interpretation of the difference between sequences such as [lalalaz] and [lələlæz] is that the former has a final flat z, /lalalaz̄/ whereas the former does not, /lalalaz/. Krauss wrote a 1975 paper on Chilcotin phonology (unpublished)¹¹⁵; Cook also wrote on Chilcotin phonology in 1976 (unpublished)¹¹⁶, disagreeing in certain details with Krauss's analysis, but agreeing on the basic nature of this remarkable system. A modified version of the recommendations for an orthography based on the new analysis was adopted by the Chilcotin group and King, and school materials and programs, I understand, are now in preparation. The time is ripe, as the Chilcotin language community continues to grow, and the children generally speak Chilcotin.

Another point that became clear about Chilcotin finally in 1975 is that in no sense does Chilcotin appear to be more similar to Pacific Coast Athabaskan or Kwalhioqua-Tlatskanai (or Apachean) than is Carrier, but Chilcotin appears rather to have evolved in its own phonological direction not shared by any other Athabaskan language.¹¹⁷

Extinct Intermediate Athabaskan Islets of Nicola and
Kwalhioqua-Tlatskanai

Nicola was a small island of Athabaskan speech 150 miles

southeast of Chilcotin, extinct soon after the turn of the century, and with about 50 poorly transcribed forms documented that are or may be Nicola Athabaskan. A natural conjecture is that Nicola is an offshoot of Chilcotin, but the pathetic data are not adequate so far to substantiate this. J. P. Harrington claimed to have rescued a fair number of Nicola "vocables" in 1943, but the box containing the data, marked "Merritt, B.C.," could not be located at the Smithsonian as of 1973. The main new information on Nicola linguistics since 1973 is that the Merritt box has been located, and the material found to contain a fair amount of latter-day lore but little new of value for Nicola Athabaskan linguistics. Still, careful study of all the Nicola fragments and a better knowledge of Chilcotin and the surrounding Salishan languages might yield some understanding of the provenience of Nicola.

The Kwalhioqua-Tlatskanai sources, more than what was published in IJAL in 1924, have been carefully collated by Krauss in a long-term philological project he has made of them. The history of the fieldwork on the language 1841-1910, by amateurs and ethnologists of the era, most of whom knew each other (Gibbs, A. C. Anderson, Hale, J. Wickersham, Boas, Teit, E. S. Curtis, Frachtenburg) is in itself a fascinating study of the ethnolinguistics of the time, of friendship and sincerity, but also very much of petty rivalry, lack of trust and cooperation. The major penalty here was

severe botching of the last chances to document the language decently, with three linguists (Teit, Myers with Curtis, and Frachtenburg) all working with the last speakers in 1910, all known to Boas, and within days of each other.

Clearly Kwalhioqua and Tlatskanai are very similar or identical dialects; they are also not Pacific Coast Athabaskan, though they may share a few peculiarities with it. The most striking affinities that I have noticed for Kwalhioqua-Tlatskanai are with Babine-Hagwilgate. For instance, widely in Alaska the first person singular pronoun, **-š-*, combines with the *l* classifier (<**l̥-*) to produce an inexplicable *-gə-*, as Koyukon *nəgəgəd* 'I'm frightened', 2s *niłgəd*, 3s *nəl̥gəd*. In Hagwilgate the cognate *ls* would be [*nəgl̥gəd*], Babine-Hagwilgate being the only language outside Alaska with a similarly irregular form. There is enough evidence to be found in a careful examination of Kwalhioqua-Tlatskanai data, such as Hale's *níłkəs* 'to stand' and Gibbs's *nék-luk-sto* 'to stand' to show a development similar to the Babine-Hagwilgate, as the interpretation of the Gibbs form must clearly be *nəgl̥kəs-to* (unidentified velar stem-initial, devoiced reduced vowel, future enclitic, and *ls* subject pronoun exactly as in Hagwilgate). Krauss has made important use of Kwalhioqua-Tlatskanai evidence in his comparative paper on PAE fricatives (see Comparative below).

Pacific Coast Athabaskan (PCA)

In a recent oral presentation, 1976, Victor Golla estimated the number of different PCA languages (not counting Kwalhioqua-Tlatskanai) as but four, the Oregon branch consisting of Umpqua and all the rest, the California branch consisting of Hupa(-Chilula-Whilkut) and all the rest. This is admittedly a radical reduction, basically confirming and emphasizing Krauss 1973:924. In Oregon, Tolowa-Chetco-Tututni-Chasta Costa-Coquille, though a continuum, may not have been mutually intelligible at the extremes, and Applegate-Galice was slightly divergent again. Still, Golla's point also remains that Umpqua was far more divergent. Similarly, the extremes of the Bear River-Mattole-Nongatl-Sinkyone-Lassik-Wailaki-Kato continuum in California may not have been mutually intelligible, but they are perhaps closer than either is to Hupa. Even so radically reduced in number of languages, there is considerable divergence within PCA; at the same time there are enough innovations common to all PCA to justify considering it an Athabaskan "substock," though not so compact a substock as Apachean.

Of the four languages or language groups in question, two are now extinct, Umpqua in Oregon and (almost certainly) the whole California continuum. Of the Oregon continuum Tolowa remains with at least three good speakers, and there may be again as many surviving from the Tututni area. Of all the PCA languages, Hupa has

the largest number of speakers still, perhaps about twenty.

There is a fair amount of documentation of the PCA languages in various repositories. The 1974 Parr bibliography¹¹⁸ of Athabaskan languages contains an excellent listing for the PCA languages, including archival resources, some of which were just recently becoming identified or available by 1970, e.g. the work of C. H. Merriam. Still more recently, important additional materials of that kind are to be added to the list, e.g. more by Harrington (including an Umpqua vocabulary), Sapir's Hupa notes, Li's Wailaki. The time is now certainly ripe for gathering xerox copies of all known PCA linguistics data sources together onto a few manageable feet of shelf space in one place, as an indispensable basis for efficient progress in PCA studies.

Victor Golla continues to merit his mantle as the dean of PCA linguistics, doing fieldwork in Tututni in the early 1970's, publishing a good grammatical sketch¹¹⁹ of it in 1976. For Hupa he published one of Sapir's texts¹²⁰, a note on verb-stem variation¹²¹, wrote a grammatical sketch¹²² for the forthcoming Smithsonian Handbook, and continues working on a dictionary and edition of the Sapir Hupa texts as a long-term project.

William Seaburg has recently begun to work in the field of PCA linguistics, first as part of a project of helping Elizabeth Langdon Jacobs (Mrs. Melville Jacobs) edit Oregon materials

gathered by the Jacobses in the 1930's.¹²³ Seaburg has also been editing Fang-Kuei Li's valuable Wailaki data, mostly texts, from 1927, and has published two texts from those¹²⁴ with textual and comparative notes. Seaburg in 1977-8 has been doing fieldwork with the remaining speakers of Tolowa. Seaburg and Golla are also collaborating on the long-term project of a comparative dictionary of PCA.

Also published in the 1970's are two more editions of older Oregon materials, a list of Galice stems¹²⁵ by Hoijer, one of his last publications, based on fieldwork by Melville Jacobs and himself with the last speaker of Galice, Hoxie Simmons. In 1977 Herbert Landar published three Oregon vocabularies¹²⁶, one by Harrington, ca. 1942, from "R[ogue] R[iver]" (perhaps Wolverton Orton, Chasta Costa), and two transcriptions from tapes made by Morris Swadesh in 1953, of Miller Collins (Rogue River Tututni) and of Hoxie Simmons (Galice).

Another activity in Pacific Coast Athabaskan that should be mentioned is that of Thomas Parsons of Humboldt State College, Arcata, California, who has organized both Hupa and Tolowa language courses for the communities, including some materials production. For these he uses an alphabet of his own making, "Unifon" script. Though a totally novel alphabet inevitably has serious practical disadvantages, it might have interesting advantages if based on a

good understanding of Athabaskan phonology, unfortunately lacking in this case. Nevertheless, some textual and lexical materials are being written in Hupa and Tolowa in Unifon that are valuable and thus need phonologically adequate retranscription.

Apachean

Apachean is a single close-knit substock which represents a separate and later migration from the North than does PCA, and which seems to come from a different direction, having certain "affinities" perhaps with Sarcee. The origin and inner organization of Apachean were the subject of one of Hoijer's last articles¹²⁷, in which he revises certain earlier views, including a reclassification of Apachean into only two languages, Kiowa-Apache and the rest, as "it is obvious that Navaho, San Carlos, Chiricahua, Mescalero, Jicarilla, and Lipan are simply closely related dialects of a single language." This reduction is probably a bit radical, but it correctly emphasizes the divergence of Kiowa-Apache. That language, incidentally, is rapidly approaching extinction, but no fieldwork on it has come to my attention since that of Bittle in the 1950's.

Muriel Saville-Troike has written a number of articles¹²⁸ on Navajo dialectology, both synchronic and diachronic (with whatever use that can be made of the poor 19th-century sources), showing

how that ties in with Apachean dialectology in general, of which it is an integral part.

For Apachean other than Navajo, I am aware of only two major works during the 1970's, Philip Greenfield's dissertation¹²⁹ on White Mountain phonology (structuralist), and a dictionary¹³⁰ of Western Apache published by a White Mountain Apache group under the (anonymous) editorship of Faith Hill of SIL: English, ca. 2,600 words, to Apache, with appendices including a brief grammatical sketch. Also important to note is a Lipan text¹³¹, Hoijer's last publication. The White Mountain group has further published some literacy materials and specialized word lists, but I do not know at this writing to what extent there are bilingual programs in Apache schools, and materials provided for them, nor do I have up-to-date information on Apache language maintenance (except for Jicarilla, that only a minority of the children are learning it).

The first half of the 1970's saw an impressive flowering of Navajo language work, emanating in large part from two centers, MIT under the leadership of Ken Hale, and the Navajo Reading Study at the University of New Mexico under the leadership of Bernard Spolsky. Other centers, Rough Rock Navajo Curriculum Center, Ramah, Rock Point, Sanostee-Toadlena, produced a very significant amount of reading materials and school texts during that

period also. In addition, there were as usual important individual efforts, which continue. The group efforts, however, seem to have declined noticeably since 1975. The UNM Navajo Reading Study is no longer active, the Navajo linguistics journal (mostly at MIT) is no longer being issued, and I see far less evidence of school material output than I saw four years ago.

Navajo linguistics flourished at MIT under Ken Hale, who instructed a number of Navajos in linguistics (Paul Platero, Mary Helen Taptto Creamer, Ellavina Tsosie Perkins, Lorraine Honie), supervised dissertations on Navajo syntax by Paul Platero¹³² and Ellen Kaufman¹³³. Hale himself wrote a series on Navajo linguistics for Navajos¹³⁴ and together with Lorraine Honie, in Navajo, articles on comparative Athabaskan and Navajo phonetics, published in Diné Bizaad Náníl'ííh/The Navajo Language Review. This brave undertaking came out in six or eight issues during 1974 and 1975. It published articles, some of them in Navajo, by Platero, Creamer, Perkins, Honie, Frank Hardy, James Kari, Gary Witherspoon, and others. Another remarkable publication is a collection of papers¹³⁵ on Navajo linguistics, some in Navajo, by a group of twenty Navajos led by Paul Platero, at a 1973 workshop. Other important publications of the MIT group include a study of Navajo syntax¹³⁶ in Navajo by Platero and papers¹³⁷ by Ellen Kaufman.

At the University of New Mexico, Navajo Reading Study personnel published bibliographies¹³⁸ of Navajo reading materials by Bernard Spolsky, Agnes Holm, and Penny Murphy, with a supplement by Spolsky, Rose Fasthorse and Louise Benally, with a total of 190 items. These give good coverage through 1972. Perhaps another hundred may be added by now, but, as mentioned above, production seems to have declined. A third bibliography¹³⁹ by James Kari, for works on the Navajo language itself, listing nearly 500 items, some unpublished, including an analysis of the 39 boxes of the papers of Fr. Berard Haile now at the University of Arizona Library and Athabaskan manuscripts at the University of Chicago and University of Northern Arizona, a vast repository of Navajo linguistics and culture. For the serious student of Navajo linguistics, this bibliography is the basic key to the literature through 1973.

The appearance of Kari's dissertation¹⁴⁰ on the generative phonology of the verb prefix-complex has been a major event in Navajo linguistics; it has greatly advanced the description and explanation of those infamously intricate morphophonemics.

On the subject of Navajo orthography there has also been considerable study. Robert Young wrote an interesting history¹⁴¹ of Navajo orthography and literature, and Wayne Holm's dissertation¹⁴² deals not only with the history of Navajo orthography

but also with some experiments with simplified underdifferentiating orthographies (omitting e.g. tone marks, nasalization marks), not necessarily championed by Holm and fortunately not adopted.

Presently at the University of New Mexico Frank Hardy is writing a dissertation on the Navajo verb, building not only on Kari's dissertation but proceeding beyond that on a comparative-historical basis, building further on the recent work of the Alaskan group (q.v. in the Comparative section, below).

Other dissertations reported in Navajo linguistics (which I have not seen) are Suzette Elgin's on syntax¹⁴³ and James Kale McNeley's on Navajo semantics and world-view or culture¹⁴⁴. Along this latter line, recent studies by Oswald Werner and Allen Manning¹⁴⁵ and two by Gary Witherspoon¹⁴⁶ should be mentioned.

In 1974 the AMS Press reprinted two old Navajo grammars that had long been unobtainable. Most important was Gladys Reichard's¹⁴⁷ much maligned, but still useful for many points and insights not available in the writings of the Sapir-Hoijer-Haile "school." Also reprinted was the equally unobtainable but not equally valuable 1926 grammar¹⁴⁸ of Fr. Berard Haile. Fr. Berard's contribution to the documentation of Navajo oral literature and lexicon was enormous, however; yet much of that remains unpublished altogether.

Turning finally now to the field of Navajo lexicography, noteworthy is a dictionary¹⁴⁹ by semantic domain, written by a Navajo, Martha Austin, the first such dictionary since the Franciscan Fathers' Ethnologic Dictionary of the Navajo Language of 1910, and therefore the first in an adequate orthography. It makes a contribution to a field already very rich, including, as was pointed out in 1973, not only good basic coverage by Young and Morgan (1943) and Fr. Berard (1951-2), but also good specialized works on such areas as anatomy, ethnobotany, entomology, medicine, even automobile parts.

To this wealth, however, two works of the greatest significance are now to be added. The first, published in 1974, was Hoijer's last and perhaps most important work on Navajo, the culmination of the lexicon to which Sapir and Hoijer had both devoted many years' labor.¹⁵⁰ Here the Navajo lexicon is masterfully collected, analyzed and presented for the linguistic public, especially the comparativist. The book is hardly designed for the Navajo public, however, arranged strictly by stem and form class, and in the Sapir-Hoijer scientific orthography (e.g. with č c instead of ch ts). The largest section, pp. 1-250, lists verb-stems, numbered 1-827 (not all unrelated), with stem-variants for the modes, and lists under each the major bases with prefixes, choice of imperfective and perfective conjugation marker; e.g.

for the stem -ʔá 'rigid object extends', by no means the most productive stem, 52 bases are given. Probably about 4,000 verb bases are listed. Smaller sections list 627 noun stems or stems used in noun bases, and there are extensive lists of postpositions, verbal prefixes, particles, not all fully analyzed, however. Kari's review¹⁵¹ of the book provides an excellent evaluation. Not mentioned, for some reason, however, in the bibliography of basic works on Navajo at the end of the book, is the extremely significant grammar and dictionary by Robert Young and William Morgan from 1943.¹⁵²

The most impressive publication in Navajo yet will be the new Young and Morgan grammar and dictionary which is about to appear (and of which I have seen advance sample sections). This book is the fruit of forty years' experience, collaboration, and devotion to Navajo linguistics by Young and Morgan. The first section is a grammatical "introduction" about 400 pages long; it will be our first account of Navajo morphology even approaching adequacy in covering the data. Not rule-oriented, however, it contains, organizes, and displays truly full information, without avoiding the redundancy necessary in that type of presentation. The book is designed for Navajos and learners of Navajo, but it will serve as a perfect field, the richest of sources, for linguists, who will certainly find rewriting it irresistible.

(They will also find that Kari's work on the prefixes points most of the way.) The Navajo-English section of the dictionary will be over 800 pages long in reduced type, the equivalent of over four times that in ordinary typescript. The arrangement of this will be even more surprising to the linguist than that of the grammar, alphabetical not by stem but by prefixes, as demanded of the authors by the Navajo public. The dictionary thus enormously emphasizes prefix-complexes and is highly redundant in listing the stems. Certain conventions must be learned by the user nonetheless, e.g. that anatomical terms are to be found under 'a- for the indefinite possessor, whereas verb bases with object or objects of postpositions are to be found under bi-, third person object. It might seem at least as easy to learn to find items by stem, but certainly the authors know what they are doing. The English-Navajo section of the dictionary is over 200 pages long, again reduced type, and contains about 10,000 entries, clearly very comprehensive coverage (where the object is not for Navajos to look up the meaning of non-colloquial English words). Again, the new Young-Morgan will be a vast resource for the Navajo people and for linguists.

There is a striking contrast and perfect complementarity between these two grand dictionaries just described, the spare, abstract, almost austere (Sapir-)Hoijer, and the concrete,

explicit, overwhelmingly generous Young-Morgan, both masterworks.

General and Comparative Athabaskan; Na-Dene

Since the 1973 report was written, two major publications have appeared that deal with Athabaskan in general, though non-comparatively. A most useful reference work is Richard Parr's bibliography¹⁵³ of Athabaskan languages. The title is modest in that the work covers anthropology (cultural, physical, archaeological, folklore) in addition to linguistics; in linguistics it is impressively comprehensive for published work at least, through 1972, for all Athabaskan. It is not merely our only Athabaskan language bibliography since Pilling's of 1892, it is also an excellent one, a most useful tool for the serious Athabaskanist.

Harry Hoijer, scholar and humanitarian, dean of Athabaskan studies, died in 1976. An issue of IJAL (Volume 43, Number 4, October 1977) was fittingly dedicated to his memory. Ably edited by Victor Golla, it contains seven articles on Athabaskan. Already cited have been Elizabeth Jacobs (Chetco text), James Kari (Ahtna-Tanaina diffusion), Herbert Landar (three Oregon vocabularies), Keren Rice (Hare continuants), William Seaburg (Wailaki text, from Li, with comparative notes), and Victor Golla (a note on Hupa verb stem variation); Eung-Do Cook writes on light/heavy syllable alternations in Sarcee, Chilcotin, and Carrier.¹⁵⁴

This last is not comparative in the sense that it does not attempt to show correspondences or reconstructions, but rather deals with the phenomenon from a general theoretical point of view. The issue also includes a full bibliography of Hoijer's publications, 1933-1975, 165 items, with annotations, by Herbert Landar.¹⁵⁵

Using comparative historical techniques but limited in scope to the historical explanation of individual languages, a number of works have already been cited, such as Seaburg's Wailaki text, Leer's Kutchin, and Krauss's Chilcotin phonology; or limited in scope to contiguous languages and dialects, such as Howren's survey of the Mackenzie Drainage area, Story's of Beaver-Sekani, or Kari's composite Ahtna-Tanaina stem list. In a sense, however, most good work on Athabaskan, even the purely descriptive, is now being done by linguists who already have a good background in comparative Athabaskan, without which it is in fact wasteful to proceed.

Dyen and Aberle's work on the reconstruction of the Proto-Athabaskan kinship system¹⁵⁶ is remarkable for the heroic feat, in 500 pages, of achieving ninety per cent accuracy from the data they chose to limit themselves to, Hoijer's 1956 study of Athabaskan kin terms¹⁵⁷. The data in that are usually dreadful, 19th century, or by investigators who knew no linguistics or Athabaskan, and Hoijer's interpretation of that is far from his best work.

The authors' elaborate and rigorous methodology filters out most of the "noise," so that they come fairly close to achieving what could be done with one-eighth the doubt and effort and space from the good data on many Athabaskan languages, especially Alaskan, that have become available in the last twenty years. Krauss has an article¹⁵⁸ forthcoming doing precisely that, reconstruction of the Proto-Athabaskan kinship system from good data, including Eyak, with an **appendix** to reconcile the data in the 1956 article.

Notwithstanding Hockett's¹⁵⁹ absurd comment that comparative Athabaskan is in a "scandalous state," the significant progress of the 1960's has continued unabated in the 1970's, especially in the phonology (phonetics), morphophonology, and morphology, mostly the work of the Alaskan group, Kari, Leer, and Krauss.

Major further refinements have been made on the PA phoneme-inventory in a paper by Krauss¹⁶⁰ on the obstruents and another by Krauss and Leer¹⁶¹ on the sonorants. Krauss revises his reconstruction of the $*\underline{k}^w$ -series in PA (though still $*\underline{k}^w$ for PAE), on the grounds that $*\underline{k}^w > *t\underline{g}^w$ never merges with $*\underline{k}$, only with $*t\underline{g}$, and is never attested in Athabaskan as a velar. He then further examines the relationship between the affricate series, especially the fricatives, which appear to be quite irregular. Most irregular of all is in the first person pronoun, "normally" $*\underline{g}$, but $*-g-$ in some environments, for which see his discussion here under Kwahioqua-

Tlatskanai. The paper perhaps raises more questions than it answers. The paper by Krauss and Leer on the sonorants, on the other hand, is very satisfying in the new light it sheds on the PA(E) sonorant system. Different from normal correspondences for PA *n are certain instances of Carrier y, as in yəɬ 'wedge', ti 'trail' (< təy), -qi? 'husband' (< -qəy?) (cf. Navajo niɬ, ti'n, -kàʔ). These turn out to correspond neatly with the equally unpredictable Ingalik ŋ: ŋəɬ, təŋ, -qəŋ?, which are now reconstructed as PA(E) *ỹəɬ, *təỹə, *-qəỹ?. The paper cites eleven stem-initial and twenty-four stem-final instances of the correspondence. The same correspondence also now elegantly explains the nə~i- alternations in two important homophonous prefixes, the second person singular pronoun and the mark of the perfective, now identified with the "y-element" of the classifier. Krauss and Leer go on to tie in Eyak (here wəɬ, ta', -qa?), and even Tlingit (Tongass yi's 'wedge', qa? 'man'). They then consider the sonorant system of PA(E)-Tlingit as a whole, and find reason to reconstruct PA(E) *w̃ as well as *w, to explain correspondences such as dvn', dəm' for 'fly (insect)', *dəw̃?, also PA*(h)unəyə 'older brother', Tlingit húnx, Eyak xəwəx (< *həw̃x) (perhaps a diffusion). Most spectacularly, however, is Tlingit (Tongass) wa'g, Eyak -la'x, in Athabaskan usually initial -n-, but with certain irregularities, the most startling of which is again in Ingalik, -mag (< PA *-w̃æg- ~

*-w̃og-). The new PAE *w̃ initial here allows us to reconstruct what Krauss finally considers a fully convincing cognate stem for PAE-Tlingit.

Here should also be mentioned two articles by Tiit-Rein Viitso on PA obstruents¹⁶² and on classifying the Athabaskan languages¹⁶³. In the former Viitso would reverse the labialization feature from the present reconstruction of PA(E) *ts k tš_ḵ^w (> tš_ḵ^w) as *t^y k^y t^{yw} k^{yw} to *t^{yw} k^{yw} t^y k^y respectively, basically because *ts > Koyukon tɬ, Hare f^w, etc. In the latter and more interesting paper Viitso studies various methods of classifying the Athabaskan languages taxonomically, partly in mergers that were quite parallel to what was attempted in Krauss 1973, which Viitso had apparently not seen.

Also in our understanding of the morphology and morphophonemics of the prefix complex, very considerable progress has been made beyond Hoijer's 1971 summary of it (written in 1967)¹⁶⁴. On the basis of outstanding descriptions such as Golla's Hupa (1970) and Kari's Navajo (1973) dissertations, some of Krauss's work (especially the 1969 monograph on classifiers), and their experience with Alaskan languages, Kari and Leer in particular have worked out a number of problems that had not been solved in the 1960's. The only publication so far is Kari's article¹⁶⁵ pointing out the

synchronic importance still of the boundary between disjunct and conjunct prefixes in Navajo and Tanaina. The rest remains still unpublished, as does much of the progress to be discussed below concerning the stem phonology.

Aside from syntax, which has barely been considered in comparative studies at this point, the major remaining problem not only for comparative Athabaskan but even for synchronic descriptions of individual languages, a prerequisite even for designing fully adequate dictionaries, is the problem of the structure of the stem, and the morphophonemics of stem-variation, not only inflectional for perfective-imperfective-optative-future/progressive(-repetitive/customary), but also derivationally through the many "aspectual" stem sets, e.g. momentaneous-continuative-semelfactive, etc. In most Athabaskan languages there is still a very complex pattern of such variation, to produce which there must still be synchronic rules operating on a single underlying stem form, and suffixes, many now fully or partly abstract processes instead of segments, especially for closed (CVC) stems.

Starting about 1973 Jeff Leer began to study these problems, joined soon by James Kari. In a series of unpublished papers, beginning with a "Preliminary report on Athabaskan stem variation" (1974), most recently "Spirantization and the development of

suprasegmentals in the Proto-Athabaskan stem" (1977), Leer emerged with a theory that accounts for the variation in terms of suffixes and processes such as reduction and spirantization of final obstruent in closed stems operating on stems with PA vowel contrasts $V/V'/V?$ to produce the attested forms, including tones. Working closely with Leer, Kari has studied the variation and derivational sets in three languages where the system is very elaborate and phonologically conservative, Ahtna and Tanaina (which preserve the glottalization) and Koyukon (which preserves some overt suffixes even on closed stems). Kari has just finished a paper (tentatively, "Athabaskan verb theme categories: Ahtna and Navajo") detailing the system for Ahtna, but then going on to show that Navajo too shows corresponding phenomena for most of the system, proving beyond a doubt its fundamental place in Proto-Athabaskan grammar and providing the basic theory now to account for it as it still operates on the grammar of most Athabaskan languages.

Accounting for the system was only one step in understanding the multidimensionality of the Athabaskan verb, to which Kari's paper is an enormous contribution. To quote from the introduction: "The verb theme categories constitute an extremely powerful theory of the Athabaskan verb. The categories apply to virtually the entire corpus of themes in an Athabaskan language, making their

conjugation, pattern of prefix derivation, and aspectual stem variation predictable and also making a claim to the semantic character of each category. Polysemy is very common in the Athabaskan verb complex. Throughout this study we will see single morphemes taking on a great many functions. A set of four perfective-imperfective modal prefixes appear in nine different conjugation patterns. A conjunct prefix *i-* has distinct functions in three different aspect formulae. The verb stem suffixes are only eight in number, yet these can occur in an astounding number of combinations to mark the four modes in the various aspects and subspects. This reshuffling of a relatively small number of morphemes into many subtly different structural combinations of prefix and stem suffix with subtly different meanings, is the very heart of the Athabaskan verb."

In the field of comparative Athabaskan-Eyak and Na-Dene, less effort has been recently expended, less published, and rightly so, in that higher priority belongs on further development of closer comparisons before concentrating on much longer-range ones, sparing the field much wasteful speculation by proceeding in an orderly fashion from the known to the unknown.

There has not yet been a systematic study of PA-Eyak as such, though the subject is being chipped away at by the inclusion of Eyak in most of the recent studies, now that the data are available.

Some problems are by no means simple, e.g. in the phonology where PA *-wət' 'belly', *-zət' 'liver' and *ɬəd 'smoke' correspond to Eyak -wət', -sahd, ɬahd.

In comparative Na-Dene, the main development has been the elimination of Haida, treated above. Pinnow has continued to publish on Na-Dene, in two monographs, one on verb-stem variation in Navajo¹⁶⁶ (tied in with other Athabaskan, and with Tlingit, but not with Eyak or the important progress by Leer and Kari), and the other a history of Na-Dene research¹⁶⁷. The latter is a valuable historical and bibliographical contribution, listing and describing work in the field 1798-1976, in three sections: studies on Tlingit and Haida, studies relating Tlingit and Haida with Athabaskan-Eyak, studies relating Na-Dene to other language families (with much more detail and patience than Krauss devoted to the subject in his 1973 report).

Nevertheless, the PAE-Tlingit lexical and grammatical comparison are by no means being neglected. Leer, in particular, continually working with Tlingit and Athabaskan, has been steadily accumulating a file that promises to establish correspondences between at least some of the Tlingit lexicon and Athabaskan-Eyak,

NOTES

N.B. Because of the style and nature of this survey report, the author has elected to include all bibliographic references in the notes, and to omit an additional bibliography. The publications cited in the text are therefore to be found fully cited below in the same order as they appear in the text, and thus by subject areas.

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Middle American Languages

Lyle Campbell

0. Introduction

Discussions of North American Indian languages often stop at the Mexican border, though there are good reasons for including the languages of Mexico and Central America. For one, the genetic relationships among the languages do not stop at the border. As Sapir (1929:140) put it:

Middle America, in spite of its special cultural position, is distinctly a part of the whole North American linguistic complex and is connected with North America by innumerable threads.

Another good reason is the strong historical precedent for including Middle America (henceforth MA). Sapir's (1929) famous classification, which has been the starting point of most subsequent discussions of American Indian language classifications, was titled "Central and North American languages". Sapir's historical work involved several Middle American languages, including his "Southern Paiute and Nahuatl: a study of Uto-Aztecan" (1913-1919), which was one of the first detailed applications of the comparative method to an American Indian language family. His other works were Sapir 1920, and 1925.

The very first article of the first issue of the International Journal of American Linguistics (IJAL) was Boas' (1917) on Pochutec of Oaxaca. Boas' other work in the area should not go unmentioned (1912, 1913, 1917, 1930; Boas and Arreola 1920). This historical precedent is indeed impressive when the various works on Middle American languages by other early well-known American Indianists are taken into account. See, for example, Brinton (1884a, 1884b, 1886, 1887, 1888, 1891, 1892a, 1892b, 1892c, 1895), Kroeber (1915, 1931, 1934, 1939, 1940, 1943, 1944), Radin (1916, 1924, 1925, 1929, 1930, 1933a, 1935, 1943-4, 1944, 1946), Whorf (1935, 1937, 1943, 1946 etc.), and Swadesh, Mason, McQuown, Newman, and others.

The case for including Middle America in a survey of North American languages is strong. However, the area is not parallel to other areas covered in this book; rather, the linguistic diversity of Middle America rivals that of the rest of North America taken as a whole. Though numbers of languages and families may be of little ultimate significance (given the tenuousness of many classifications), they do give some idea of the linguistic complexity to be dealt with in this paper. Compare Sapir's (1929) six stocks for North America with his fifteen for Central America (which does not include the three stocks of North America and the two South

American stocks which have outliers in MA). Even Kaufman's (1974a, 1974b) recent synthesis, which is by far the most accurate to date, has 21 major families (fifteen independent stocks). The number of individual languages is truly great: McQuown (1955:544-7) has 351 languages in Mexico and Central America; Longacre's (1967) map has 200 languages in Meso-america. There is also great typological diversity, as well:

In one small portion of the area, in Mexico just north of the Isthmus of Tehuantepec, one finds a diversity of linguistic type hard to match on an entire continent in the Old World. (McQuown 1955:501).

In face of this diversity, I cannot pretend to present a synthesis of MA comparable to that presented in this book for other areas and language families of North America. Nevertheless, the flurry of recent and on-going research in MA makes for an exciting survey and for a much more complete picture than possible just a few years ago. I will try to present an account which is, if not exhaustive, at least accurate and representative.

It will be helpful to begin this survey with a list of prior works which have treated MA languages in a general way, all of which are useful in different ways: Hervas y Panduro 1800, Adelung and Vater 1806-17, Orozco y Berra 1864, Pimentel

1874, Brinton 1891, León 1903a, Thomas and Swanton 1911, Lehmann 1920, Rivet 1924, Schmidt 1926, Sapir 1929, Mendizábal and Jiménez Moreno 1937, 1939, 1944, Mason 1940, Radin 1944, Rivet, Stresser-Pean, and Loukotka 1952, McQuown 1955, 1960a, 1960b, 1967, 1975, Greenberg 1956, Swadesh 1959, 1967, Tax 1960, Longacre 1967, 1968, McClaran 1973, Kaufman 1973, 1974a, 1974b, Arana de Swadesh 1975, Escalante, Pérez 1975, etc.

I will focus on five areas of discussion: 1) linguistic families, 2) the MA linguistic area (Sprachbund), 3) hypotheses of distant genetic relationship, 4) linguistic prehistory (the cultural implications of MA historical linguistic work), and 5) needs and directions for future research.

1. MA language families

The classification of MA families presented here is generally accepted and not considered very controversial. Below I take up the major proposals of remote relationships with their inherent controversies. The glottochronological dates in this paper are for the most part reported from Swadesh 1967 and Kaufman 1974b; I personally have no confidence at all in glottochronology, and so report these dates here (reluctantly, but in true MA tradition) only for the purpose of giving a rough idea of the nature of relationships.

1.1. Uto-Aztecan (UA)

Only aspects of UA not covered directly by Steele (this volume) involving UA languages of MA are considered here.

1.1.1. Proto-Aztecan. When Pochutec (see Boas 1917) is compared with other varieties of Aztec (Nahuatl) a rather different picture of Proto-Aztecan emerges than formerly thought. Campbell and Langacker (1978) present these correspondences and reconstructions for vowels:

PUA	PCH	PA	CN	Pi	Po
**i	*i	*i	i	i	i
**i:	*i:	*i:	i:	i:	i
**a	*a	*a	a	a	e
**a:	*a:	*a:	a:	a:	a
**o	*u	*o	o	u	o
**o:	*u:	*o:	o:	u:	u
**ɨ	*e	*ə	e	e	o/ø
**ɨ:	*e:	*e:	e:	e:	e

PUA - Proto-Uto-Aztecan

CN - Classical Nahuatl

PA - Proto-Aztecan

Pi - Pipil

PCH - Proto-Cora-Huichol

Po - Pochutec

The arguments for these reconstructions strongly support the reconstruction of PUA **ɨ(:) instead of **e(:), hopefully resolving this long-time controversy.

Two controversial aspects of Aztec historical phonology were also, hopefully, resolved. One is the origin of /tɬ/. Campbell and Langacker (1978) show that tɬ came from PUA **t before **a (just as in Whorf 1937), but this happened already in PA times. Later, the so-called t-dialects changed marked tɬ back to unmarked t. Though this is supported by a number of facts, basically the evidence comes from the residue of tɬ's existence in the t-dialects, and from cases of tɬ in which the requisite a that triggered the t to tɬ change existed only in PA times but suffered mutations away from *a in later dialects. The second controversy surrounds initial p- in Aztec from PUA **p-. Campbell and Langacker (1978) show that the sound change **p > **h > \emptyset in initial position was regular and that remaining Aztec initial p's are found only in either identified loan words from other MA languages, or in verb roots (where necessary prefixes prevented the p's occurrence initially in words) and kinship terms (which are inalienably possessed so that they always occur with a prefix, keeping p from occurring initially). The development of initial **p- in Aztec had nothing to do with the famous UA lenition processes, although medial -p- bears more study.

1.1.2. Subgrouping. The findings for PA bear important implications for UA subgrouping. The Aztec-Cora-Huichol sub-

group (AC) is supported by the following shared innovations (Campbell and Langacker 1977):

- 1) $h > \emptyset$
- 2) $w > h / __o$
- 3) $p > h / \# __$
- 4) $u(:) > \pm(:)$
- 5) lexical, morphological

Evidence for a Southern-Uto-Aztecan subgroup including Aztecan and the so-called "Sonoran" languages (i.e., AC, Piman, and Taracahitic) is presented in Heath 1977, Kaufman 1974b, Campbell and Langacker 1978).

1.1.3. Pipil. Pipil of El Salvador is a quite moribund Aztecan language. Ethnohistorical accounts show that the Pipiles migrated to Central America from central Mexico about 900 A.D., which corresponds well to the glottochronological date of 11 minimum centuries (henceforth m.c.). Pipil is extinct in Guatemala and Nicaragua. There are from one to a dozen surviving speakers in each of ten towns in El Salvador, while Cuisnahuat and Santo Domingo de Guzmán may have as many as 50. Recent work includes a dialect survey (Campbell 1975a), a dictionary for Cuisnahuat and Santo Domingo de Guzmán, folkloric texts, and a grammatical sketch (Campbell ms.).

Each town has dialect variation. Some examples are:

- 1) individual variation in the preservation of vowel contrasts;

2) Chiltiupan $\acute{c} > s$ ($\acute{c}u:\acute{c}ukul > susukul$ "jug"); 3) Ataco $i, u > \emptyset$ between stop and semivowel ($kuwat > kwat$ "snake", $-altiya > altyá$ "to bathe"); 4) Teotepeque $l > \underline{l}$ (voiceless) in all positions, not just finally as in other dialects; 5) Jicalapa $\underline{l} > l^y$ (pre-palatalized finally, $-\underline{y}\underline{l}$ (pel^yu "dog", $kuma^y\underline{l}$ "griddle")); 6) Teotepeque $\acute{s} > \acute{\check{s}}$, which varies with \check{r} ($\acute{\check{s}}u\check{c}it \sim \check{r}u\check{c}it$ "flower"); 7) Santo Domingo de Guzmán $k > g$ / __ V ($gagawat$ "cacao"); 8) Cuisnahuat $k > g$ / V: __ V ($tu:gay$ "name", $tukat$ "spider"); etc.

1.1.4. Extinct UA languages of Mexico. The following languages are thought to be extinct and are usually identified as UA. These need much more work. Alternate names for the same language should be identified. Additional information should be sought from both governmental archives and private collections in Mexico, the United States, and Europe. Philological studies of all available information are needed, including the study of toponyms, onomastics, extant vocabularies, grammars, texts, etc. They should be classified and subgrouped where available data permit. The list I present here is compiled from secondary sources and is far from exhaustive; it is presented here with a plea for more investigation. For the location of these languages and available linguistic material concerning them, see the references at the end of this list. The tentative affinities and alternate

names are those presented in these sources and should be re-studied in detail.

Acaxee (Aiage) - closely related to Tahue, in the Cahitic group (with Tebaca and Sabaibo). Perhaps some speakers still exist in Tamazula, Durango.

Cazcan (sometimes equated with Zacateca) - closely related to Nahua

Baciroa close to Tepahue, Taracahitic

Basopa

Batuc (an Opata dialect?)

Cahuimeto, Cahuameto (perhaps belongs with Oguera and Nio)

Chicorato

Chínipa (either close to Ocoroni, or a local name for a variety of Varihio) (said to be mutually intelligible with Ocoroni)

Coca

Colotlan (Piman, closely related to Tepehuan or Teul and Tepecano)

Comanito (close to Tahue, Taracahitic)

Concho (Chinarra and Chizo were subdivisions of Concho) (Taracahitic?)

Conicari (close to Tepahue, probably belongs to the Taracahitic group)

Guisca, Coisca (Nahua)

Eudeve (a division of Opata, with dialects Heve (Egue) and Dohema)

Guachichil (a variety of Huichol?)

Guasave (with dialects Comopori, Ahome, Vacoregue, Achire - Taracahitic group)

Guazapar, Guasapar (either a dialect of Tarahumara, or with Varihio and Chínipa) (perhaps Guazapar, Tubar, Jova, Varihio, Pachera, and Juhine are all Tarahumara dialects)

Hio (Taracahitic?)

Huite (close to Ocoroni, Taracahitic group)

Irritila (a Lagunero band)

Jova (Jobal, Ova) Some give Jova as a Tarahumara dialect, most link it with Opata.

Jumano (Humano, Jumano, Jumana, Xumana, Chouman (French), Zumana, Zuma, Suma, Yuma) (Suma is said to be the same language) (Possible UA).

Lagunero (like Nahua)

Macoyahui (presumed to be related to Cahita)

Meztitlaneca (a Nahua dialect?)

Mocorito (a Tahue language, Taracahitic group)

Nacosura (Opata dialect)

Nio (nothing is known about this language) (perhaps close to Ocoroni)

Ocoroni (Chínipa was mutually intelligible; it is said to be similar to Opata, Huite and Nio are also perhaps close to Ocoroni, Taracahitic)

Oguera, Ohuera

Opata (Teguima another name) (Eudeve is also said to be Opatan languages) (Batuc and Nacosura are Opata dialects) (Taracahitic or piman)

Sayultec (Aztecan, maybe a Nahuatl dialect)

Suma (same language as Jumano)

Tahue (Tahue languages may include Comanito, Mocerito, Tubar(?), and Zoe; Tahue is definitely not Aztec, perhaps Taracahitic)

Tecuexe (a "Mexican" (i.e. Aztec) colony?)

Teco-Tecoxquin (Aztecan)

Temori (Taracahitic?)

Tecual (like Huichol) ("Xamaca, by another name called Hueitzolme ((Huichol)), all of whom speak the Thequalme language, though they differ in some vowels" (Sauer 1934:14). Recent reports indicate that some Tecual speakers survive to this day.

Tepahue (Macoyahui, Conicari, Baciroa are said to be close to Tepahue; presumably Taracahitic)

Tepanec (Aztecan)

Teul (Teul-Chichimeca) (Piman, perhaps with Tepecano?)

Topia (maybe this is Xixime)

Topiame (Taracahitic?)

Tubar (a Tarahumara dialect?) -- perhaps a few speakers still survive to this day (Sauer 1934:28).

Xixime (Jijime) (Hine and Hume subdivisions; have a problematic classification; its links with Acaxee are not certain; perhaps Taracahitic).

Zacateca (often equated with Cazcan; see Harvey 1972: 300).

Zoe (probably affiliated with Comanito, Baimena was a subdivision; perhaps Taracahitic) etc.

Sources: Beals 1932, 1933, Dávila Garibi 1935, 1942, 1951, Escalante 1963, Harvey 1972, Jaquith 1970, Jiménez Moreno 1943, Johnson and Johnson 1954, Kroeber 1934, Lastra de Suárez 1973, Lombardo 1702, Lumholtz 1902, McQuown 1955, Mason 1936, Mendizábal and Jiménez Moreno 1943, Sauer 1934, Smith 1861a, 1861b, 1862; etc.

Since a few of these languages still exist, but are critically near extinction, it is important to do a linguistic survey of northern and western Mexico as soon as possible and to work on these moribund languages.

1.2. Otomanguean (OM).

The OM languages are rather different from most other American Indian languages, so different they have been accused of being "unamerican":

The classification of Central and South American languages set forth in ... this paper is provisional in some respects. The eight families listed are to be considered branches of a more inclusive stock which probably includes also all the remaining American languages except Na-Dene and Eskimauan. Among the groups listed here only Otomanguean ... is considered at all not likely to belong to this great family. (Greenberg 1956:791).

Some aspects of OM languages which give them their peculiar character are: 1) tone (all have from two to five level tones and most have gliding tones as well), 2) phonemic vowel nasalization, 3) open syllables (most OM languages have only CV syllables except for those closed with a glottal stop (CV?)), 4) syllable-initial consonant clusters are limited, usually to sibilant-C, C-y or C-w, nasal-C, and C-h or C-?, where C-? produces glottalized consonants in all OM families but Zapotecan; 5) lack of labial consonants (bilabial stops are lacking from most, though some have developed these from *k^W.) (Rensch 1976).

OM has seven families. Linguists of the Summer Institute of Linguistics (who are to be credited with a great portion of OM comparative work) feel that the reconstruction rivals that of Proto-Indo-European:

The publication of this study [Rensch 1966] will give us one language stock of the western hemisphere in which systemic reconstruction has been carried out on a scale somewhat comparable to the scope and depth of Indo-European studies.

(Longacre 1968:333).

Indeed Rensch's (1966, 1973, 1976, 1977) work is the most complete and accurate; Longacre's (1967, 1968) surveys are very good; and Hopkins' (1978) exhaustive OM bibliography is extremely useful.

The OM families and languages are:

1. Mixtecan (Mixn) (see Longacre 1957)
 - Mixtecan
 - Mixtec
 - Cuicatec
 - Trique

2. Popolocan (Pn) (see Gudschinsky 1959)
 - Mazatec (several dialects)
 - Popolocan
 - Popoloca
 - Chocho
 - Ixcatec

3. Chiapanec-Mangue (CM) (see Fernández de Miranda and Weitlaner 1961)
 - Chiapanec (Chiapas, extinct)
 - Mangue (Nicaragua, Costa Rica, extinct; Dirian, Nagranda, Chorotega, Orotiña are alternate names or varieties)

4. Otompean (OP) (see Bartholomew 1965)
 - Otomian
 - Mazahua
 - Otomí
 - NW Otomí
 - NE Otomí
 - SW Otomí
 - Ixtenco Otomí
 - Matlatzincan
 - Matlatzinca (Pirinda)
 - Ocuilteco (Atzingo)
 - Pamean
 - N Pame
 - S Pame
 - Chichimec (Jonáz)

5. Zapotecan (Zapn) (see Suárez 1973)
 - Zapotec (a complex with estimates ranging from 6 to 56 languages)
 - Papabuco (Harvey 1968, see Rendón 1971, Suárez 1972)
 - Chatino

6. Chinantecan (various languages) (Chin) (see Rensch 1968)

7. Amuzgo (two varieties, Oaxaca and Guerrero) (Am) (see Longacre 1966)

The following is Rensch's (1977:68) inventory of POM

sounds:

t	k	k ^w	ʔ
s			
n			
	y	w	h
i		u	
e			
a			

(tones: 1, 2, 3, 4)
(1= high)

The following are Rensch's reconstructions of clusters with their reflexes in the OM families.

<u>POM</u>	<u>PMixn</u>	<u>PPn</u>	<u>Am</u>	<u>PCM</u>	<u>POP</u>	<u>PZapn</u>	<u>PChin</u>
**nt	* ⁿ d	*nt	nt	* ⁿ d	*=t	*ɕ	*z
**nk	* ⁿ g	*nk	nk	* ⁿ g	*=k		*g
**nk ^w	* ⁿ g ^w		nk ^w	* ^m b	*=p		*g ^w
**ns	* ⁿ d	*c	c	* ⁿ d	*c	*ɕ	*z
**nn		*m	ɸn	*m			*m
**ny	*l	*l		*l	*ni	*L	*l
**nw	*m	*m	m	*m	*m	*k ^w	*m
**Yt		*t ^y	t ^y			*t ^y	*tɪV
**Yk		*ɕ	k ^y	*ɕV			*kɪV
**Yk ^w							*k ^w V
**Ys		*ɕ	ɕ			*ɕ	*sɪV
**Yn		*ñ		*ñ			*nɪV
**Y ^w							*wV
**Ynt		*nt ^y	nt ^y				*zɪV
**Ynk			nk ^y				*gɪV
**Ynk ^w							*g ^w V
**Yns		*ɕ	ɕ				*zɪV
**Ynw							*mV
**?CV	*?CV	*?CV	C?V		*C?V	*CV?CV	*?CV
**hCV	*hCV	*hCV	ChV		*ChV	*CV?VCV	*hCV
**CV?	*CV?	*CV?	CV?	*CV?	*CV?	*CV?	*CV?
**CVh	*CVh	*ChV	C ^v	*C ^v	*CVh	*CV?V	*C ^v
**CVh?		*ChV?	C ^v ?	*C ^v ?			*C ^v ?

Future work in OM should attempt to make the reconstructions more plausible phonetically. While such things as Ys, Yn, etc. may represent the correspondences, they are not very revealing phonetically. The immediate needs in OM are more descriptive and comparative work in the language families. Ocuiltec and Matlatzinca are critical, since they are moribund. Future work should be directed at grammar generally and at OM morphophonemics, which are complex, but frequently correspond from language to language. If the reconstruction is revised, as I believe it should be, then Rensch's (1973) ideas about subgrouping and diversification will not hold up. OM subgrouping is generally considered an open question, and deserves serious investigation.

1.3. Hokan

Branches of Hokan are covered in this volume by Jacobsen and Langdon, and I consider here only recent work on the so-called Hokan languages of MA. Hokan is at best a controversial grouping, especially when it comes to languages in MA. Those discussed in this section should not be considered to share a proven relationship.

1.3.1. Tequistlatecan (Chontal of Oaxaca). Brinton (1892) suggested that Yuman, Seri, and Tequistlatec were related, and Kroeber (1915), in framing the Hokan hypothesis, included

all these. Though the classification of Tequistlatecan as Hokan is tenuous, it is usually accepted without much comment. However, it has been the subject of recent controversy, Turner (1967, 1977) arguing against the connection, and Bright (1970) arguing against Turner's methods and for the connection.

Tequistlatecan has two closely related languages (13 m.c.), Huamelultec (Lowland Chontal), and Tequistlatec (Highland Chontal). Proto-Tequistlatecan phonology has been considered by Turner (1969) and refined by Waterhouse (1969).

It has the inventory:

p	t	c	k	i	u
b	d		g	e	o
f'	tʃ'	c'	k'	a	
	ʃ	s		phonemic stress	
w	l	y	h ?		
m	n				
W	N			(probably voiceless W and N should be reanalyzed as clusters of <u>hw</u> and <u>hn</u> respectively)	

See also Turner and Turner's (1971) dictionary.

1.3.2. Jicaque. There are two Jicaque languages (10 to 16 m.c.). Jicaque of El Palmar (JPal), now extinct, is known only from a short vocabulary published in Membreño (1897: 195-6, 233-42), reprinted in Lehmann (1920:654-68). The

other Jicaque language is spoken by a few hundred individuals in la Montaña de Flor, near Orica, in Honduras, and still by a very few very old people in the department of Yoro. Not much is available on this language (see Conzemius 1922, Lehmann 1920, Membreño 1897, Von Hagen 1943, Oltrogge 1971, 1976, 1977, Dennis and Fleming 1976, Dennis et al 1975a, 1975b, Flemming and Dennis 1977).

Proto-Jicaque phonology has been reconstructed (Campbell and Oltrogge 1977). Some of the correspondences with our reconstructions are: (JPal given in Membreño's orthography)

Proto-Jicaque	JPal	J Montaña de Flor
*-p	-k	-p
*-k	-k	-k
*l-	d-	l-
*-l	-n	-l
*-m	-n	-m
*k'-	k-	∅
*-k'-	-g-	-ʔ-
*(-)t'-	(-)č-	(-)t'-
*-t'	-t	-t'
*t ^h	š	t ^h
*-t-	-č-	-s-
*s-	č-	s-
*-s	-∅	-s

The Jicaque-Hokan hypothesis is taken up below.

1.3.3. Tlapanec-Subtiaba. Subtiaba and Tlapanec are closely related languages (8 m.c.), though Subtiaba was spoken in Nicaragua (now extinct) and Tlapanec is spoken in Guerrero, Mexico (by about 50,000 speakers). Extant sources of Subtiaba are Lehmann (1920:932-69), Mántica 1973, and Campbell 1975b. The principal sources for Tlapanec are Radin 1933a, Schultze-Jena 1938, Weitlaner and Weitlaner 1943, and Weathers 1976.

Weitlaner and Weitlaner's Popoloca-Tlappaneca (of Tenancitla, Guerrero) is a rather different variety; though they presented only about 100 words, they noted these correspondences:

Tlapanec	Popoloca-Tlappaneca	Subtiaba
i-	e, e̞-	e, e̞
a-	e, e̞-	a-
ny-	ɣ-	ñ-
-ny-	-ŋg-	-ŋg-
r-	l-	d-
r-	n _d -	d
ɛ-, -ɛ-	ɛ-, -ɛ-	s-, -s-

Both varieties have tonal contrasts. They concluded that Popoloca-Tlappaneca represents a more conservative variety.

Weathers (1976) reports six dialects of Tlapanec with clear-cut borders, all with at least a minimal level of mutual intelligibility with the Malinaltepec dialect. This dialect's phonemic inventory is: p t k ʔ, b d g, s s, m n, l r, w y h, i e a o u, vowel length, nasalization, and tone (three level and several gliding). In his comparisons of Tlapanec forms with Subtiaba, Weathers comes to the conclusion that Subtiaba is more conservative.

The controversial Hokan and OM affinities of Tlapanec-Subtiaba are taken up below.

1.3.4. For Seri and Peninsular Yuman, see Langdon 1974, Massey 1949, Kroeber 1931, 1943, Moser and Moser 1961, Robles U. 1964, and Langdon and Jacobsen in this volume.

1.3.5. For Coahuiltecan revisions see Goddard (this volume). See also Hoyo 1960, 1965, Troike 1959, 1963, Swanton 1940. Most of the so-called Coahuiltecan languages are so different that they cannot be considered successfully related on the basis of extant material.

1.4. Huave

Huave (in Oaxaca) is generally considered an isolate, though unsubstantiated hypotheses have attempted to link it with Mixe (Radin 1916), Zoque and Mayan (Radin 1924), Algonquian-Gulf (Suárez 1975), and others (see Arana 1964a,

Swadesh 1960, 1964a, 1964b, 1967:87, Longacre 1968:343, etc.

The Huave-OM hypothesis is considered below.

Suárez (1975) reconstructed Proto-Huave based on four dialects, San Francisco, San Dionisio, San Mateo, and Santa María. His Proto-Huave phonemic inventory is:

p	t	k	k ^w	i	i:	ɨ	ɨ:
	c			e	e:	o	o:
mb	nd	ng	ng ^w		a	a:	
	nc						
	s				tonal contrast		
	l						
	ɾ						
(w)	(r)	(y)	h				
	(ɗ)						

Parenthesized segments are problematical and can perhaps be eliminated in future work. The ɨ occurs in only two cases. The o is also rare, only seven examples. Though Suárez reconstructs two r's, he suggests that there was probably only one in the proto language, that these were conditions variants. The y and w, in Suárez's opinion, may be merely neutralizations of certain vowels. The ɨ varies between central and back, and since younger speakers have u more frequently, Suárez chose *ɨ for the reconstruction. There are, however, some reasons to suspect that *u might actually have been a

better choice, and this bears investigation. The o: is rare, occurring only in penultimate syllables. The tonal contrast also exists only in penultimate syllables and is preserved fully only in San Mateo, though some residue of it is reflected in final consonants of other dialects. Since Huave tone has a low functional load (see Pike and Warkentin 1961), it may ultimately be possible to explain its origin and eliminate it from Proto-Huave. Finally, many of Suárez's Proto-Huave lexical items are loans; of his 971 reconstructed lexical items, I identify over 50 as loans from other indigenous languages.

Suárez (1975) is by far the best source on Huave. Other descriptive sources, however, are Diebold 1962, Stairs and Hollenback 1969, Pike and Warkentin 1961, Radin 1929, Warkentin and Warkentin 1947a, 1947b, 1952.

1.5. Totonacan

Totonacan includes Totonac and Tepehua (26 m.c.). The only comparative study so far is that of Arana (1953). She reconstructed Proto-Totonacan phonology on the basis of three Totonac dialects, one Tepehua dialect, and a list of only 68 cognates. Her inventory was:

p	t	č	č̣	tl	k	q	i	u	V:
		s	š	±	x			a	
m	n								
w		y		l					

Though Tepehua has glottalized consonants, they correspond largely to Totonac glottal stops in CV?(C), the so-called glottalized vowels, in most environments. Arana reconstructed the Totonac pattern for the Proto-language. However, the entire question of glottalized consonants in Totonacan deserves serious study.

Descriptive materials on Totonac are quite good, including good dictionaries of three dialects (Aschmann 1962, 1973, Reid and Bishop 1974). For historical work on Totonacan we still need an analytical dictionary, one which shows the morphological composition of Totonac words and stems; Totonac is a synthetic language with quite complicated word formation. For Totonac grammar see McQuown 1940, Reid et al 1968, Aschmann 1953, Ashmann and Wonderly 1952, etc.

Materials for Tepehua are extremely scant, and we need a dictionary, preferably analytical, and descriptive materials generally. Linguists of the Summer Institute of Linguistics have worked on Tepehua, but as yet little is available (see Bower 1948, Bower and Erickson 1967). Lewis Jacks conducted a broad dialect survey of Tepehua and Totonac dialects (infor-

mation on file in the linguistics program of Centro de Investigaciones Superiores del Instituto Nacional de Antropología e Historia in Mexico). Some limited information is also found in Hasler 1966.

Several lines of information suggest the Totonacs as the strongest candidates for the builders of Teotihuacan, an extremely important MA archaeological culture. For this reason Totonacan loan words in other indigenous languages deserve extensive study. (For details, see Campbell and Kaufman 1977).

1.6. Mixe-Zoquean (MZ)

The MZ family has special importance in Mesoamerica, since MZ seems to have been the language of the archaeological Olmecs, the first great MA civilization (see Campbell and Kaufman 1976). Unfortunately little historical and comparative work on MZ has been published (see Wonderly 1949, Kaufman 1964a, Nordell 1962, Thomas 1974, Longacre 1967:137-8, and Campbell and Kaufman 1976). By far the most extensive and accurate is Kaufman's unpublished (1964b) "Diachronic Studies in Mixe-Zoquean" and his list of about 500 reconstructed vocabulary items, prepared on the basis of sources available in 1962. Kaufman's MZ classification is:

I. Zoque

A. Chiapas Zoque

1. Central (including Copainalá)
2. Northern (including Magdalena)
3. Northeastern (including Chapultenango and Ocotepec)
4. Southern (including Tuxtla Gutiérrez and Ocozocuatla)

B. Oaxaca Zoque (San Miguel Chimalapa, Santa María Chimalapa)

C. Veracruz Zoque

1. Sierra Popoluca (including Soteapan and 25 others)
2. Texistepec Popoluca

D. perhaps Tabasco Zoque (no data available)

II. Mixe

A. Veracruz Mixe

1. Sayula Popoluca
2. Oluta Popoluca

B. Eastern Mixe (Oaxaca a)

C. Western Mixe (Oaxaca b)

D. Tapachultec (extinct, material reprinted in Lehmann 1920)

There is now general agreement that Tapachultec belongs to the Mixe branch of the family (see Kaufman 1964a). Kaufman's unpublished study also includes historical phonology, with

developments traced from the proto language into the daughter languages, and comparative grammar (especially morphology).

Kaufman's inventory of PMZ sounds is:

p	t	c	k	ʔ	i	ɨ	u	V:
		s			e	o		
m	n				a			
w		y		h				

Campbell and Kaufman (1976) present some reconstructed vocabulary, and identify MZ loan words in other MA languages.

MZ languages need to be documented more fully, little information is available on several of the Zoquean languages. More extensive lexical information from some of these unstudied Zoquean languages would allow many more reconstructed lexical items than the 500 of Kaufman's study. Some of these may be critically near extinction.

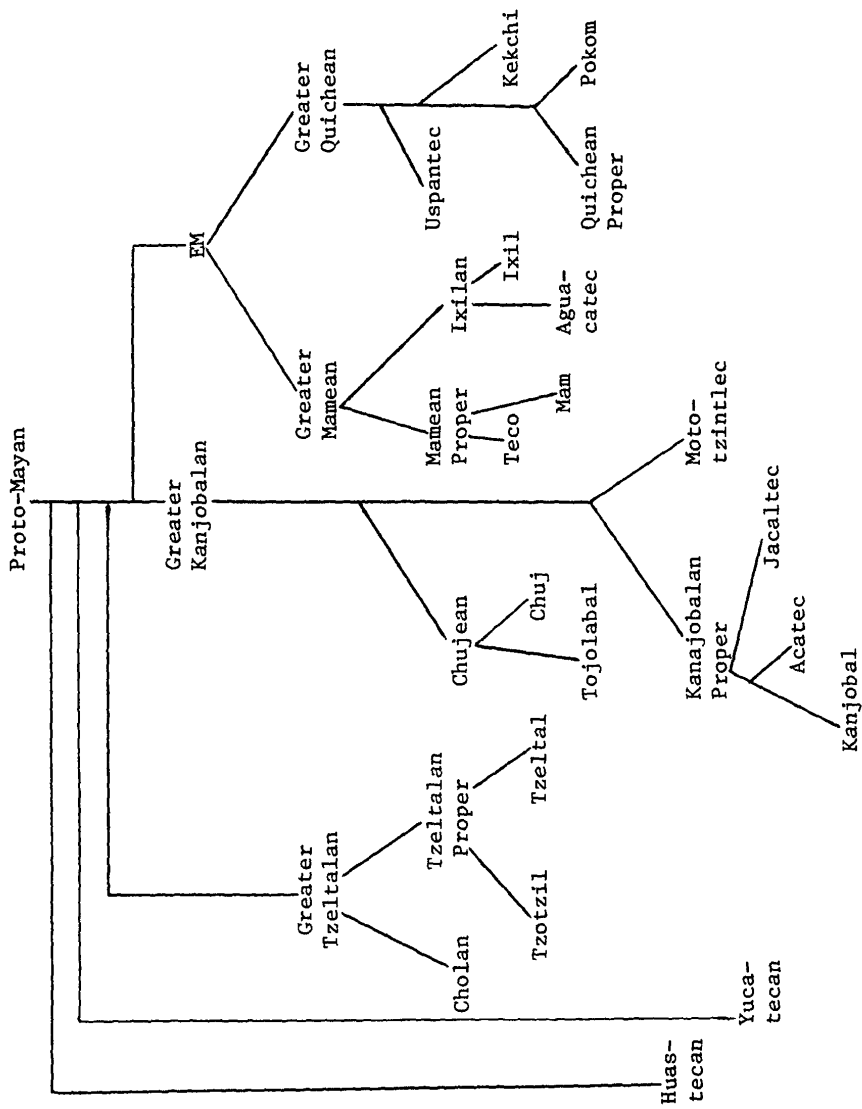
1.7. Mayan

Mayan is perhaps the best studied of MA families. Nevertheless many gaps in our knowledge and abundant controversies remain. The descriptive work on Mayan languages has mushroomed in the last few years. Thanks to Terrence Kaufman's extensive fieldwork, to linguists of the Proyecto Lingüístico Francisco Marroquín in Guatemala, to the Summer Institute of Linguistics, to students of Norman McQuown at the University

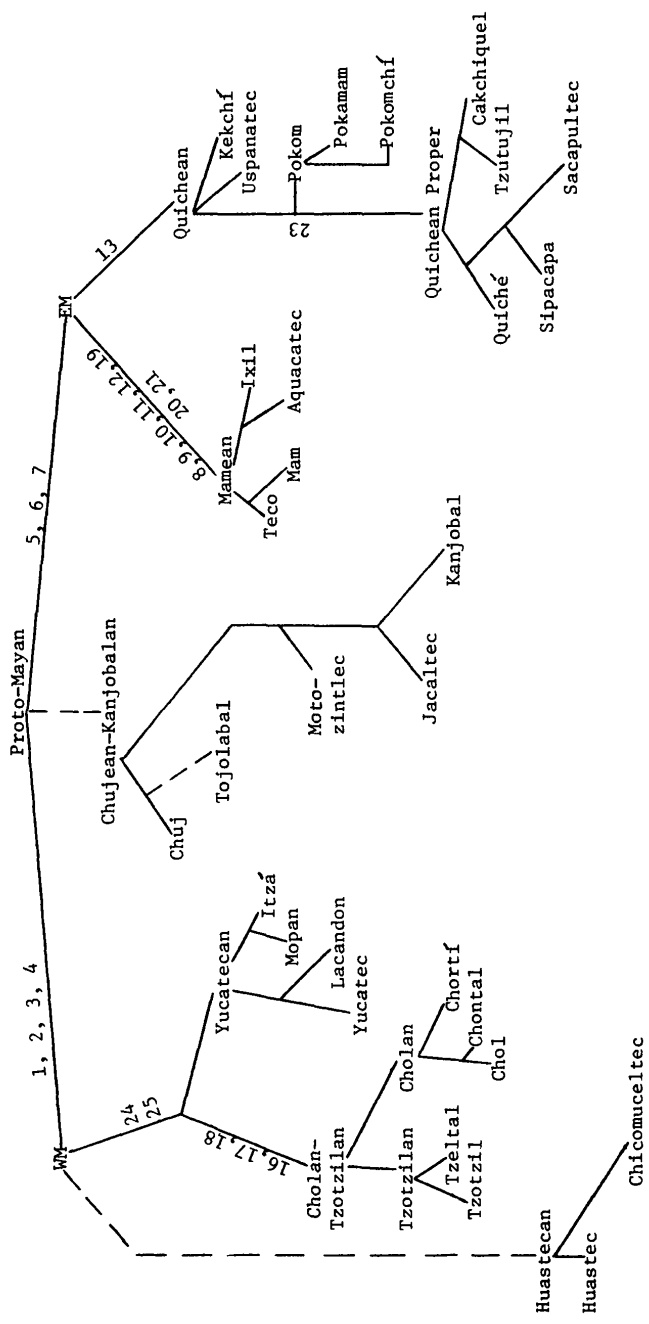
of Chicago, and others, rather good information exists at least in manuscript and file-box form for most Mayan languages. The next few years will see, hopefully, the publication of grammars and dictionaries for most. The languages that remain most underrepresented are Uspantec, Chontal, Chol, Lacandon, and Itzá, though much remains to be done in the others as well. (For details, see Campbell, Ventur et al 1978).

The history of Mayan historical and comparative work and the controversies surrounding it are traced in Campbell 1977a. Recently, good beginnings have been made toward reconstructing Proto-Mayan (PM) syntax (Smith-Stark 1976, 1977, Robertson 1976, and Norman and Campbell 1978). These studies point to PM as an ergative language with basically VOS word order, where pronoun marking, verbal voice, ergative noun hierarchies, word order, and complex sentence relations interact in complicated but predictable ways. The promise for successful reconstruction of PM syntax is perhaps stronger than for most other language families of the world.

Mayan subgrouping is very advanced, but still controversial in some aspects. The most accurate and widely accepted (at least major portions of which) is: (Kaufman 1976a)



An alternative, suggested more to stimulate further research than as a competitor to Kaufman's, in the following. The numbers on the various branches refer to the shared phonological innovations which are the evidence upon which this classification is based, listed below. The dotted lines indicate the most controversial parts of the classification.



Shared innovations:

- | | |
|-----------------|---|
| 1. *r > y | 14. *b' > p' / ___V { sonorant }
fricative |
| 2. *q > k | 15. *ŋ > n |
| 3. *t̃ > t | 16. *CV?C > CVC |
| 4. *k > č / ... | 17. *k > č |
| 5. *ŋ > x̃ | 18. *V: > V |
| 6. *t̃ > ć | 19. *h > ? |
| 7. *CV?VC CV?C | 20. x̃ > x |
| 8. *r > t | 21. *š > ṣ̌ |
| 9. *t > č | 22. x > h |
| 10. *č > č̣ | 23. x > x |
| 11. č > č̣ | 24. *x > h |
| 12. *ʃ > č̣ | 25. $\begin{bmatrix} e: \\ o: \end{bmatrix} > \begin{bmatrix} i \\ u \end{bmatrix} / \dots$ |
| 13. ć > č | |

The question in considering Huastec is, do innovations 1-4 shared (at least in part) with Yucatecan and Cholantzotzilan constitute strong enough evidence for grouping these together, or could 1 through 4 have happened independently (the latter is Kaufman's opinion)? And if they do share these phonological innovations as members of a single subgroup, then how did Huastec come to be so different in its grammar and lexicon? The question surrounding Chujean-Kanjobalan is, if these are related, why don't they share any phonological innovations? Many aspects of Tojolabal grammar, for example, are shared with

Tzotzilan, though it is difficult to determine whether this is due to common innovation or to diffusion. (See Robertson 1976, 1977).

The most widely accepted reconstruction of PM phonology is:

p	t	ɬ	ʈ	ç	k	q	i	u	V:	CVC
b'	t'	ɬ'	ʈ'	ç'	k'	q'	e	o		CV:C
m	n				ŋ		a			CV?VC
		s	ʃ			x				CV?C
	l									CVhC
	r									CVSC (S=s, ʃ, x)
w		y	h	?						

There were many important developments which led to this reconstruction, many were refinements in McQuown's (1956a) original reconstruction. The tonal distinction McQuown posited turns out to be the reflex of segmental phonology in Yucatec (*CV:C > C[̀]V:C, *CV?C > C[̀]V?VC, *CVhC > C[̀]V:C). McQuown's proposed *ə is explained in that the ə of Chol and Chontal is the reflex of *a in all contexts except before h or ?, where it remained a. The Tzotzil ə reflex is explained in like manner, but also involves conditioning from certain other following consonants. Long *a: became a in these languages, thus giving the apparent a/ə contrast. The assumed *ç is really the reflex of *ç in the chain-shift in Mamean:

$$*r > t$$

$$*t > \check{c}$$

$$*\check{c} > \check{c}$$

The *p' posited earlier by various scholars turns out to be a reflex of *b' from the Yucatecan and Greater Cholan change:

$$b' > p' / \text{---}V \left\{ \begin{array}{l} \text{fricative} \\ \text{sonorant} \end{array} \right\}$$

Finally, it is now clear that PM contrasted *r and *y. Both these had been assumed to be *y earlier, but the correspondence sets clearly contrast: *r - Quichean r : Mamean t : Motozintlec \check{c} : others y; *y - y in all languages. (See Campbell 1977:89-100).

For a rather comprehensive bibliography of Mayan linguistics see Campbell, Ventur, et al 1977.

The most pressing need in Mayan studies is for the completion and publication of work in progress or in manuscript form. The subgrouping controversies need more study; this will require an understanding of grammatical innovations, since the testimony of phonology has largely been exhausted. Mayan subgroups should be reconstructed, especially Proto-Cholan, Cholan-Tzotzilán, and Proto-Huastecan. Extensive philological studies of the extant colonial materials, which are massive for some languages, should be done. This is particularly important for Chicomuceltec and Cholt'í (both extinct),

and for documenting linguistic change during the past 400 years. (For some beginnings see Freeze 1975, Norman 1977, Campbell 1973a, 1974, 1977, in press.) All Mayanists wait for Terrence Kaufman to complete and publish his etymological dictionary. Finally, an important need is for scholars with linguistic sophistication to dedicate more attention to Mayan hieroglyphic writing.

Great progress has been made in understanding Mayan hieroglyphic writing. There can be little doubt, at least among linguists, that the phonetic hypothesis has been demonstrated, that some aspects of Mayan writing involved symbols with the value of phonetically-read syllables. The best single review of this field is Kelley 1976. Some other exciting sources are Lounsbury 1974a, 1974b, Lounsbury and Coe 1968, Kelley 1962a, 1962b, 1966, etc.

1.8. Tarascan

Tarascan (with about 50,000 speakers in Michoacán) is an isolate, with no convincing external relationships, though such relationships have been suggested in abundance. Friedrich 1971a presented a comprehensive study of Tarascan dialectology, involving 26 villages. He showed that the phonological variation had historical implications. There are sources on Tarascan, though often of limited access; see Bright's (1967) bibliography

for older sources. More recent works are Foster 1969, Friedrich 1969, 1971a, 1971b, and Swadesh 1969 (based on Gilberti 1559).

The most pressing need in Tarascan is a modern, preferably analytical, dictionary.

1.9. Cuitlatec

Cuitlatec of Guerrero, also an isolate, has recently become extinct. The principal source of information is Escalante 1962. His phonological inventory is:

p	t	c	k	k ^w	i	ɨ	u	tones: / \
b	d		g		e	o		
m	n	l			a			
			ɬ					
			s					
w	y	h	ʔ					

Other sources are: León 1903b, Hendrichs 1939, 1946:220-45, 1947, McQuown 1945, Weitlaner 1936-9, and recently Almstedt 1972, 1974. Almstedt's work is based on Lemley's unpublished field data, collected on trips made between 1943 and 1949.

None of the genetic affinities proposed for Cuitlatec is convincing, and very little substantive data has been presented in support of any of these. They are UA (Sapir 1926 ("a doubtful member of the stock"), Swadesh 1960, Arana 1958

(with 49 m.c. separation from Aztec)); Hoka, OM, and Tarascan (Weitlaner 1936-9, 1948a); Mayan and Xinka (Hendrichs 1947); Tlapanec (Lehmann 1920); and Paya (Arana 1958 [47 m.c.]).

1.10. Xincan

Xincan in Guatemala is a family of at least four closely related languages. Yupiltepeque, also once spoken in Jutiapa, is now extinct; extant materials are reprinted in Lehmann (1920:727-68). Chiquimulilla has only one surviving speaker. Guazacapán has a very few speakers. Jumaytepeque Xinka is a language which I recently discovered near the top of the Volcano of Jumaytepeque; it also is quite moribund. Terrence Kaufman and I have worked extensively on the three extant languages and have prepared a comparative grammar and dictionary, with a reconstruction of Proto-Xincan phonology and abundant texts. As for the relationships, Swadesh calculated 17 m.c. separation for Chiquimulilla and Guazacapán (Swadesh 1967:98-9); Kaufman (1964b) calculates 12 m.c. for the family.

Toponyms with Xincan etymologies show that Xincan languages once had a much wider distribution in Guatemala and nearby territory of Honduras and El Salvador (see Campbell 1978, Campbell and Kaufman 1977). Also, Xincan languages have borrowed extensively from Mayan and other indigenous languages. The fact that most Xincan terms for cultigens

are loans from Mayan suggests that the Xinca may not have been agriculturalists before their contacts with Mayan speakers. (See Campbell 1972a, 1978, Campbell and Kaufman 1977). It also seems likely that Xinca's VOS word order is borrowed from Mayan.

1.11. Lencan

Lencan is a family of two languages, Honduran Lenca (HL) and Salvadorian Lenca (SL) (also called Chilanga after the principal town in which it was spoken). Swadesh (1967:98) calculated 20 m.c. divergence between the two. HL is probably extinct, though this is not yet certain. Most available material is reprinted in Lehmann (1920:668-700) representing dialects from Intibucá, Opatoro, Guajiquiro, Similatón (modern Cabañas), and Santa Elena. These are for the most part represented only by short word lists recorded by non-linguists, and thus leave much to be desired. The only modern sample is that of Campbell, Chapman, et al. 1978, taken from a tape recording made by Anne Chapman in 1965 of an old man whose father had spoken Lenca well, but the man himself could recall only a few words and phrases.

SL is extinct. Most extant material, including Lehmann's own phonetically recorded data, are contained in Lehmann (1920:700-719). I was able to amplify and clarify Lehmann's data

somewhat in my work with the last speaker shortly before his death (Campbell 1976a).

The most important need for Lencan is a thorough philological investigation of both languages, especially HL. Another need is the reconstruction of Proto-Lencan. Here I present some preliminary historical considerations. My interpretation of HL orthography is impressionistic, based on the tape recording, and should be refined in a detailed philological study. Some Lencan sound correspondences are (first Member is SL, second HL): l-š, š-š, t'-s, p-p, t-t, k-k, m-m, n-n, s-s, y-y, w-w, etc. A sample cognate list, to give a flavor of the relationship, is:

SL	HL	
alah	aša	hair
wal	was	water
t'epe	sepe	salt
-tokoro	to(ho)ro	head, ear
en-(gin)	en-(gin)	hear
maš-	maš	to hit
ša	šak	firewood
wati	waktik	sandal
in-t'ač'a	in	mouth
košaka	gulal	hand
t'aw	taw	house

SL	HL	
šara	šir	grass
šoko	šogo	white
š'upa-	sopata	cloud
šušu	šušu	dog
ta-	ta	milpa
tal-	tal-	to drink
tem	tem	louse
ul-	ul-	to dance
wewe	wa(wa)	boy
ik'an	yuga	fire
ihwa-	ive-	to sing
	etc.	

Terrence Kaufman has compiled about seventy-five Lencan cognate sets; he has also presented his interpretation of the philological meaning of extant Lencan materials (Kaufman 1965).

1.12. Paya

Paya is spoken still by about 300 persons in the northern part of Olancho department, Honduras. Paya has also generally been considered an isolate and attempts to relate it to other languages have been unconvincing because of the lack of any dependable descriptive material. Conzemius (1928) for example, omitted vowel nasalization, glottal stops, and tones, all

contrastive.

Squier (1853) grouped Paya with Jicaque; Schmidt (1926) grouped Paya, Jicaque, Xinca, and Lenca as a branch of his Miskito-Xinca Gruppe. Arana (1958) related Paya and Cuitlatec at 47 m.c. separation. Swadesh (1967) put Paya in the Chibchan family, closest to the Misumalpan group (which he calls Misuluan). Loukotka (1968) also classified Paya as a member of the Chibchan stock, though not supported by comparative evidence.

Dennis Holt's recent descriptive work and connected historical studies (see Holt 1975a, 1975b, 1975c, 1976, Holt and Bright 1976) have conclusively demonstrated that Paya is a Chibchan language. The following brief sample from Holt (1975a) shows the relationships (see Holt 1975a for details of correspondence sets, proto forms, and sound changes):

Paya	Guatuso	Bribri	Cuna	Cágbaba	
to:k	tió-k̄i	ɛ-tʂuk-	toka		enter
wa:k-	xuá-k̄i	wo	wakala	waka	face
sá	čiá	tsá	saila	sã-, sãĩ-	head, hair
píš	pí-k̄i-ka	bikãš	pikwa	bitsa	how many?
pí-	pi-	bĩ-	pi-	mi-	interrogative
-tá-	ébedo		ta	na-	negative
-wa		-wa		-wa	present tense
ti:š	tí-k̄i	tkē	tik-	ni-ka	to plant, sow
parí:	pálo-xa	boło-boło		málu(rze)	sweet
pó:k	páun̄ka	bōk	po(:)kwa	máužua	two
-tia	tí	di?	ti(i)	ni	water
pa-	pō	be?	pe	ma	you

I do not take up Macro-Chibchan generally. For information on other recent work in Chibchan see Holt 1975a, 1976, Bogarín 1970, Wilson 1970, 1974, Wheeler 1972, Constenla 1975, and Arroyo 1966.

1.13. Misumalpan

The Misumalpan family is generally considered a branch of Macro-Chibchan, though little has been done to demonstrate it. The family consists of Mískito (spoken by about 35,000 in Honduras and Nicaragua), Sumu (still quite viable, spoken in several divergent dialects in Honduras and Nicaragua), and Cacaopera (of eastern El Salvador) and Matagalpa (of Honduras) (both now extinct).

Cacaopera and Matagalpa together have been called Matagalpan (Brinton 1895), and are frequently thought to be merely dialects of a single language. However, they are separate languages (Swadesh 1967:97 calculates 10 m.c. separation), as seen from a few cognates illustrating the r-y correspondence:

Cacaopera	Matagalpa	
ařáw	ayan	crab
ířa	iya	rain
kařám	kayan	mountain
dúřu	doyú	land
búřu	buyo	two

All available Matagalpa material is reprinted in Lehmann (1920: 599-604); the language has been extinct at least 100 years. Most available Cacaopera information is also in Lehmann (1920: 604-23). I was able to clarify aspects of Cacaopera in my own recent work (Campbell 1975c, 1975d), where I obtained a few hundred words and phrases from the grandchildren of the last competent speakers. Apart from these few old persons who remember a few scattered words, the language is extinct.

Mískito is reasonably well documented, though much more could be done (see Lehmann 1920, Heath 1927a, 1927b, 1950, Heath and Marx 1961, Thaeler n.d., Conzemius 1929, 1932, 1938, Mántica 1973, etc.).

Sumu has considerable dialect diversity, including varieties called Tawahka, Panamaka, Uluwa, Bawihka, and Kukra, among others. Some have supposed this diversity to be as great as that between German and Dutch, and since the dialect differences are rapidly being eliminated in recent population movements, this should be studied soon. Sumu is poorly described and a full-scale grammar and dictionary should be prepared. Available sources are Lehmann 1920, Heath n.d., Conzemius 1929, 1932, Mántica 1973, and Membreño (1897:217-27), etc.

Misumalpan as a family has long been recognized, though no rigorous historical study has been done. Swadesh (1967:

97-8) gives 43 m.c. for the family, indicating that the relationship is not especially close. A sample of probable Misumalpan cognates and correspondences gives a better idea:

Cacaopera	Matagalpa	Mískito	Sumu	
bil (worm)		piuta	bil	snake
pasár		písa	pisa	flea
man	man		pan	tree
aiku	aiko		waiku	moon
sásaka		san-	sanka	green
lalá		lalah-	lalah	yellow
mayu	pu	paw-	paw	red
búru	buyo	wal	bu	two
li	li	li	was	water
u	u	u	u	house
wasba/watba	watba	yumpa	bas/mas	three
sial	sial	sikia	sarin	avocado
lawal	lawal	lapta (hot)	lawa (griddle)	fire
-nan-	nam		nan	nose
yam		yan	yan	I
man-		man	man	you
wabu		yampus	wan	ashes
m-	m-/p-	p-	p-	
l-	l-	l-	l-	
s-	s-	s-	s-	
y-	y-	y-	y-	

1.14. Extinct and unclassified languages

The following is a list of lesser-known extinct and unclassified languages:

Aibine (perhaps Eudeve or	Meztitlaneca
Aguata Jova)	Negrito
Apanec	Olive
Ayacastec	Otomí of Jalisco
Bocalo	Pampuchin
Borrado	Panteca
Cacoma	Pelón
Cataara	Pinoles (OM?)
Chameltec	Pison, Pisone, Pizones
Chichimec (one of several called "Chichimec")	Pocotec
Chontal of Guerrero	Potlapigua
Chumbia	Quacumec, Cuauhcomec
Cintec	Quahutec
Coano	Quata
Cocmacague	Quinigua (Hoyo 1960), Quirigua (Swadesh 1968)
Conguaco (Xincan?)	Salinero
Copuce	Tacacho
Cuacumanes	Tamaulipic (Swadesh 1963)
Cuharete	Tamazultec (Tlacotepehua-Tepustec)
Cuyumatec	Texome
Guamar, Guamara	Tezcatec
Guaxabane	Tiam
Hualahuifs	Tlaltempanec
Huaynamota	Tlatzihuiztec
Himeri	Toboso
Hio	Tolimec
Huehuetec	Tomatec
Icaura-Ayancaura	Tonaz
Iscuca	Totrame
Itzucu	Tuxtéc
Izteca	Tuztec
Janambre	Uchita
Jano	Ure
Jocome	Vigitega
Mancheño	Xocotec
Matlame	'Zapotec' of Jalisco
Mascorro, Mazcorro	'Zapotec' local
Mazatec of Guerrero	Zapotlanec
Mazatec of Tabasco	Zayahueco
Meco(Chichimeco?)	Zoyatec
Melaguese	

(25 other languages without names)

Sources: Bright 1967, Harvey 1972, Longacre 1967, McQuown 1955, Swadesh 1968.

1.14.1. Naolan. Naolan was spoken in Naolan, near Tula in southern Tamaulipas. It was all but extinct when Weitlaner (1948b) collected the only known material, 43 words and phrases, in 1947. He compared it to Otopamean languages, some so-called Hokan languages, and some UA languages, finding that "the few correspondences are distributed almost equally among the three linguistic groups" (1948b:217) (my translation, LC), and concludes, "the author of this work is inclined to consider this language as belonging to the Uto-Aztecan group and within that it seems to be nearer the Cahita subgroup" (1948:218) (my translation, LC). On the other hand, Bright (1955) thought Naolan belonged to the Hokan-Coahuiltecan languages, perhaps to be identified with Janambre or Tamaulipeç, while Swadesh (1968) placed it in the Hokan-Coahuiltecan group, with closer connections with Tonkawan. I see little to recommend any of these proposals. For now the language should be considered unclassified and more study of available material done in order to relate it to larger groupings, if possible. Indications in Weitlaner's discussion suggest equating Naolan with Mazcorros, or perhaps with Pizones as a less probable candidate. Of the 43 words

and phrases, six are loans from Spanish, five are loans from other indigenous languages, and another four are probably loans also. This leaves little native material to work with. I suspect Weitlaner's choice of UA and Cahita connections was based on -su·na "corn". Miller (1967, #102) presents *sunu as PUA, however cognates are found only in southern UA languages (Papago huun, Tarahumara sunu, Aztec siin-, etc.) and are almost certainly loans from OM (see Campbell and Langacker 1978, and Campbell and Kaufman 1977). The only other similar form is PUA *-punku "dog" and Naolan bo·kam "coyote", but this is strained. Consequently the evidence for connecting Naolan with UA is quite weak.

1.14.2. Maratino. Swanton (1940:122-4) published the scant material available on Maratino. Swadesh (1963, 1968) called the language Tamaulipeco or Maratín and classified it with UA. I find little to recommend this. Maratino chiguat (čiwat) "woman" is an obvious borrowing from Aztec siwatl (cf. PUA *suma or *sun^wa), as is peyot "peyote" from Aztec peyotl. Swadesh's other 20 odd compared forms are not very compelling in their phonological or semantic similarities.

1.14.3. Guaicurian. Though we have no reliable gauge for the possible larger affiliations of the Guaicurian family, historical information gives reasonably good indications of which languages within the family must have been more closely

related:

Guaicura

Guaicura

Callejue

Huchiti

Cora (not the UA Cora)

Huchiti

Aripe

Periúe

Pericú

Pericú

Isleño

(after Massey 1949:303; see also Robles Uribe (1964).

We need a concentrated search for the colonial grammars and dictionaries which have disappeared. All potential information from place names, colonial reports, etc. should be catalogued and studied, too.

1.14.4. Alagüilac. Brinton's (1887) identification of Alagüilac as Pipil has generally been accepted, although I showed (Campbell 1972b) that there are serious problems with Brinton's identification. Juarros (1808) said Alagüilac was spoken at San Cristóbal Acasaguastlan and "Mejicano" (Nahua) at San Agustín Acasaguastlan. Brinton's assembled evidence for the interpretation of Juarros' Alagüilac as Pipil (Nahua)

included four manuscript pages dating from 1610 to 1637 and an 1878 word list from San Agustín Acasaguastlan. But notice that in San Agustín Acasaguastlan "Mejicano", not Alagñilac was spoken (see also Estrada Monroy 1972:50). For San Cristóbal Acasaguastlan a 1769 report says, "la lengua materna de este curato en la cabecera es el Chortí, pero que en los otros poblados y trapiches solo se habla el Alagñilac" (Estrada Monroy 1972:29). Thus it is clear that Alagñilac was considered something other than either Mejicano (Nahua) or Chortí. Furthermore, Brinton's data contain many examples of tl, a feature limited to the tl-dialects of Mexico, which could not have reached Guatemala in pre-Conquest times. Thus the Nahua Brinton found had to be either from the resettled Tlaxcallan auxiliaries of the Spanish conquerers of Guatemala or from clerics trained in Nahuatl (see Heath 1972:27).

Since Alagñilac cannot be either Nahua or Chortí, I suggest a possible Xincan connection. It seems preferable to attempt to relate it to known languages than to assume it had no relatives. The proximity of place names of Xincan origin support the possible Xincan affiliation (see Campbell 1978).

1.15. New languages

Recently four heretofore unknown languages have been discovered in Guatemala. They are Teco, a Mayan language of

the Mamean subgroup (Kaufman 1969a), Sipacapa and Sacapultec, of the Quichean subgroup of Mayan (Kaufman 1976b, Campbell 1977), and Jumaytepeque Xinca (Kaufman and Campbell forthcoming).

1.16. MA Late Arrivals

Apache, Carib, and Kickapoo are all recent arrivals in MA. The Apachean bands are Athapaskan (see Krauss, this volume) and entered Mexico after 1500.

Kickapoo, a Central Algonquian language closely related to Fox, with speakers also in Kansas and Oklahoma, is spoken in la Ranchería Nacimiento (Colonia de los Kikapú), Coahuila, Mexico. The Mexican variety is considered conservative (see Voorhis 1971). In 1667 the Kickapoo were reported in Wisconsin. In 1775 they were granted land concessions in present-day Texas. They began going to Mexico in 1839, near Morelos, Coahuila. In 1864 they petitioned for permission to stay and were granted Nacimiento, which had been abandoned by Seminoles in 1861. (Gibson 1963, Latorre and Latorre 1976.)

Black Carib (also called Garífuna) is spoken by about 30,000 in Belize, Guatemala, Honduras, and pockets in Nicaragua. It is an Arawakan language. The forebears of Central American Black Carib were deported from St. Vincent in the British West Indies in January of 1797. Thus Central American

Carib is a close offshoot of 'Island Carib' women's speech of 300 years ago, and hence of that spoken by the Lesser Antilles' pre-Carib inhabitants, the so-called Igneri. These islands were invaded by Caribs who claimed descent from the Galibi, a Carib-speaking tribe of Guiana. They failed, however, to establish their language, so that the language remained basically that of the Arawakan substratum, but with a men's jargon where Carib morphemes could be substituted for Arawakan equivalents. The women's speech has not changed much over 300 years, but Central American Black Carib has largely leveled out the men's forms. That is how "Black Carib" can be an Arawakan language, but carry a name that suggests a Carib affinity. The first African ancestors of the Black Caribs came to St. Vincent in 1675. (See Taylor 1948, 1951, 1952, 1954, 1956.)

1.17. Fake Languages

1) Aguacatec II was made up by Stoll's (1958:244) maid. Stoll mentions 300 words she produced, but he presented only 68 forms, saying the others were too suspicious (of course many of his 68 are also highly suspicious). Consequently, no one before or after Stoll has ever found anything remotely similar to Aguacatec II. Aguacatán is the center of Aguacatec, a Mayan language of the Mamean subgroup. There are no non-Mayan languages near this part of Guatemala and since it is

near the most probable location for the Proto-Mayan homeland, it is unlikely that there have ever been any non-Mayan languages in this area (barring paleoindian).

2) Pupuluca of Conguaco. Colonial sources say Pupuluca or Populuca was spoken in Conguaco and nearby towns. But Pupuluca (Popoloca, Popoluca) is the common designation of a number of languages from Nicaragua to Mexico, coming from Nahuatl "to babble". Stoll (1958:31-4) found among Berendt's manuscripts a word list from a language called Popoluca and he assumed it was from Conguaco. The Popoluca of the manuscript, however, was from Oluta, Veracruz, a Mixe language, which accounts for why Stoll was able correctly to recognize its relation to the Mixe of Oaxaca. To this day we do not know what the Pupuluca of Conguaco was, and no native document, place name, nor surname has yet been discovered -- we only know it was not Oluta Popoluca. Geography suggests that it may have been a variety of Xinca, perhaps close to Yupiltepeque Xinca.

3) Subinhá. Catherine the Great's project of collecting samples of all the world's languages received lists from the Audience of Guatemala in 1788-9, including one titled Subinhá and said to be from Socoltenango, Chiapas. Though it was thought to be a separate Mayan language, examination of numerals shows every other one to be Tzeltal alternating with

Tojolabal (Tzeltal for even numbers, Tojolabal for odd) (Kaufman 1974b.)

2. MA as a Linguistic Area

Areal linguistics involves the diffusion of structural features of language across genetic boundaries. Central to the notion of a linguistic area (also called convergence area, diffusion area, Sprachbund, adstrata, etc.) is striking structural similarities among genetically unrelated languages spread over a wide geographical area. Mesoamerica has only recently been recognized as a linguistic area (Campbell 1976b, 1977a, Kaufman 1973, 1974b), and therefore it is yet too early to present an exhaustive definition of MA areal features. Of those presented here, some are shared by most MA languages, but by others outside MA as well; some are restricted in their distribution within MA. This preliminary list is presented here to demonstrate the existence of the MA area and to stimulate more research in it.

2.1. Phonology

Some widely distributed phonological phenomena of MA are: 1) devoicing of final sonorants (l, r, w, y), (Mayan, Nahuatl, Xinca, Cacaopera, Totonac, Tarascan, Sumu, etc.); 2) voicing of obstruents after nasals (most OM, Tarascan, MZ, Huave,

Lenca, Xinca, Jicaque, Tlapanec, etc.); 3) vowel harmony (Xinca, Lenca, Jicaque, Huave, Mayan (more limited), etc.); 4) stress rule: $V \rightarrow \check{V} / __ C(V)\#$ (Xinca, Lenca, Jicaque, etc.); 5) general similarities in inventories: (a) contrasting voiced stops (and affricates) almost absent (barring a few OM languages, Cuitlatec, Tlapanec, and Tequistlatec (where they can be explained)); (b) a lateral affricate is shared by some Nahua dialects, Totonac, and Tequistlatec, otherwise it is lacking; (c) only Totonacan and Mayan have post-velar (uvular) stops; (d) contrastive voiced spirants are lacking (barring the Zapotec lenis/non-geminate series); (e) aspirated stops and affricates occur in Tarascan, some OM languages, and Jicaque; (f) glottalized consonants occur in Tepehua, Jicaque, Tequistlatecan, Mayan, Xincan, Lencan and most OM languages; (g) distinctive stress is very rare (only in Tequistlatecan, Cuitlatec, and perhaps Cacaopera); (h) tonal contrasts are found in all OM languages, Huave, Tlapanec, Cuitlatec, and some Mayan languages (Yucatec, Uspantec, and the San Bartolo dialect of Tzotzil).

2.2. Grammatical Features

1) inalienable possession of body parts and certain kin terms (almost all MA languages); 2) possession of one noun by another has the form his-noun₁, the noun₂, meaning the noun's₂

noun₁, e.g. his-dog the man for "the man's dog" (very widespread in MA); 3) vigesimal numeral systems (most MA languages); 4) numeral classifiers (many Mayan languages, Tarascan, Totonac, Aztec, etc.); 5) absolutive noun affixes (a suffix on unpossessed and otherwise affixally isolated nouns (UA, Mayan, Paya, Misumalpan, etc.)); 6) verbal aspect is more important than tense; 7) noun objects may be incorporated into the verb (limited in some Mayan languages (Yucatec, Mam), Nahua, Totonac, etc.); 8) directional morphemes (away from or toward) incorporated into the verb (Mayan, Nahua, Tarascan, some OM, Totonac, etc.); 9) locatives derived from body parts, e.g. "stomach = in, inside" (Mayan, Nahua, Tarascan, Totonacan, OM, etc.); 10) copula (form of the verb "to be") is typically lacking or quite restricted; 11) noun plurals (as affixes) are absent or limited largely to human referents (Mayan, Nahua, Tarascan, OM, etc.); 13) positional (or stative) verbs differ in form (morphological class) from intransitives or transitives (Mayan, OM, etc.).

2.3. Semantic

Lexical compounds and semantic doublets are widespread in MA. Some examples are: door - mouth of house, bark - skin or back of tree, eye - fruit or seed of face, knee - head of leg, boa - deer-snake, moon - grandmother, finger

ring - coyol-hand (coyol is a species of palm tree), witch - owl, witch - sleep, witch - old man, cramp - associated in some way with deer, fiesta - (big) day (ceremonial occasions), root - hair (of tree), twenty - man, lime(stone) - (rock-) ashes, writst - neck of hand, egg - stone-bird, river - water, gall bladder - bitter, wife - inalienably possessed "woman".

Finally, aspects of ethnography of communication are also widespread. For example, whistle speech is shared by Amuzgo, Mazatec, Otomí, several Zapotec groups, Mopan, Chol, Totonac, Tepehua, some Nahua dialects, and Mexican Kickapoo. A very stylized form of ritual language and oral literature, involving among other things paired couplets of semantic associations, is very wide spread with remarkably similar form (Quiché, Tzeltal, Tzotzil, Yucatec, Nahuatl, Ocuiltec, Amuzgo, Popoloca, Totonac, etc.). This is called Huehuetlatolli in Nahuatl, é'ono:x in Quiché.

The obvious need is for more detailed study of the MA area. These features should be studied to see to what extent they have been diffused. Additional features should be sought and identified. New descriptive material on the lesser-known MA languages should be investigated for areal phenomena. The area's geographical limits should be defined and its sub-areas investigated.

3. Distant Genetic Relationships

Perhaps the major emphasis in American Indian linguistic studies has been the reduction of genetic diversity to manageable schemes. This emphasis led to a number of poorly founded proposals of distant genetic relationship, often proposed initially as hunches or long-shots to be tested more fully in subsequent investigations. Too frequently, however, these preliminary proposals were taken as established and unquestioningly repeated in later literature. Sapir's skepticism about areal diffusion is well known. Statements like, "nowhere do we find any but superficial morphological inter-influencings" and "we have not the right to assume that a language may easily exert a remolding morphological influence on another" (Sapir 1921:215-20) led American Indianists to interpret possible far-reaching areal similarities as evidence for remote genetic connections. To take just one example, McQuown (1942:37-8) launched the now widely accepted Macro-Mayan hypothesis on the basis of:

The only other language family besides Totonacan of Mexico that has this glottalized series is Mayan, and this fact together with other significant details suggests to us the probable genetic relation of

Totonac-Tepehua with Mayan; but the relatively small number of coincidences in vocabulary indicates to us that this kinship is quite distant.

(My translation, LC).

But, since many other MA languages have glottalized series (as seen above) and because glottalization can easily be diffused areally, the Macro-Mayan hypothesis had a shaky origin. And though several have investigated the Macro-Mayan hypothesis in recent years (see Kaufman 1964d, Campbell 1973b, McQuown 1943, 1956b, Swadesh 1961, 1967, Wakefield 1971, Brown and Witkowski 1977, Jacks 1972, Arana 1964b, etc.) little has come of it but lists of potential cognates and a few rather weak phonological matchings. Recent investigation has shown that in fact most of the proposed cognates are identifiable loan words, and the others are problematical (not semantically equivalent, onomatopoeitic, not phonologically similar, etc.) (Campbell and Kaufman 1977). The Macro-Mayan hypothesis is quite typical of most of the other proposals of remote relationship.

A detailed reexamination of the various distant genetic proposals, taking into account the areal phenomena and what is now known about MA loan words, calls most of these proposals seriously into question. Since it is obviously impossible

to present a detailed evaluation of each here (but see Campbell and Kaufman 1977), I present a brief examination of the Xinca-Lenca hypothesis as a case study not unlike the other proposals and then only report the results of the reexamination of the others.

Lehmann (1920:767) was the first to suggest the Xinca-Lenca genetic relationship, though his hypothesis included also MZ, Tequistlatec, and Chumash-Salinan (the latter two now generally considered Hokan). Though Xinca and Lenca are almost universally reported as related, Lehmann's is the only direct evidence for the hypothesis ever presented. It was (modern Xinca in parentheses):

Xinca	Lenca	
ical (?ik'aɬ)	etta, ita	one
bi-al, pi-ar, pi (pi?)	pe	two
vuaal-al, hual-ar (waɬ(a))	laagua, lagua	three
iri-ar (?irya, hirya)	heria, erio, sa, aria, eslea	four
uʃ (u:y)	cuy (winter)	water
suma (sas ^h ma "in the dark")	ts'ub (Nacht)	night
ts'ama (s ^h ma)	ts'ana-uamba (Morgen(graunen))	dark, black
ti-tzuma (ti-s ^h ma "in the dark")	saba	shade

Xinca	Lenca	
xusu	shushu	dog
ojo (?oho)	hoo, oiguin	cough
au, aima (?ayma)	ama, aima	maize
xinak (š ^h inak)	shinag	bean

"One" is not sufficiently similar phonologically. The numerals two through four are widely borrowed in this part of Central America (Campbell and Kaufman 1977). "Water/winter" (even if "rainy season" is intended) are not sufficiently similar semantically and they are so short that chance could explain any similarity. "Cough" is onomatopoeic and similar forms are found throughout MA and the world (cf. Proto-Mayan *?oxb', PMZ *?ohu, Tepehua ?ux?u-, Quechua uhu-, etc.). "Dog" has similar forms widespread in American Indian languages (cf. Paya šušu, Patwin ʔuʔu, Alsea su, Yana su:su, Tlapanec suwa:, PUA *ʔu, etc.). Three of Lehmann's twelve forms involve the same Xinca etymon, "dark, black", and additionally the three involve lack of semantic and phonological similarity to the Lenca forms with which they were paired. Finally, the terms for "maize" and "bean" are borrowed in both languages; "bean" is from Proto-Mayan *kinaq', Western Mayan činak'; "maize" is widely borrowed (cf. Cacaopera-Matagalpa ayma, Sumu ama, Subtiaba ima, Tarascan ema, eme, Proto-Mayan *?e?m, etc.). It is safe to conclude that Lehmann's evidence does not support

the proposed Xinca-Lenca hypothesis.

The other hypotheses (investigated in detail in Campbell and Kaufman 1977) are merely reported here.

1. Macro-Mayan (Mayan, Totonacan, and MZ). The hypothesis is too weak to embrace, but may be worthy of further research (see discussion above).

2. Mayan-Tarascan. This is supported only by Swadesh 1966; absolutely no evidence supports it and it should be abandoned.

3. Maya-Chipaya (Mayan and Chipaya-Uru of Bolivia). This was proposed by Olson (1964, 1965) and has been widely accepted (see Stark 1972, Hamp 1970, etc.). Though initially the hypothesis seems well supported by cognates and sound correspondences, reexamination reveals that the evidence all dissolves, involving such problems as non-recurring sound correspondences, erroneous Mayan forms based on non-cognates, loans, onomatopoeia, etc. Campbell (1973c) shows the hypothesis to be extremely weak and unfortunately misleading to anyone not familiar with Mayan.

4. Maya-Chipaya-Yunga (Maya-Chipaya and Yunga of Peru). This was first launched by Stark (n.d., 1972) and has been supported by Hamp 1967, 1970. This hypothesis shows a fairly clear relationship between Chipaya-Uru and Yunga, but is even weaker than the Maya-Chipaya hypothesis in the evidence pre-

sented in support of a Yunga connection with Mayan.

5. Maya-Araucanian. This was also framed by Stark (n.d., 1970) and supported by Hamp 1971. All its evidence can be explained away as accident, onomatopoeia, vague semantic and phonological similarities, etc. The hypothesis is too weak to warrant further attention for the time being.

6. Mexican Penutian. Mexican Penutian includes different language families for different scholars, MZ and Huave for Sapir (1929), these plus Mayan and Totonac for Greenberg (1956), these plus UA for Whorf (1935). As generally conceived today it includes Aztec-Tanoan, Macro-Mayan, and others, and belongs to Macro-Penutian. Since most of these components are tenuous classifications themselves, it seems far too premature to project these questionable entities into even more far-flung classifications. Thus for now I denounce Mexican Penutian.

7. OM-Huave. Swadesh (1960, 1964a, 1964b, and 1967:96) has consistently maintained that Huave has OM affinities, and Longacre (1968:343) is inclined to accept this classification. The only substantive evidence presented so far in favor of this hypothesis is that of Rensch (1966, 1973, 1976). While the evidence is not yet totally convincing, it is certainly strong enough to suggest the hypothesis be given much further study.

8. OM-Tlapanec-Subtiaba. Rensch (1966, 1973, 1976, 1977) has also supported an OM relationship for Tlapanec-Subtiaba, and Suárez (1977) has independently come to the same conclusion. Since the evidence presented so far is rather limited, a cautious conclusion is that the hypothesis deserves further attention, but it is too early at present to evaluate it properly; a wait-and-see attitude is in order.

9. Jicaque-Subtiaba. Oltrogge (1977) relates Jicaque to both Tequistlatec and Subtiaba, and following Rensch, suggests an OM relationship, though he also allows for the possibility of an exclusive Hokan affiliation or a broader Hokan-OM grouping. His Jicaque-Tequistlatec evidence is quite good, but his Jicaque-Subtiaba evidence is very weak.

10. Jicaque-Hokan. Greenberg and Swadesh (1953) proposed the Hokan affinity for Jicaque, though their 68 lexical forms, indiscriminately chosen from the two Jicaque languages, came far short of demonstrating the relationship. The relationship has largely and uncritically been accepted in the literature. In a recent study (Campbell 1974a) with more accurate and extensive Jicaque data I concluded (independently of Oltrogge's (1977) recent study) that the evidence for a Jicaque-Tequistlatec connection is reasonably strong. This, then, circumstantially links Jicaque with the

other Hokan languages, since Tequistlatec is generally considered Hokan. But, given the controversial nature of the Hokan classification generally, it is safer to suggest (that while the entire Hokan grouping requires much further work), that the Jicaque-Tequistlatec relationship, regardless of the ultimate outcome of Hokan questions, will probably stand. Some probable cognates and sound matchings (potential correspondences) are:

Proto-Jicaque	Tequistlatec	
*(p)ip ^h ɬh	-abi	ash, dust
ɬ'ɬk	-šigo	beard
*pɬlik	aš-pela?	many
*k'aɬ	-hwáɬ'	blood
*ɬuh	-šuih	blue
*k ^h ele	-gaɬ	bone
*-pe	-bi?	to burn
*pehy	-bi?e	egg
*pɬneh	ifungi	fat
kewan	-guwe?	husband
hep ^w e	-webo?	iguana
*amah	-amáɬ'	land
setel	giɬala?	seed
polok	-biɬ'	skin
*wele	-balay-	to speak

Proto-Jicaque	Tequistlatec	
*(<i>č</i>) <i>č</i> h	<i>čete?</i>	squirrel
*pe	-bik	stone
peyom	-š-piyami	coati, agouti
*pelam	-bá <i>č</i>	tongue
*-pa?	-ba-	to wash
*p ^h e	-fuh-	white
-Vk	-k'	1st and 2nd per pl
l	l	
p	b	
p	f	
<i>č</i> (')	š	
k	g	
m	m	

(For the detailed reasons behind these judgements concerning these various proposals, see Campbell and Kaufman 1977, where each hypothesis is evaluated in detail.)

4. MA Linguistic Prehistory

Linguists have a variety of techniques for getting information about culture history (the comparative method, classification and subgrouping, linguistic migration theory, dialectology, philological techniques, loan words, linguistic homeland (Urheimat), the cultural implications of reconstructed

lexicon of proto languages, Wörter and Sachen, toponyms, and linguistic paleontology generally). In this section I simply report the major hypotheses and tentative conclusions of the recent work in MA linguistic prehistory (references listed below).

1. The archaeological Olmecs spoke MZ languages.

(Campbell and Kaufman 1976.)

2. Both the MA culture area (co-tradition) and MA linguistic area were shaped by the same forces, by extensive Olmec influence and by extensive trading from Olmec formative times onward.

3. The principal bearers of Classic Lowland Maya civilization were Cholan speakers. Cholan was most important in the development of Mayan hieroglyphic writing.

4. The Mayan homeland was in the Cuchumatanes, near Soloma, Guatemala.

5. Monte Alban was always Zapotecan in speech.

6. Teotihuacan was not built by Nahuatl speakers; the Nahuatl speakers' arrival coincides more closely with the fall of Teotihuacan than with its rise.

7. The strongest candidate for the builders of Teotihuacan is the Totonacs.

8. The OM homeland was probably in the Tehuacan Valley (about 5,000 B.C.).

9. Proto-Mayan, Proto-Mixtecan, and Proto-Mixe-Zoquean, among others, already had a rather full complement of Mesoamerican cultigens, including the maize-complex, beans, and squash, etc.

10. Pipil left central Mexico around 900 A.D., migrating to Central America, and consequently had nothing to do with events in Kaminaljuyú, Cotzumalhuapa (until very late), or Quiché territory.

11. The epi-Toltec Nahua influence in Quichean languages came from the Gulf Coast dialects, not from Pipil nor from central Mexico.

12. Pokomam was split off Western Pokomch' by the intrusion of the Rabinal lineage of the Quiché after 1250 A.D. and pushed into former Xinca territory. Pokomam had nothing to do with Classic Chalchuapa nor Kaminaljuyú.

13. The Xinca were not agriculturalists until their contact with Mayan speakers. Their geographical territory once included all of eastern Guatemala below the Motagua River.

14. There were no pre-Conquest Pipiles in the Motagua Valley.

15. The MZ were the inventors of the Mesoamerican calendar and hieroglyphic writing; there was strong MZ influence in the early development of Mayan hieroglyphic writing.

16. The Mangué migration to Nicaragua took place after 600 A.D. from Chiapas, while the Subtiaba migration to Nicaragua from Guerrero was even later, about 1200 A.D.

17. The Lenca homeland was probably in central Honduras; SL reached El Salvador about 1 A.D. and is responsible for Classic Quelepa.

18. Quichean dialect boundaries correspond exactly with pre-Conquest political units as reconstructed from ethno-historical accounts.

For details, see Amador & Casasa 1974; Campbell 1970, 1972a, 1972b, 1976c, 1977, 1978; Campbell and Kaufman 1976, 1977; Josserand 1975; Kaufman 1964a, 1969b, 1973, 1976a; Longacre and Millon 1961; McQuown 1964; Merrifield 1966, etc.

5. Outstanding Needs and Directions for Future Research

Individual needs have been pointed out for languages and areas throughout this paper. In this section I will concentrate on general needs.

1) More full-fledged grammars and dictionaries are needed.

2) More comparative and historical work, including subgrouping of most of the families, should be done.

3) Potential genetic relationships should be examined more closely.

4) More attention should be given to areal diffusion,

loan words, and language contacts. The non-Uto-Aztecan vocabulary of Nahua and the non-Mayan vocabulary of Huastec should be examined and its origins determined. The same should eventually be done for all MA languages. The MA linguistic area needs more rigid definition.

5) The moribund languages of MA should be studied fully and as exhaustively as possible (Ocuiltec, Matlatzínca, several UA languages of northern Mexico, Itzá, Uspantec, etc.).

6) Available documentary material needs to be fully utilized; this requires training in philological techniques and should involve training in the colonial (so-called classical) languages, Nahuatl, Classical Yucatec, Classical Quiché, Cakchiquel, etc. It also involves searching archives and private collections for missing and as yet unknown colonial sources.

7) More attention should be devoted to MA writing systems by linguistically sophisticated scholars.

8) Questions of MA prehistory toward which linguistics may help provide solutions deserve careful consideration.

9) We should marshal our resources in several ways. One is to train native speakers to prepare dictionaries, grammars, texts, etc. Another is to prepare ourselves and our students with a strong background for solid work in the area, including not just descriptive and historical linguistic methods, but

philology, classical languages of the area, Old Spanish, and in related anthropological fields. Another way is to practice our craft courteously, making the results of our work available to native groups and foreign scholars, especially in Latin America. When the opportunity presents itself, we can help train students of our Latin American colleagues. In this way we may be able to dispel some of the often very justified resentment toward foreign, especially North American scholars now so common in Latin America. Also, we can support regional newsletters and workshops such as now exist among Mayanists, Uto-Aztecanists, Hokanists, and appears to be about to begin among Otomangueanists. Finally, we can help to ensure the accuracy of materials published, and encourage potential sources for the publication of accurate material.

In summary, the most critical need is for good linguists to do good work.

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HMAI = Handbook of Middle American Indians. Robert Waucope,
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ICA = International Congress of Americanists.

IJAL = International Journal of American Linguistics.

INAH = Instituto Nacional de Antropología e Historia. Mexico.

JSA-P = Journal de la Société des Américanistes, Paris.

Lg = Language.

P-APS = Proceedings of the American Philosophical Society.

RMEA = Revista Mexicana de Estudios Antropológicos.

SIL = Summer Institute of Linguistics.

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A Glance from Here On

Eric P. Hamp

It goes without saying that the contributions to this volume are rich both in detail and in coverage. The striking thing is the difference with which the separate stocks and areas present themselves, quite apart from the individuality of focus and temperament that each author understandably brings to his task. We see here a whole continent in a spectrum of stages of scholarly elaboration, of transparency and tractability, of lacunae and needs, and occasionally of neglect. We wish to glance ahead at what the future may hold for us, or at least at what we may reasonably ask of the future. To do so, it seems essential to take a running account of what may be the texture of past accomplishment, and this is impressively mirrored in the sort of presentation that each of the foregoing chapters has lent itself to.

Certain fields are very large, have been worked over a considerable time, and are, relatively speaking, evenly populated with accomplishment. These fields lend themselves readily to a species of annalistic conspectus. A notable example of this is the--largely--far North, covered in a broad sweep by Krauss. His account must be read, of course, as a continuation of his ample stock-taking in Trends of a decade ago. For understandable reasons his coverage is fullest and deepest for Alaska, and the news of the recent USSR contacts are extremely welcome. It is to be hoped that in the richly studied Eskimo field our knowledge of the dialectology within Canada will soon and rapidly be refined. Meantime Krauss gives us a fine report on Yupik, where excellent active work proceeds month by month. It is imperative that Bergsland, the master

of Aleut who has placed us all immeasurably in his debt, be given aid and relief in his monumental labor. A bright spot in Eskimo studies virtually unparalleled in the entire continent is the high cultural status finally accorded Greenlandic. The production of native scholars to join our ranks and give leadership in the future looks more promising in the far North than in most other parts of the continent. For intercontinental connexions I continue to feel that our likeliest chances lie with Eskimo-Aleut in the direction of Luoravetlan; this possibility deserves strenuous attention. Yet at the present time we are not witnessing a steady yield from detailed comparative Eskimo-Aleut study that we might hope to.

The whole Na-Dene terrain has been commendably worked, and in many ways we possess a gratifying control of it; important dictionary projects are afoot. Yet it is ironical that the most actively spoken subfamily in North America, the Apachean, is regrettably understaffed in expert active scholars; here is a pressing task of recruitment. For that reason the needed help is not available at present for the fine-grained elaboration that should be possible in comparative Athabaskan. But we must not complain overly; huge strides have been made with Eyak in the eleventh hour, thanks to Krauss, and now great progress is seen in Tlingit. I have tried to point elsewhere to the productive new view that the moribund Tongass dialect gives us of the entire Na-Dene consonant system. It augurs well for the future that in the past few years a spate of work has been reported on Haida; here we need a heavy concentration of effort, particularly so long as Haida cannot be claimed as a branch of Na-Dene. It is worth noting that now that Na-Dene is perceived to require no reconstructed tones

the motivation for a relation to Sino-Tibetan has largely vanished; we might just as well look to Nivkh (Gilyak).

A rather different kind of annalistic conspectus is offered by Campbell for Middle America. This vast area has a linguistic cohesion of its own only in the more southerly part. Campbell's highly informed treatment takes at a half dozen giant strides an approach centered on certain major aspects of linguistic scholarship throughout the area. He first presents a conscientious inventory by genetic families, stressing recent work. His account of Aztec reminds one that this group is at a stage of ripeness in scholarship comparable to that, say, of some parts of Uralic; it is one of the few New World groups with a philology measurable by normal European standards. For that reason it is susceptible of highly refined work and can absorb a large amount of devoted study. Otomanguean is the only current New World comparative enterprise of Indo-European proportions, as Longacre has rightly said; at this point we should pause to salute our SIL colleagues and the late Sarah Gudschinsky, who have made so much possible for us. The phonology is tremendously well done, considering the distances to be bridged; but much basic work yet remains on the alternations at all chronologies. Campbell calls for more descriptive work; certainly that is always a desideratum, but actually work has in fact been done on Matlatzinca and Ocuilteco though its publication and extension are much to be desired. In my opinion the most pressing tasks in comparative Otomanguean lie in the areas of word morphology and phrase structure; the old paradigms underlying partial disagreements in form have scarcely been laid bare. A true one-volume comparative grammar of Otomanguean should be a firm and realistic goal for a large team of workers in the

next decade. The problem of Middle American Hokan and Huave is very different and vexed. To a large extent I see these as little better than well explored isolates. An urgent need is to make accessible far more on Totonacan, and also to have at hand Kaufman's stimulating Mixe-Zoquean work. Tarascan is a real orphan, and something strenuous should be done about it on several levels. Campbell, Holt, and Kaufman--among others--have done noble work on the moribund remnants; but there is still important salvage work to be done. In this connexion we should also salute Douglas Taylor for his tremendous contribution to the unravelling of Carib, Black and Island. It is sad to read the meticulous list of extinct languages.

Turning briefly to Mayan, we have an unusual case: This is probably the only stock of which it would be greedy to ask for more work. The past two decades have seen a wonderful flowering of scholars for this Romance-sized family; for the time being primary field work will serve largely other ends than the comparative, e.g. sociolinguistics or the testing of theory. the primary historical goal for the next decade should be twofold, the elaboration of a full-scale comparative grammar in its initial version together with an ample etymological dictionary and the concentrated pursuit of work toward genuinely reading the glyphs. The combination of these two results would be a unique event for the New World.

Campbell is correct in pointing to the interest of areal linguistics, and the task is one that will absorb much energy. I am convinced, however, that MA must be split up into a complex spectrum of a number of smaller areas; this has been our experience elsewhere repeatedly, and there is no reason to expect MA to behave differently. Campbell has healthy things to say about the search for distant relationships, but it is

difficult to project these into a program of work for the future. Indeed much of the ultimate success in this pursuit will come from the sort of serendipitous reflexion that rests on chancing to notice the right things while observing the general caveats of sound procedure. Contrary to Campbell, I continue to see South American relations for Mayan as more promising than, for example, an Otomanguean-Huave relation. On the latter, Hollenbach has argued (Los Angeles, November 1978) very lucidly that there are huge grammatical gaps to bridge before Otomanguean and Huave can be successfully compared. We know, of course, that nonrelationship can never be demonstrated; yet a successful demonstration must in principle bridge such gaps so as to show plausibly how continuities are envisaged. At the same meeting Suárez adduced equations of grammatical elements that make a Tlapanec-Otomanguean relation considerably encouraging; as I have argued elsewhere, grammatical equations coupled with phonetics are the core of a genetic demonstration, and lexical comparisons persuade only in so far as they englobe such elements. Until we have a clearer resolution of issues in Hokan farther to the north there is little we can do additionally with Jicaque-Tequistlatec.

Campbell's theses for the prehistory of the region are fascinating, and these constitute a program of work for the most ambitious comparativists of the entire region for several decades to come. In Indo-European such issues have been debated for a century and a half. Still, as with Indo-European, MA offers an archaeologyadequate to fuel such a debate.

Of Campbell's generalized outstanding needs, I would single out: reference grammars and certain dictionaries, familial subgrouping, screening distant relationships for grammatical elements, diffusion within small sub-areas, salvage,

and old-fashioned philology infused with new linguistic theory. As a final remark on this vast and complex subcontinent, I must register a strong dissent from Witkowski and Brown (1978), whose unsupported claims of a huge language phylum betray gross neglect and misuse of the careful work of earlier scholars in the field and risk misleading the unwary.

Our next category of topical treatment is very easy to characterize, and cannot call for extended comment; to enter into the latter would take us into the midst of endless detail. There are two chapters in this work which we may call miniatur handbooks. Mithun's outline of Iroquoian provides a splendidly lucid and compact introduction to Iroquoian attestation, the workers in the field and a bit of its implied history, the fate of the reconstructed phonology in each language, and the subgrouping of the family. It is a hallmark of this compact family, of the long white contact with it, of its relatively early serious documentation that this is all possible. But it must be remembered that for decades these linguistic studies lay neglected, and that Lounsbury was perhaps the only active name. This is a field that has witnessed a dramatic renaissance, and the future holds high promise. Morphological fusion is endemic in Iroquoian, and simply finding roots is an exasperating task. It is therefore no small accomplishment that in recent years substantial lexical comparisons have been made; we look forward to a strong continuation of these gains. Cherokee is an important language to the enterprise, and requires much more manpower in the next decade or two. Perhaps we may see a pilot comparative grammar and root list in the next ten years. Mithun reminds us that new data is still the first priority--an essential support.

The other vademecum is furnished in Thompson's coverage of

Salishan and the Northwest. Here we have a rather different basis in scholarship from that of Iroquoian, yet the same relative compactness; the diversity in languages and the growth in the cadre of serious workers are closely comparable to what holds for Mayan, but the latter had the advantage of an earlier starting scholarship. In Thompson's chapter we find a fine detailed recapitulation of the disclosure of the family, with rich exactitude on phonology. The entire comparative Salish account is really excellent, and only the complexity of the long morphological formations prevents such a report from turning into a miniature handbook. It is interesting that Shuswap, Okanagan, Kalispel, and Tillamook have an analogue to Grassmann's Law for successions of glottalized consonants; Grassmann's Law is really a special case of a phenomenon to which heavily marked segments must be prone. In stress-attracting and -repelling morphemes we find another parallel to Indo-European, whose noun case endings showed such habits. Note that there is an absorbing problem of directionality in the question of ablaut. The vowel alternations of Salishan will be a hard nut to crack; the analogous problem in Indo-European took 150 years, so that Salishan scholars should not be faint of heart. Thompson, like others, points to the ever-present need for more full descriptions of languages. In this vein it is important to point to the large amount of new syntactic work that has been done in recent years, especially in a series of articles by Davis and Saunders on Bella Coola. A special desideratum in this Northwest area is a concerted study of diffusion, which will equally sharpen our perception of the genetic lines. In the next generation of scholars we may look for substantial results in Salishan as the large dictionaries now under way appear.

We come now to a category of enquiry which characterizes several chapters, each in a different way, partly conditioned by the material and partly by the author's temperament. Langdon's discussion of Pomoan and Yuman resumes a genre that has attracted a number of studies in the Hokan field over the past quarter century, the binary comparison. This method has both advantages and shortcomings. The weakness is inherent in the fact that important criteria may be excluded by wearing blinders, so to speak, to other related branches; one would make disappointing progress by comparing Greek and Germanic verbs. Yet by concentrating in this fashion one can spend the necessary time searching a terrain thoroughly for sparse clues; and the riddles of Hokan putative relations impose such a search. It is a difficult choice. To Turner (1977) one can well say that the comparative method is not crude; it is some people's application of it that may be. Langdon commendably aims at classical comparison, though also welcoming the notions and criteria of diffused and universal traits. She correctly observes the feebleness in correspondences of Pomoan t as against t, an observation that leaps to the eye in McLendon's careful t tabulations. But immense difficulties soon crowd in on one: the proposed laryngeal increments lack specific correspondences. h is secondary in Yuman and perhaps in Pomoan too (i.e. there are no h- roots); but the similar situation in Yurok lends little cause for confidence in this as a genetic observation. Then there is the problem of Pomoan b and d; pretonically *b = Yuman *w and *p. The morphosyntax remains lean in likely items, and the word-order syntax leads almost nowhere for the time being. Yet we must not lose heart. These two branches have been explored internally in the past two decades to an amazing degree; another twenty years of

similar exact probing and formulation would be itself much more substantial as a gain than many an Old World family has yet seen.

In less specificity for the individual linguistic phenomena but with balanced attention to all reasonably related branches Jacobsen has considered 13 major nodes on the Hokan stemma; he is concerned purely with inter-branch relations. This number of branches makes the problem of Hokan quantitatively similar to that of Indo-European; but the entire undertaking is utterly different because of our radically inferior grasp both of intra-branch reconstructions and of phonological distance between the rather isolated branches in the case of Hokan. Indeed we still have a very imprecise and sparse command of the major Hokan Lautgesetze. The problem may well be exacerbated in a major way because half a dozen of the branches are already extinct, and in another way because we categorically lack the appeal to ancient languages as interstages that we so much benefit from in Indo-European. The besetting weakness in these larger Hokan comparisons, from Dixon and Kroeber nearly down to the present, is the rarity or total absence of recurrent instances of putative correspondences. This is of course an inherent difficulty in this recalcitrant material; but such a difficulty is turned into misleading pseudo-knowledge if it is not recognized for what it is by the scholars analyzing the material and if claims are made without allowance for this nearly crippling disability. Jacobsen's presentation brings this home with sober numbers, and tries to make reasoned sense of a tantalizing and discouraging situation. In trying to make the best of things he is driven to a heavy dependence on lexical stems; the familiar Hokan trap may readily be illustrated from IE: Modern Greek 'eye' is

mati, and the Albanian correspondent is sy. The first reflects *ok^wmn-t-ion, while the second is *ok^wioHu--same base, but different stem derivation (and inflexion) and catastrophic phonetic loss. All of this is assuming that some of these desperate Hokan "basic words" are related. The answer to the implied question is clear: We have an enormously detailed and exact control of Greek and Albanian, and we did not begin the exploration of Indo-European with these forms; we began with fader and pater. Jacobsen aptly points out the cost of random lexical loss (or replacement, as we think of it). In fact I know of only one word with the direct undisturbed Albanian reflex of IE *n; but Brugmann did not launch his theory of the syllabic nasals a century ago on the evidence of Albanian. Jacobsen makes a very strong point all too often overlooked when he insists that at great time depths the correct and probative phonological correspondences are likely to be highly non-obvious and displaced by multiple steps phonetically. Equations such as Armenian k^hirtn, Latin sūdor, and English sweat must be allowed for, if not routinely expected and sought. The best hope for Hokan in the next two decades lies in a rich harvest of accurate intra-branch studies, an icily stern and acidly critical application of sound method, the will to prune with a ruthless knife, and some wonderful lucky hunches that do come every so often.

Jacobsen's Chimakuan discussion addresses a very tiny family, but the problem of external relations is really just another case of the inter-branch problem which we have been discussing. Some fifteen years ago I argued that if there was such a thing as Mosan almost all of Swadesh's arguments were the wrong ones; I still believe that. If there is a Chimakuan relation to Salishan, the most encouraging points of entry

lie in certain morphologized or phrasal categories such as idiosyncracies of deixis and gender. But so far the most tangible hope has reached in the direction of Wakashan in the recent work of J.V.Powell. Jacobsen sees old loans as flawing this, but I am inclined to give Powell's thesis better promise than that even though we must recognize the diffusional traps at all times and be prepared for them. Clearly a great deal of careful sifting and critical reasoning is called for here. The next decade should see slow but firm steps in that direction. I myself take up the question of the imbalance in laterals on a more appropriate occasion.

It is convenient to close this review of the inter-branch problem with Silverstein's consideration of Penutian, in its various potential acceptances and scopes. His paper is an imaginative and principled worrying of the quarry on tough terrain, and its opening warns us of the strongly theoretical emphasis of his approach. Although the presentation is packed with the evidence of specific background knowledge, it could easily be read with profit by a theoretician with no particular interest in the ultimate solution of Penutian and its circle of phylum associates. An important point is scored on the matter of the sorts of implications to be drawn from productivity of formations; indeed, for genetic relations we must always work from non-productive formational mechanisms by preference. The interplay of typology and genetics in Silverstein's reasoning and his awareness of the limits to licit invocation of typology give his chapter a special flavor and value. When we come to look at the future of Penutian studies, we must conclude that it shows many traits in common with what has been emphasized for Hokan, despite the fact that the core of Penutian looks considerably more encouraging.

Our next rubric is a very mixed one; there are two fields that show a great variety of complex problems. Siouan is a family that gives the impression of having been known for a long time. Yet, as Rood makes clear, the very data, although at long last improving and getting clarified, have been quite unsatisfactory, resting on a quicksand of bad phonetics. An acute need persists for Dhegiha and Chiwere data. Furthermore the comparison done in the past has been rudimentary. On the question of subgrouping Rood gives us an enlightening critique of the Southeast unity. On the whole we sense a negative and shaky situation, with a real task ahead at last well formulated. Rood gives us, too, a fine recognition of earlier scholarship. It is worth noting that Matthews' sound symbolism here is reminiscent of the Wiyot-Yurok phenomenon. It is clear that in recent years Siouan has awakened from a long slumber with only fitful incursions by scholars with other preoccupations. This is one of the ripest fields for steady advance on all fronts in the coming decade or two.

Another area with similar characteristics is the Southeast. Haas, the dean of the field and for years its lone cultivator, gives us a useful and authoritative conspectus. Additional to her review we can now state with joy and impatience that the most spectacular renaissance of the past few years is unquestionably that of Muskogean: whole sessions devoted to it at the Conference on American Indian Languages within the AAA, and an entire day devoted to a dozen papers in Norman, Okla. in October 1978. Muskogean can only blossom from now on, and in the hands of demonstrated competent and energetic young scholars. And naturally we look forward with impatience to Haas' crowning achievements of one of the major careers of the century.

In the same geographic area, Shawnee is badly under-worked, yet there is good news on Natchez. Timucua, Chitimacha, and Atakapa require massive careful attention. Relations of any of the Southeast with other stocks will not be probative until correspondences showing repeated instances in sets of morphs can be adduced. Though Yuchi remains an isolate at present, Ballard has undertaken important work on this language lately.

We come now to a case by itself, Chafe's Caddoan. Miserably neglected for a half century, this too has seen a mini-renaissance. Here lexicon is a pressing need before more even of the conservative tasks can be addressed. But Caddoan is a case of an interesting gap in our syntactic command, which must be repaired before these languages die. The neutral noun suffix reminds us of the Uto-Aztecan absolutive, even though the $-V^?$ is perhaps to be compared with the Iroquoian $-a^?$. The Caddoan-Iroquoian verb question is of course fascinating, but these larger relations partake somewhat of the Hokan inter-branch problem.

The converse of Caddoan is surely Uto-Aztecan, where we are now in the third or fourth round of phonological comparison and exploration, and in a gap-filling operation with the less well studied languages. Here is the place where the most active syntactic reconstruction in North America is proceeding; cf Langacker 1977. And there is no sign of this stopping. The only caution required here is that of the geneticist to the typologist.

We come now to the end of the true comparative issues, which Uto-Aztecan neatly bridges, to the fully mature specimens of genetic familial comparison with all the controls of areal and dialectological criteria also in principle being

applied. In this category, strictly speaking, we find the small family of Wakashan, on which Jacobsen has lavished careful detail. On the other hand, within the context of the present discussion the problem of Wakashan ranks more with those of intra-brach characteristics, while its possible relation to Chimakuan has been discussed as a specimen of inter-branch problem. At any rate, work continues apace, and in the next decade perhaps we may see the first summation.

And now, in a sense different from that applied to Otomanguean, to the Indo-European of the New World, Algonquian; or together with Wiyot and Yurok, Algic. Goddard's presentation is the only one in this volume which can permit itself the luxury of singling out notable lacunae in our knowledge and summarizing them as monadnocks on a plain of acquired erudition. Still, there are general lessons in his treatment. He gives an especially informative exposition of the problems of proto-alternation vs. variation vs. isolated later historical developments (e.g. the Cree dialect data now coming in, and Fox a-). Much of detail could be remarked in the course of this rich documentation and exemplification; thus the Delaware use of objective forms with definite objects reminds one of the Balkan pleonastic object pronoun. Goddard's section on Eastern Algonquian is particularly valuable; Algonquianists are very conservative on questions of subgrouping. In many ways they behave like Indo-Europeanists, and work in that field proceeds at a stately pace--but with a disappointingly small work force.

Finally for the isolates--Kiowa, Tanoan, Keresan, Zuni (Davis), Timucua, Yuchi and others (Crawford), and the South Texas region (Goddard)--the cry is for descriptions and dictionaries, and some inventorizing and archiving of extinctions

proceeds. But real comparison is a long way off. After all, we must content ourselves with the likely reality that there are Basques in various parts of the world. Such hubris to think that we will ever know all about where we have come from!

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