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# STUDIES IN CALIFORNIAN LINGUISTICS

EDITED BY WILLIAM BRIGHT

21m. Gabriellito  
21n. Nicoteno  
21o. Mountain Caballita group  
21p. Juaneño  
21q. Luiseño  
21r. Lujano  
21s. Pomo  
21t. Pomo  
21u. Pomo  
21v. Pomo  
21w. Pomo  
21x. Pomo  
21y. Pomo

14c. Ynezeno  
14d. Barbareño  
14e. Centereño  
14f. Eastern  
14g. Interior (subtotal)  
14h. Island  
Yuman:  
15a. Northern (Western) Diegueño  
15b. Southern (Eastern) Diegueño

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# THE CLASSIFICATION OF THE UTO-AZTECAN LANGUAGES: A HISTORICAL SURVEY

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## 0. INTRODUCTION

### 0.1. Language Classification.

The activity known as language classification is a curious one, in that much of it is not really concerned with the classification of languages. Some linguists have apparently never properly distinguished the separate functions of (1) language classification, (2) establishment of genetic relationships among languages, and (3) application of the comparative method. In practice, much of the work generally considered to be language classification has actually been more concerned with finding and establishing genetic relationships. And, at least in the more conservative and highly regarded circles, the finding and establishment of genetic relationships is virtually synonymous with the application of the comparative method.

But the comparative method cannot in itself show that two languages are related, nor is it always necessary for that purpose. The comparative method can only show that groups of vocabulary items are related. More precisely, its application can reveal the presence of recurrent correspondences among phonemes or morphophonemes in the representations of morphemes or combinations of morphemes with similar or related meanings. This can establish beyond reasonable doubt (when enough correspondences in enough such lexical items are present) that each correspondence represents a single phoneme or morphophoneme of some earlier period,<sup>1</sup> and that therefore the morphs and combinations of morphs containing them have, for each corresponding set, a single origin.

But this is not the same as showing that two languages are genetically related. Sets of correspondences which permit reconstruction and the establishment of cognate sets, like those mentioned above, can also be found when one language has borrowed a large number of words from another over a relatively short period of time.<sup>2</sup> In this case, just as in that of divergence of a pair of entire lan-

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<sup>1</sup>It can also be shown, of course, that certain groups of similar sets of correspondences are in complementary distribution concerning other sets as conditioning environments; these groups can then be assumed to reflect a single earlier phoneme or morphophoneme (cf. Hoenigswald, 1956).

<sup>2</sup>See, for example, Miller (1959-1960). The possible counterargument that, in borrowed forms, one finds irregularities that do not fit the regular correspondences is met by the rebuttal that this situation is no different from that found in genetically related languages, where there are also numerous embarrassing sets of forms that, though obviously cognate, do not fit the regular correspondences. Just as such forms are frequently explainable as dialect variation (and therefore divergence) before or borrowing after the split, so divergent pairs in the event of borrowing may be explained as due to other borrowings before or after the major borrowing period. Phonological reconstructions in borrowing tend to coincide with the forms of the lending language, and this is, of course, as it should be. If done correctly, and with sufficient data, the comparative method will necessarily tend to provide reconstructions that coincide with the forms of the lending language at the time of borrowing, since these are the forms constituting the common origin. The reconstructions, e.g., of Acoma-Spanish, will thus differ from the corresponding forms of modern Spanish only to the extent

guages from a common origin, we have two groups of vocabulary items that are separate continuations of what was once a single group. To establish genetic relationship among entire languages it must further be shown that the cognate morphemes are basic ones, preferably that some of them are of the "grammatical" type (and therefore very basic) rather than "lexical". Correspondence in types of combinations of morphemes, particularly at the "inner layers", is also very valuable evidence. In short, the comparative method is only one, although to be sure the most important one, of a number of devices that are applicable, preferably in combination, to the problem of establishing genetic relationship.

This observation does not belittle the importance of the comparative method. On the contrary, it is those who equate that method's application with the establishment of genetic relationship who are downgrading it, since they are thereby overlooking its various other functions, some of which might well be considered much more important. For it makes possible, through the reconstruction of phonemes and their meaningful combinations, the determination of grammatical and other features of the earlier language, as well as various characteristics of cultural and geographical setting. In addition, its application makes possible the discovery of actual phonological, grammatical, and semantic changes which have taken place in the history of individual languages. This information, aside from its intrinsic value for linguistics, constitutes data for the study of general principles of linguistic change, without which our understanding of language can never be complete.

The widespread (but certainly not universal) misunderstanding of the proper place of the comparative method in linguistics is an understandable result of the way it has been used during the past hundred and fifty important years of the history of linguistics. This period was one in which much activity was devoted to the establishment of genetic relationships, sometimes with dramatic impact. Such activity was perhaps not inappropriate in view of the scarcity of knowledge of genetic relationships during that time, but there is now, as before, a very great need for detailed comparative work within groups of languages (in North America and elsewhere) whose genetic relationship is accepted without reservation.

In general, the question of whether or not various languages are genetically related is one which has caused greater concern and confusion than is necessary. There is a need to recognize more clearly that the question of whether or not two languages are genetically related differs sharply from the also meaningful one of whether two languages have been established or proved to be genetically related. It is too easy to assume that two languages which have not been proved or asserted to be related are unrelated. Thus, until recently, it seems not to have occurred to many linguists and anthropologists that relationships might exist between some of Sapir's superstocks, some of them perhaps closer than those existing within superstocks. The fact is that, for Sapir's classification as well as for most language classifications, the major groups each consist of languages which happen to have been found (either definitely or probably) to be related to each other; and such findings are as much a reflection of what possibilities happen to have been examined as they are of the underlying true facts. Actually, for purposes of language classification as it should be, it is not safe to assume that any two languages are unrelated. For a truly meaningful classification, it is just as bad to leave apart two related groups as it is to put together two unrelated ones.

Methodologically it is very helpful, when marshalling evidence to establish a relationship, to start from an assumption that the languages are unrelated. This

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that the latter differs from Spanish spoken at the time and place of the borrowing. The differences in the forms of Acoma are greater since they have undergone an additional process of phonetic change, namely phonetic substitution.

makes the amassing of reconstructions and other comparative evidence much more significant, as when one proves a theorem by starting from the assumption that it is false and then demonstrating that such an assumption is untenable. The proper proof of a genetic relationship is a demonstration that makes it quite clear that the possibility of the languages being unrelated is too remote for serious consideration, since no other condition than genetic relationship can account for the systematic correspondences which have been discovered. But the methodological adoption of an assumption should not impose limitations on our beliefs concerning the actual facts. It is one thing to make an assumption for methodological purposes but quite another thing to believe that the assumption is really true.

Whereas most linguists seem to feel that languages taken at random, especially if they are from different geographic areas, are unrelated unless they have been proved to be related, the reverse may more often be the actual truth. That is, it may well be that if we take two languages at random from any two parts of the world, the chances of their being related are greater than those of their being unrelated. Indeed, a case can be made for the belief that all the existing languages of the world are genetically related to each other, and the argument in favor does not require the examination of any linguistic forms.

This contention, by the way, is altogether unrelated to the question of the monogenesis of language. Indeed, the latter question is meaningless anyway. For it to be meaningful, the origin of language would have had to occur (once or on each occasion) in a relatively short period of time in a relatively small area. But such was not the case. Language doubtless evolved from something extremely simple to language as we know it over a period of scores if not hundreds of millenia, and its evolution may very well have gone hand in hand with that of the human brain. During this period, contributions to the development of structural complexity and concomitant flexibility and utility of language were undoubtedly made at different times in widely different places throughout the inhabited world. And throughout this period, as in more recent times, there was doubtless communication, conquest, and the like among neighboring groups of hominids, extending in chains from one area to the others. We cannot know the details of that development, but we can be relatively sure that any "Proto-World", i.e., a protolanguage representing all the languages now spoken in the world, had its existence a long time after language had finished originating, perhaps dozens of millenia later, and that it was, at the time it existed, only one out of perhaps hundreds of languages spoken in the world at that time, all of which except this one became extinct in subsequent millenia.

My argument in favor of this hypothesis is not based on any linguistic comparisons (although many can be made, as has been shown in various writings of Morris Swadesh), but simply on the observation that the world is entirely populated nowadays by *Homo sapiens* and no other hominid. Language was undoubtedly in existence long before *Homo sapiens* started spreading himself around the world, and when he did he succeeded in wiping out, for the most part at any rate,<sup>3</sup> the representatives of all inferior human types, perhaps often with the same cruel, indiscriminate slaughter that was seen so often in the conquest of North America by Europeans. And, just as these Europeans failed to adopt any of the native North American languages, so we would hardly expect that any Cro-Magnon group would adopt the language of its Neanderthal neighbors or slaves before wiping them out.

<sup>3</sup>*Homo sapiens* probably did not wipe out all members of previous human types. Some interbreeding has to have been possible at least up to a certain point in the development of sapiens, and some remains of Neanderthal genetic material may well have survived to modern times. But it would only have been occasional individuals who had continuing offspring, no whole groups of pre-Cro-Magnon types.

The question that should be of greatest concern for language classification, then, is not whether or not a given pair of languages is related but how close or distant the relationship is. A classification based on this and related principles<sup>4</sup> would be the "probable truth" or PT classification, as opposed to the ER or "established relationship" type of classification, whose nature depends primarily upon what possibilities happen to have been worked out during the history of comparative linguistics, and which in practice has shown relatively little concern for the vital problem of different degrees of relationship. Interestingly enough, some of the classifiers of the nineteenth century (see below) were in one respect more advanced than some of the more recent ones, in that they took it for granted that all North American languages were genetically related and saw their job as one of discovering the relatively closer relationships within the over-all group.

In deference to what has been a common practice in linguistics, I shall, in this survey of work on Uto-Aztecan classification, continue to include under the heading of language classification those works that on other grounds might be regarded as concerned only with preliminaries to real classification.

## 0.2. The Uto-Aztecan Field.

There are only a few linguistic groups in North America that have been favored enough by the attentions of scholars during the last century and a half to require a historical survey. Uto-Aztecan is one of them. Yet even here many details of the interrelationships remain to be worked out. It is hoped that this survey will help in providing background for those who will continue the work in the future. In addition, it offers some information of wider interest for the history of work on North American languages in general.

## 0.3. The Families of Uto-Aztecan.

The Uto-Aztecan stock of languages is a member of the Aztec-Tanoan order<sup>5</sup> which includes, besides Uto-Aztecan, Kiotanoan (Kiowa and Tanoic), and which may include or be related to other linguistic groups of North and South America. As far as has been determined, the various languages which comprise the Uto-Aztecan stock fall into nine families, as indicated in the following outline,<sup>6</sup> although future work may indicate combinations giving a smaller number of discrete genetic subdivisions of the stock.

### A. Numic<sup>7</sup> (Plateau Shoshonean)

1. Monoish
  - Mono (Monachi), Paviotso
2. Shoshonish
  - Panamint, Shoshone
3. Yutish
  - Kawaiisu, Ute

<sup>4</sup>For further information, see Lamb, 1959.

<sup>5</sup>The terms "genus", "family", "stock", and "order", referring to genetic linguistic groups of successively higher degrees of divergence, are used according to the scheme outlined by Lamb, 1959. Names of genera are given with the suffix -ish, families with -ic, and stocks with -an.

<sup>6</sup>Groups whose membership in the branch to which they are assigned is doubtful are indicated by (?). The asterisk denotes extinct languages. Families labeled A through E are (or were) found in the United States, G through I in Mexico, and F in southern Arizona and Mexico.

<sup>7</sup>The Numic family (cf. Gatschet's "Numa" stock, section 2.5.) is named after the word for 'people, Indians' in these languages (see Lamb, 1958).

The name Paviotso has been questioned, but I found the word used among the Owens Valley Paiutes and certain Nevada Shoshones as the name for the Northern Paiutes of Nevada and the Mono Lake-Bridgeport area of California.

- B. Tubatulabalic
  - Tubatulabal
- C. Giaminic<sup>8</sup>
  - \*Giamina
- D. Luisenic<sup>9</sup> (Southern California Shoshonean)
  - 1. Serranish
    - Serrano, \*Vanyume, \*Alliklik, \*Kitanemuk
  - 2. Gabrielish
    - \*Fernandefio, \*Gabrielino, \*Nicolefio
  - 3. Luisish
    - Cahuilla, \*Juanefio, Luisefio, Cupefio
- E. Hopic
  - Hopi
- F. Pimic
  - Pima, Tepehuan
- G. Taracahitic
  - 1. Tarahumarish
    - Tarahumara
  - 2. Cahitish
    - Cahita, \*Tepahue, \*Tahue, \*Guasave, Varohio(?), \*Acaxee(?), \*Xixime(?), Ocoroni(?).
  - 3. Opatish
    - \*Opata, \*Jova, \*Concha(?)
- H. Coric
  - Cora, Huichol
- I. Aztekic
  - (Several closely related languages; classification uncertain)

The above outline attempts to give a classification of languages rather than groups of people, and so lists a single name for each language. Thus not all the names in use for various groups of Uto-Aztecan speakers have been listed, since there are several instances in which groups known by different names speak the same language. For example, although there are many names for different groups of Numic speakers, the investigations of the present writer indicate that there are no more than six languages (and possibly only five, since it is not certain that Panamint is to be considered distinct from Shoshone). Hence, if we follow the principle that a single language should have a single name, there are instances in which the name used for a group of Indians does not coincide with the name of their language. Thus, just as Americans speak English and Brazilians Portuguese, the Owens Valley Paiutes speak Mono, while the Paiutes of Mono Lake and northward speak Paviotso, and the Southern Paiutes speak Ute. The Bannocks of Fort Hall, Idaho, speak Paviotso, and the Gosiutes and Comanches speak Shoshone. Similarly, in the Pimic family, the Papagos speak Pima, and, in the Taracahitic family, the Yaquis and Mayos speak Cahita (although it is not certain that all dialects included in Cahita are mutually intelligible).

The present paper gives a brief history of the work which has led to the above classification. Attention is given mainly to the families found in the United States,

<sup>8</sup>Known only through very scanty data published by Kroeber (1907b:126-128, 1909:263-265), who expressed some suspicion about its validity in representing an actual language. Its extinction seems to have been brought about by the expansion of Yokuts rather than by the white man. I found a similar situation in the Bankalachi tribelet, where a Tubatulabal dialect was apparently being replaced by Yokuts at the time the tribelet ceased to function. Giamina seems to be intermediate between Tubatulabal and Luisenic, perhaps closer to the latter, but different enough to constitute a separate family.

<sup>9</sup>Some of the names given for this family may actually represent dialects rather than distinct languages.

details are entered into only concerning Numic. The development of the classification falls into three periods. The first, lasting up to the time of Buschmann's monumental contributions, was the period of discovery of the northern Uto-Aztecan languages and the initial attempts at classification. The second begins with Buschmann's publication of the evidence for the genetic relationship of the then-known Uto-Aztecan languages and lasts up to the time when the evidence was finally recognized for what it was actually worth. The recent period, beginning with Kroeber (1907b), has seen the application of refined methods to comparative phonology, and to the working out of relationships within the stock.

## 1. EARLY CLASSIFICATIONS

### 1.0. First Contacts.

The first contact of Uto-Aztecan speakers with white men was with the Spaniards in Mexico. Indians of the northern part of the family remained free from white influence until much later when, in 1776, the Fathers Escalante and Dominguez traveled from Santa Fe to Utah Lake, returning via the Hopi village Oraibi. As far as is known, these were the first Europeans to enter the territory of Numic speakers.

Shoshones were first mentioned by Edward Umfreville in The Present State of Hudson's Bay (1790:177). At this time they were known only by reports of Indians further east. In 1805, Lewis and Clark found Shoshones west of the Rocky Mountains, and heard from the Sahaptin of the Columbia River about the Northern Paiutes, who, however, the explorers thought belonged to the same tribe as the Shoshones. During their travels, Lewis and Clark collected copious word lists which could have been of enormous value to early Americanists, but they were never made available. It is said that President Jefferson turned the material over to Benjamin Smith Barton for arrangement and publication, but it was never published by him and could not be found after his death (Gallatin, 1836:134).

### 1.1. Gallatin, 1836.

The most important figure in American linguistics during the first half of the nineteenth century was Albert Gallatin, a lawyer, financier, and statesman who had been United States congressman, Secretary of the Treasury (under Jefferson), and bank president before undertaking the study of American languages in his retirement and laying the foundations of their classification. In 1842, an octogenarian, he became the first president of the American Ethnological Society, which he was responsible for founding. His Synopsis of the Indian Tribes of North America (1836) was the first comprehensive attempt at a classification. The languages west of the Mississippi were practically unknown at this time, and the only linguistic material available for the study of Uto-Aztecan languages of the United States was a single Shoshone word list of twenty-four items which had been compiled by Thomas Say (1822), a member of Major S. H. Long's expedition.

The eighty-one tribes for which linguistic material was available were grouped into twenty-eight families, of which one was "Shoshonees".

Some of Gallatin's remarks illustrate the views generally held in this period concerning the relationships of the American Indian languages: "The uniformity of character in the grammatical forms and structure of all the Indian Languages of North America, which have been sufficiently investigated, indicates a common origin. The numerous distinct languages, if we attend only to the vocabularies between which every trace of affinity has disappeared, attest the antiquity of the American population" (1836:142). ". . . such is the tendency of languages, amongst nations in the hunter state, rapidly to diverge from each other, that . . . a much greater diversity is found in Indian languages, well known to have sprung from a common source, than in kindred European tongues" (1836:160).



## 1.2. Latham, 1846.

A somewhat more extreme view was held by the British philologist Robert Gordon Latham, who wrote: ". . . the affinity between the languages of the New World, as determined by their vocabularies, is not less real than that inferred from the analogies of their grammatical structure" (1846:31).

This conclusion followed as much from Latham's method as from the linguistic data. His standards concerning number and kind of resemblances were not what modern linguists would consider high enough.

In spite of his views of the mutual similarity of the languages, Latham found it useful to classify them into groups of more than usual similarity. But in this he was far from conservative. Thus he found that Athabascan should be grouped with Eskimo, which was also seen to resemble Pomo and Coast Miwok.

Material was by then available from Juaneño and Gabrielino, of the Luisenic (Southern Californian) branch of Uto-Aztecan. As these languages are quite closely related, Latham found it possible to group them together with even more than the usual ease. But no attempt was made to connect the two with any other languages.

## 1.3. Hale's Data.

Horatio Hale, the philologist of the great Wilkes Exploring Expedition of 1838 to 1842, collected a large amount of material on the languages of the Pacific Coast and northwestern America. The material, published in 1846, stimulated Gallatin to attempt a new classification of the American languages. A preliminary classification is included in a letter from Gallatin to the Commissioner of Indian Affairs, written in 1846.<sup>10</sup> This letter lists thirty-seven families (nine more than the 1836 classification), with nine languages of California (including Gabrielino and Juaneño) as yet unclassified. Among the new families is "Cumanches", which he refrained from combining with "Shoshonees" despite Hale's assertion of relationship, because a vocabulary of the former was still lacking. Included in "Shoshonees" were "Snakes" (Shoshoni), "Bonnarks" (for which he had obtained no linguistic data),<sup>11</sup> and "Wihinasht" (Northern Paiute), now known through one of Hale's vocabularies.

## 1.4. Gallatin, 1848.

In the last Gallatin classification (1848), two new families (Arapaho and Kinai) were added and condensations of the preliminary attempt (1846) were made, resulting in thirty-two families for the United States and northward. The classification was made, according to Gallatin, on the basis of lexical resemblances, since in grammatical structure the languages were thought to show "striking uniformity": "All those who have investigated the subject appear to have agreed in the opinion that, however differing in their vocabularies, there is an evident similarity in the structure of all the known American languages, bespeaking a common origin" (1848:cxix).

Although he still refrained from classifying the California languages, Gallatin stated that Kij (Gabrielino) and Netela (Juaneño) were similar to each other and to Shoshone. But he was unwilling to include them in his Shoshonean family: "The resemblance is too great to be attributed to a mere casual intercourse; but it is doubtful whether the evidence which it affords will justify us in classing them together as branches of the same family" (1848:62).

In view of the fact that the dialects included in the Shoshonean group up to this

<sup>10</sup>Not published until 1853 (listed in bibliography as 1846). Powell, 1891, (who gives the date as 1853) assumed that this classification was made at a later date than Gallatin's 1848 classification. The discrepancies between the two noted by Powell (p. 17), which seem inexplicable if the 1846 classification is taken to be the later, are actually quite understandable.

<sup>11</sup>The name Bannack or Bannock has been applied both to Shoshone and to Northern Paiute groups.

time were all of the Numic branch, and that only a small amount of material was available on the Luisenic languages, Gallatin's conservatism is quite understandable.

Although data were still lacking on Comanche, he decided to include it in the family, since the relationship was "supported by testimony from so many sources" (1848:62). He noted also Hale's assertion that the "Eutaws" (also "Utahs") spoke a dialect related to Shoshone.

Schoolcraft (1853:403), commenting on the Gallatin letter of 1846, noted that a Comanche word list had by then been obtained, which "shows that leading tribe to speak a language closely cognate with the Snakes, Bonacks, and Shoshonees of the Rocky Mountains."

#### 1.5. Latham, 1853.

In a paper of 1853, Latham showed a change in the direction of conservatism. "Uta" was included in the Shoshonean family, which he called "Paduca", on the basis of new material which had been made available. But Latham failed to include Gabrielino and Juaneño. And although he noted that eight words out of the twenty-one in a Hopi word list resembled Paduca, he refrained from adding this language to the family.

In a later contribution (1856) Hopi was placed in the "Pueblo" family, which also contained Zúñi, Acoma, Jemez, Tesuque, and Taos, a collection of languages now known to belong to four different stocks (Uto-Aztecan, Zúñian, Keresan, Tanoan) and three different orders: "The Moqui [Hopi], which is not to be separated from the other Pueblo languages, has, out of twenty-one words compared, eight coinciding with the Utah."<sup>12</sup>

#### 1.6. Turner.

William W. Turner, who was given the job of classifying the valuable new material collected by Lieut. A. W. Whipple's expedition of 1853-1854, in 1856 added to the "Shoshonee" stock the newly found Numic dialects and the languages of the Luisenic family. As set up by Turner, the stock included, in addition to Shoshone and Paviotso, the following: Ute, Southern Paiute, Gabrielino, Juaneño, Luiseño, Comanche,<sup>13</sup> Chemehuevi, and Cahuilla.

The similarity between Kiowa and Shoshonean, previously noticed by Lewis and Clark and by Pike, was commented upon: "A comparison of [the Kiowa] vocabulary does, it is true, show a greater degree of resemblance [to Shoshonean] than is to be found in any other direction. This resemblance, however, is not sufficient to establish a radical affinity, but rather appears to be the consequence of long intercommunication" (Turner, 1856:80).

## 2. BUSCHMANN AND SUCCESSORS

### 2.0. The Expansion of the Stock.

At its beginning, with Gallatin, the Shoshonean stock consisted only of Shoshone. Later, other Numic dialects were included. With Turner's work, the group came to include also Luisenic. Only Hopi and Pima, of the then-known Uto-Aztecan languages spoken in the United States, were still excluded. (Tubatulabal was still unknown.) The next contribution to Uto-Aztecan linguistics, easily the most important of the nineteenth century, was the addition to the family of not only Ho-

<sup>12</sup>See Latham (1860:369). (The original publication is unavailable.)

<sup>13</sup>Whipple's Comanche word list was obtained "from the dictation of an intelligent Cherokee, named Jesse Chisholm, a man well acquainted with the neighboring tribes and their languages. . . ." (Turner, 1856:76). He is better known as the man for whom the Chisholm Trail was named.

pi and Pima, but of all the other known Uto-Aztec languages with the exception of Aztec itself.

### 2.1. Buschmann.

Buschmann's four works on Uto-Aztec (1856, 1857, 1859, 1864) were parts of a single magnum opus of well over a thousand pages. The most important of the volumes (1859), containing 819 pages, established his Sonoran stock, and in addition treated all the known languages of western North America.

Buschmann was particularly interested in demonstrating by linguistic evidence that the Aztecs came from the North. He sought evidence for this in numerous northern languages, Uto-Aztec and others. This purpose apparently became such an obsession that it prevented him from drawing the obvious conclusion from the fact that all the languages of his larger Sonoran family contained words cognate to Aztec words.

The first part of his work (1859:1-147) treats northern Mexico and gives evidence for the relationship of the "vier sonorischen Hauptsprachen": Tarahumara (Taracahitic), Cora (Coric), Cahita (Taracahitic), and Tepehuan (Pimic), languages that, although geographically close to each other, belong to four separate branches of Uto-Aztec. He found that all of these languages, particularly Cora, resembled Aztec, but was unwilling to consider them genetically related to it.

The Sonoran words found to resemble Aztec were not the type one would expect to be borrowed: ". . . es sind grossentheils Substantiva und Verba der einfachsten und wichtigsten menschlichen Gegenstände und Handlungen, die ersten und nächsten Begriffe des Lebens" (1859:7).

But on the other hand: "Die Übereinstimmung der Nordwest-Sprachen mit dem nahuatl hat . . . ihre Gräzen; man mag noch so kühn weiter zu schreiten versuchen: man sieht bald, dass man sich zurückhalten und entsagen muss . . ." (1859:7). "Wohl selten oder nie ist ein ähnliches Verhältniss zwischen zwei Sprachmassen, wie es hier vorliegt, in unsre Beobachtung gekommen; wir blicken es an staunend und rathlos" (1859:8). "Wenn Nase, Zahn und so vieles ähnlich aztekisch an ihnen sind, warum ist es nicht Kopf? Wenn es Hand ist, warum ist es nicht Fuss? Wenn drei Elemente aztekische Wörter haben, warum auch nicht Erde? Wenn Mond, warum nicht Sonne?" (1859:117).

A similar situation was found concerning grammatical structure. The four northern languages and Aztec turned out to have part of their structure in common, but in most respects each language differed from the others in morphology. This was true even among the four Sonoran languages. Nevertheless, Buschmann considered them genetically related to each other, but not to Aztec. He concluded that an unusual thing had happened: basic features of morphological structure had been borrowed.

Buschmann's theory was that at an early date the Aztecs were in close contact with Sonorans for a long time, during which the Aztec language had a strong influence on the Sonoran languages: "Eine grosse Sprachvermischung ist es mir gelungen in den bisher meist so selbstständig, so unvermischt auftretenden amerikanischen Idiomen aufzudecken; und darüber hinaus eine Spracherscheinung von erstaunender Abnormität und Neuheit" (1859:10).

The lexical resemblances found by Buschmann amounted to 176 Aztec words with Sonoran cognates, plus 70 examples which were considered doubtful. Morphological resemblances were found in substantival endings, numbers, pronouns (personal, demonstrative, interrogative, indefinite), verbal inflections, postpositions, conjunctions, and derivations. All this was considered grammatical borrowing.

The second part of his main volume (1859:149-819) contains further evidence of the northern origin of the Aztecs, and evidence for the inclusion of additional languages in the Sonoran stock. The stock is divided into two branches, of which

one includes the four "sonorischen Hauptsprachen", the other the Numic and Luisenian languages and Hopi.

The evidence presented for the genetic unity of this stock may be regarded as ample when considered in relation to the scanty, poorly-recorded data available on the individual languages. Detailed statements of resemblances to other Sonoran languages were given for each language for which Buschmann had sufficient information. He noted not only superficial lexical resemblances, but also morphological ones, in prefixes, suffixes, compounding, and so forth. It was unfortunate for the future of Uto-Aztecan studies, however, that Buschmann's evidence was scattered throughout the book, interspersed with descriptions of unrelated languages, and with such things as ethnology and bibliography. In addition, the fact that others working in the field had little or no linguistic training, and that the book was written in cumbersome style, in German, proved a deterrent to the ready acceptance of his findings. From the literature of the next generation, it appears clear that Buschmann's work was consulted only cursorily by most investigators. The reason for the rejection of the relationship by Powell and others is not that the evidence was found insufficient, but that they did not have enough patience to dig it out of the wordy tome. That their examination of Buschmann's material was superficial is made clear by the fact that they misunderstood even his conclusion, although it was repeated at various points throughout the treatise. Powell, for example, thought that Buschmann had asserted that Shoshonean was related to Aztec (see below). Even Kroeber made an error in this connection. In commenting on Powell's rejection of the relationship, he overlooked the fact that Buschmann did state that he considered all the languages except Aztec to constitute a linguistic unity. Kroeber wrote:

As far as the effect of his work on the world is concerned, current opinion is right in attributing to Buschmann the establishment of the relationship of Nahuatl, Sonoran, Pima, and Shoshonean; but so far as his own position is concerned, opinion is in error. Buschmann's views as to this relationship were not opposed to Powell's, but the same (1907b:156 n.).

Here Kroeber is in error, since Powell rejected the relationship of Shoshonean with any languages of Mexico, including Pimic. Buschmann's views were quite different: "Ich habe durch meine Beobachtungen und Bemühungen zwanzig bis 21 Glieder des von mir gegründeten sonorischen Sprachstamms zusammengebracht. Ich Zähle nur die, von denen wir Sprachstoff haben und aus ihm die Überzeugung schöpfen" (1859:656).

There follows a list of the languages, classified geographically:

1. ". . . die 4 sonorischen Hauptsprachen:  
Tarahumara, Tepeguana, Cora, Cahita"
2. Four languages known only by texts of the Lord's Prayer:  
"Tubar [Cahitish], Hiaqui [Cahitish], Eudeve [Opatish], Opata"
3. Pima
4. (Shoshonean)
  - a. "Kechi, Netela, Cahuillo, Chemehuevi, Kizh, S. Fernando"
  - b. "Comanche, Moqui, Yutah, Piede oder Pah-Yutah"
  - c. "Schoschonisich und Wihinascht"

Although Buschmann did not include Aztec in the group, he presented sufficient evidence to show that it belonged. The Uto-Aztecan stock was as well established a century ago as Hokan is today. The other three volumes of his study treat (1) Gabriellino and Juanefio (1856), (2) sound-correspondences among the Mexican members of the stock (including Aztec) (1857), and (3) the grammar of the Sonoran "Hauptsprachen" (1864).

## 2.2. Latham, 1860.

In the addenda and corrigenda to a collection of his essays (1860), Latham referred to the work of Turner and Buschmann, although he remained largely uninfluenced by it. He quoted the Kiowa vocabulary from Turner, and Turner's conclusion (see section 1.6). Then followed his own opinion: "For my own part I look upon the Kioway as Paduca—the value of the class being raised" (1860:390).

Nevertheless, he failed to include the southern California languages and Hopi, despite the weight of the evidence presented by Buschmann. Of the Pueblo languages, he had this to say: "Upon the whole, the Zuni seems to be the most aberrant of the group—saving the Moqui, which has decided Paduca affinities" (1860:399).

Latham's views remained largely unchanged in his next contribution, which reviewed all the known languages of the world. He apparently preferred not to take a definite stand on Shoshonean, despite the work of Turner and Buschmann: "The affinity between the Netela [Juanefño] and Kij [Gabrielino] with the Shoshoni, suggested by Hale and Gallatin, has been enlarged on by Buschmann. The Cahuillo has affinities on each side. It is not in situ. At the same time, it is only by raising the value of the class that all may be made Paduca" (1862:443 n.), "The Moqui [Hopi], a Pueblo language, has decided Paduca affinities" (1862:519).

Latham still felt that all the Indian languages, of North and South America, had a "fundamental unity": "The ordinal value . . . of the whole American class requires a brief notice. I doubt whether, on the whole, it is higher than that of the so-called Indo-European . . ." (1862:52).

## 2.3. Pimentel.

Francisco Pimentel, in a three-volume work (1874-1875), supplied much valuable information on the languages of Mexico and included many lexical and grammatical comparisons of various Mexican groups. Having more material than was available to Buschmann, he added to the evidence for the genetic relationship of the Uto-Aztecan languages. Unfortunately, the conclusions he drew did not follow from the material presented. He set up as three separate groups a Familia Mexicana, comprised of Aztecic dialects; a Familia Sonorense or Opata-Pima, which included the Taracahitic, Coric, and Pimic languages, plus Yuman (!); and a Familia Comanche-Shoshone, which comprised the Numic, Luisenic, and Hopic languages, plus Kiowa. These three families were put together in a larger aggregation, the Grupo Mexicano-Opata, but the value of this grouping was negative since the same group included also such diverse "families" as Coahuilteca, Seri, Keres-Zuni (including Tanoan), and Mutsun.<sup>14</sup>

## 2.4. Bancroft.

In his five-volume work on the native races of the Pacific states, H. H. Bancroft reported:

The researches of the few philologists who have given American languages their study have brought to light the following facts. First, that a relationship exists among all the tongues of the northern and southern continents; and that while certain characteristics are found in common throughout all the languages of America, these languages are as a whole sufficiently peculiar to be distinguishable from the speech of all the other races of the world. . . . nowhere on the globe are uniformities of speech carried over vast areas and through innumerable and diversified races with such persistency, as in America; nowhere are tongues so dissimilar and yet so alike as here (1875:553).

<sup>14</sup>The classificatory table at the end of Volume I is supplied with family trees, complete with bark, leaves, and a bird perched on the top branch of each.

Nevertheless, Bancroft felt that this did not necessarily indicate a common origin, since it could as easily be explained on the basis of diffusion.

In his linguistic classification, Bancroft set up a family called "Shoshones", which included the languages of the Luisenic, Numic, and Hopic branches, and Washo (!). However, of the southern California languages and Hopi, he said:

. . . do not properly belong to the Shoshone family, but on account of certain faint traces of Aztec, found alike in them and in all Shoshone idioms, I cannot do better than to speak of them in this connection. As regards this Aztec element, I do not mean to say that these languages are related to the Aztec language, in the same sense that other languages are spoken of as being related to each other . . . How this Aztec word-material crept into the languages of the Shoshones, whether by inter-communication, or Aztec colonization, we do not know . . . (1875:660-661).

Bancroft was apparently trying to agree with both Buschmann and Latham at the same time. Unfortunately, he followed Latham too far, and clearly he did not understand Buschmann:

The result of Mr. Buschmann's researches was the discovery of Aztec traces in certain parts, but nowhere did he find the Aztec language as a base.

More particularly were these Aztec words and word-analogies perceptible in four certain languages of northwestern Mexico; in the Cora . . . Tepehuana . . . Tarahumara . . . Cahita . . . Neither of these languages are related to the others, yet in all of them is a sprinkling of Aztec word-material (1875:666).

. . . Of these four languages Buschmann makes what he calls his Sonora family; which term is somewhat a misnomer as applied to languages not related . . . (1875:668).

. . . We now come to the four Aztec-Sonora languages before mentioned, the Cora, the Cahita, the Tepehuana, and the Tarahumara, and their neighbors. I have already said that notwithstanding the Aztec element contained in them, they are in no wise related to each other (1875:706).<sup>15</sup>

This statement may be compared with Buschmann's: "Ich habe entdeckt und behauptet, dass die genannten vier Sprachen bestimmt unter einander verwandt sind; und ich habe in Folge dieser Verwandtschaft aus ihnen einen neuen, noch unbekanntem, Sprachstamm gebildet . . ." (1864:370).

## 2.5. Gatschet.

The valuable new linguistic material collected by the Wheeler expedition (United States Geographical Surveys West of the 100th Meridian, in charge of First Lieut. George M. Wheeler) was turned over to A. S. Gatschet for classification and analysis. Of the publications which followed (1876, 1877, 1879a), the third was the most complete.

In the first classification (1876), Gatschet's ideas were fundamentally those of Buschmann, but he seems to have accepted some of Buschmann's ideas with reservations. He refrained from including Hopi in the Shoshonean family, listing it separately, but with the remark that it was apparently ("anscheinend") Shoshonean. Kiowa, however, was included in the group. Although Shoshonean and Opata-Tarahumara-Pima were listed as separate families, he said of the former that it was, according to Buschmann's demonstration, a "nördlicher Zweig" of the latter. Yuman was included in the Opata-Tarahumara-Pima family. No mention was made of a possible relationship of Shoshonean and Opata-Tarahumara-Pima to the "Mexicanische Gruppe" (Aztekic).

Gatschet's opinions were somewhat different in the classification of 1877. Both

<sup>15</sup>Note that Buschmann never used the term "Aztec-Sonora".

Hopi and Kiowa were left out of the Shoshonean family but Washo was included, as a Paiute dialect, probably because of its inclusion by Bancroft, to whose work Gatschet had referred. On the Hopi and Kiowa question, and the connection with Mexican languages, Gatschet said:

Various Shóshoni dialects have largely influenced the stock of words of a few idioms, which otherwise are foreign to this family. We mean the Pueblo idioms of New Mexico, the Moqui of Arizona, and the Kiowa . . . There exists a deep-seated connection between the Shóshoni stock and several languages of Northern Mexico in the radicals, as well as in the grammatical inflections, which has been pointed out and proved in many erudite treatises by Professor T. [sic] C. E. Buschmann . . . (1877:155).

A considerable improvement in Gatschet's ideas is seen in his appendix (1879a) to the report on the Wheeler survey. The appendix presents the forty word lists obtained by that survey, including eighteen for Shoshonean dialects, with a classification of the languages represented into seven stocks. Part of the new material is the first published word list of Mono.

The Shoshonean stock (which was renamed "Numa", after the word for 'people' in these languages) was now definitely stated to be related to Aztec and the Uto-Aztecan languages of Northern Mexico:

Numerous discrepancies between the Numa tongues as the northern, and the Nahuatl as the southern portion of the stock tend to obscure their common origin, so that their affinity becomes apparent only after a close investigation of the subject. The coincidence of a number of radicals which cannot be simply borrowed, joined to that of grammatical affixes or formative syllables and to the remarkably vocalic character of all dialects in both sections, removes the doubts concerning a common parentage . . . (1879a:409).

Hopi was now included in the classification of the Numa family and Washo and Kiowa were left out. Although an attempt was made to classify the family into subdivisions, it was unsuccessful.

## 2.6. Keane.

Meanwhile, A. H. Keane had made an attempt to classify all the languages of North and South America. Keane's views on the structure of the languages were like those of many of his predecessors: "We here find, on the one hand, apparent unity of race, with the most astounding diversity of speech; on the other, this very diversity in the substance of speech combined with absolute identity in its form or structure" (1878:433).

He expressed the commonly held idea of the time that the polysynthetic character of all the languages was responsible for their great lexical diversity. He felt also (1878:455) that "Grimm's law of lautverschiebung" did not apply to "the interchange of letters" as it occurs in the American languages. On polysynthesis and its affect on linguistic evolution, he wrote:

Polysynthesis, in a word, is, both outwardly and inwardly, radically distinct from all other forms of speech. It constitutes an order apart, which like the agglutinating, has grown out of the isolating, but which unlike it, seems incapable of developing into the higher or inflectional state. One reason of this undoubtedly is, because the community itself is not progressive, but stationary. Hence its speech, after developing from the monosyllabic stage, as all speech must necessarily have done, revolves, so to say, in a vicious circle of polysynthesis, apparently unable to pass on to the more perfect inflecting state, as the speech of the progressive Aryans has done (1878:458).

The classification given was of both race and language, at the same time. In-

cluded in the "Shoshone or Snake" family were the languages of the Numic, Luisenic, and Hopic branches of Uto-Aztecan. He found (1878:477) that Kiowa "ought probably to be included . . . All these languages show certain Aztec affinities, both lexical and structural, affinities which Buschmann has traced as far north as the Snake Valley. But they are not sufficiently extensive to establish anything approaching to real relationship. Such resemblances as exist . . . have been much exaggerated, and have served as the unstable basis for some very wild theories."

In direct contradiction to the work of Turner, Keane wrote: "The only affinity really ascertained to exist between [Luisenic] and the other Shoshones, is through the Aztec element common to all, as well as to Buschmann's 'Aztec-Sonora' tongues treated farther on" (1878:477).<sup>15</sup>

## 2.7. Powell.

One of the most interesting features of the Powell classification (1891) is the extent to which it has been overrated. One of its frequently praised characteristics is that none of his groups has ever been taken apart. To praise it for this feat is like praising the University of Chicago for not having lost any football games in 1960 (they had no team in 1960). There really could hardly be a possibility for any group of the Powell type to be taken apart since, with the exception of Salish and his Piman (Pimic plus Taracahitic plus Coric), every grouping made was of languages so closely related that there could be no doubt of a recent common origin.

On the other hand, the Powell classification did have real value at its time and for several years thereafter. This value lay in its comprehensiveness and in the fact that it was based on examination of a great deal of new material not available to previous investigators nor to Powell's contemporaries. In the case of Uto-Aztecan, however, Powell's classification was not only no contribution, it was a step backward. Unfortunately Powell and his co-workers were guilty of the same misdemeanor for which he chastised others: ". . . later authors have not properly recognized the work of earlier laborers in the field" (1891:8).

In speaking of the Shoshonean stock, he said: "Buschmann . . . classes the Shoshonean languages as a northern branch of his Nahuatl or Aztec family, but the evidence presented for this connection is deemed to be insufficient" (1891:109).

This indicates that Powell did not carefully examine Buschmann's material, for although the latter's writing was cumbersome, he did make it quite clear that he did not consider Aztec genetically related to his Sonoran languages, and he continually spoke of a Sonoran family, but never of a "Nahuatl or Aztec family".

On Piman, which is listed as a separate family, Powell wrote: "According to Buschmann, Gatschet, Brinton, and others the Pima language is a northern branch of the Nahuatl, but this relationship has yet to be demonstrated" (1891:99).

Aside from the fact that Buschmann was misinterpreted, and the evidence given by him and Pimentel overlooked, it is interesting that Powell included in his Piman stock the following languages found by Whorf to be at opposite extremes of Uto-Aztecan:<sup>16</sup> Opatá (Taracahitic), Papago (Pimic), Pima, Cahita (Taracahitic), Tarahumara (Taracahitic), Tepeguana (Pimic), Cora.

In his concluding remarks, Powell stated:

. . . Buschmann has thrown the Shoshonean and Nahuatlan families into one. Now the Shoshonean languages are those best known to the author, and with some of them he has a tolerable speaking acquaintance. The evidence brought

<sup>16</sup>See footnote 19. Although Whorf's opinion about the extreme degree of divergence of Pimic may turn out not to tally with the picture that more extensive comparative work will bring, it at least seems clear that the degree of divergence found within Powell's Piman stock is greater than that between some of its members and some members of his Shoshonean stock.



forward by Buschmann and others seems to be doubtful. A part is derived from jargon words, another part from adventitious similarities, while some facts seem to give warrant to the conclusion that they should be considered as one stock, but the author prefers, under the present state of knowledge, to hold them apart and await further evidence, being inclined to the opinion that the peoples speaking these languages have borrowed some part of their vocabularies from one another (1891:140).

Thus, because his influence was so great, Powell seriously retarded the progress of Uto-Aztecan studies.

#### 2.8. Brinton.

Although Powell's classification was based on lexical resemblances,<sup>17</sup> Brinton was guided primarily by morphological features:

Wherever the material permitted it, I have ranked the grammatic structure of a language superior to its lexical elements in deciding upon relationship. In this I follow the precepts and examples of students of the Aryan and Semitic stocks; although their methods have been rejected by some who have written on American tongues. As for myself, I am abidingly convinced that the morphology of any language whatever is its most permanent and characteristic feature (1891:x).

In his classification, Brinton included all the known Uto-Aztecan languages in a single stock, to which he gave the name "Uto-Aztecan":

The relationship of these numerous bands is unquestionable, although many of them have freely adopted words from other stocks (1891:118).

. . . The establishment of the unity of this linguistic family we owe to the admirable labors of Joh. Carl Ed. Buschmann . . . In spite of deficient materials, his sharp-sighted acumen discovered the relationship of the chief tongues of the group, and later investigations have amply confirmed his conclusions (1891:119).<sup>18</sup>

The stock was divided into three branches, two of which corresponded to the two branches of Buschmann's Sonoran stock. The third was Nahuatl.

A short comparative word list was given in support of the relationship of the languages. It was much too short to offer convincing evidence, and since Powell's work was on the whole more careful than Brinton's, those who consulted only Powell and Brinton could hardly be blamed if they rejected the Uto-Aztecan stock.

#### 2.9. The Addition of Tubatulabal.

The first notice of Tubatulabal was given by C. Hart Merriam (1904) who collected (but did not publish) lexical material on this language and on Western Mono. Tubatulabal was provisionally assigned to the "Paiute stock" but was found to be very divergent.

### 3. THE TWENTIETH CENTURY

#### 3.0. Validation of the Stock.

At the turn of the century, two problems remained. The Uto-Aztecan stock was not yet fully accepted, and the relationships within it had not yet been worked

<sup>17</sup>The evidence of cognation is derived exclusively from the vocabulary. Grammatical similarities are not supposed to furnish evidence of cognation, but to be phenomena, in part, relating to the stage of culture and in part adventitious" (Powell, 1891:11).

<sup>18</sup>Again, Buschmann's conclusions were misinterpreted.

out. The first of these problems was soon dealt with by Kroeber and Sapir. The second has yet to be solved completely, despite the work of Kroeber, Mason, Whorf, Swadesh, Miller, Voegelin and Hale, and myself.

### 3.1. Kroeber, 1907.

In his "Shoshonean Dialects of California" (1907b), Kroeber published the first word lists (in some instances the only ones ever published) of Kawaiisu (Utish), Western Mono (Monoish), Tubatulabal, Kitanemuk (Serranish), Vanyume (Serranish), and Fernandeano (Gabrielinish). He also classified the dialects of the four northern branches of Uto-Aztecan. The general outline of this classification has remained unchanged to this day. In addition, he gave evidence for the validity of the Uto-Aztecan stock in an effort to dispel the doubts raised by Powell. In a supplementary paper on the southern California dialects (1909), he also included a number of morphological comparisons between various Uto-Aztecan languages.

### 3.2. Other Investigators.

The connection between Azteckic and the languages known as Sonoran was accepted by Thomas and Swanton in their classification of Middle American languages (1911).

If there were those who wanted further demonstration of the relationships among the Uto-Aztecan languages, it was provided by Sapir (1913-1919). In the first extensive application of the comparative method to a group of American languages, he worked out sound-correspondences and set up a phonemic system for Proto-Uto-Aztecan.

Mason, in his sketch on Yaqui (1923), provided additional comparative notes and suggested some modifications in Sapir's system.

### 3.3. The Status of Sonoran.

Further investigation of the northern Mexican languages, which Brinton had, on the basis of Buschmann's classification, put into a single group called Sonoran, revealed a high degree of diversity among them. A regrouping, first suggested by Mason (1917:378), was worked out by both Mason (1936, but written in 1923) and Kroeber (1934b), who reached similar conclusions. Kroeber isolated Pima-Tepehuan (Pimic), Cahita-Opata-Tarahumar (Taracahitic), Cora (Coric), and Huichol (Coric) as four separate branches of Uto-Aztecan, though the position of the last two was given as uncertain. Mason's results were essentially the same, except that he classed Cora and Huichol together. The same similarity was noted by Whorf (1935a) in a review of Kroeber's study. Mason, however, still considered that these groups, taken together, constituted a linguistic unity within Uto-Aztecan.

In his appendix to Mason's classification, Whorf (1936b) proposed the names Taracahitian, Coran, Nahuatlan, and Piman for the groups so designated in the present paper (with suffix changes and the substitution of Azteckic for Nahuatlan). He also proposed fitting Nahuatlan and the northern branches of Uto-Aztecan into the scheme between Coran and Piman,<sup>19</sup> thus completing the dissolution of the old Sonoran group.

### 3.4. Whorf.

Further advances in the comparative linguistics of Uto-Aztecan were presented in three papers by Whorf (1935b, 1936, 1937) and one by Mason (1952).

<sup>19</sup>"After . . . Nahuatlan should come in succession several of the as yet imperfectly classified groups in the United States . . . and only toward the end of the list should we place Piman, as being one of the groups most unlike the groups with which we began the classification; an opposite pole, as it were, to such languages as Tarahumar, Cahita, Cora, and Huichol." Whorf's opinion of the position of Pimic was based on limited types of evidence and is probably not completely justified.

Of particular importance for the classification of the languages was Whorf's finding that the relationships among the northern branches of Uto-Aztecan is not such that they can be considered a linguistic unity within the stock. Thus Shoshonean, like Sonoran, which had been accepted as a unit since Buschmann, began to dissolve. One might say that the dissolution became a fait accompli at this point, although in the opinions of some, Shoshonean remained a unit. Kroeber, on the basis of his own comparisons, always maintained reservations about this finding of Whorf's<sup>20</sup> in spite of the support given to it by some later workers. Among anthropologists one still continually hears talk of Shoshonean as a unit, not because of linguistic evidence to support this position, but simply because of long-standing tradition.

### 3.5. Mason.

In his paper on "The Native Languages of Middle America" (1940), Mason provided another classification of that part of Uto-Aztecan found in Mexico. This classification differs from the previous one (Whorf, 1936b) only in that Coran and Nahuatlan were combined in a single branch named Aztecoidan. The classification at the beginning of this paper is based largely on those of Mason for the southern portion of the stock and Kroeber for the northern, but I have departed from Mason in maintaining Coric and Aztecic as separate branches, on the basis of lexicostatistic calculations.

### 3.6. Lexicostatistics.

Lexicostatistic studies for Uto-Aztecan have been made by Swadesh (1955) and Hale (1958). On the whole, the findings are not substantially different, in view of the margin of error that must be allowed for any lexicostatistic figure. One important discrepancy is in the figure for Tubatulabal-Luisenic. Hale's figure for Tubatulabal-Cahuilla was twenty-two centuries, whereas Swadesh's figure for Tubatulabal-Luiseño was forty centuries. A later count by Swadesh after additional Tubatulabal material became available to him yielded a figure of thirty-two centuries.<sup>21</sup> While this is more in line with Hale, there is still too much discrepancy. To me, considering what has been learned of the relationship between these two groups from other types of evidence, Hale's figure seems too low, as do some of the other figures obtained by him for Cahuilla.

In general, the results of both Swadesh and Hale give support to the classification presented in this paper. Somewhat surprisingly, however, Hale concludes that Uto-Aztecan consists of the same three branches Brinton set up in his 1891 classification on the basis of Buschmann's work. The relationship between this conclusion and Hale's lexicostatistic figures is not clear. It is possible that Hale was unduly influenced by long-standing tradition and was reluctant to accept the picture of a chain relationship in place of a family tree.

The lexicostatistic results give figures around three millenia between families of Uto-Aztecan that are geographically close to one another and higher figures, ranging up to four and five millenia, for those farther apart. All such figures are to be interpreted as minimum centuries, meaning that the actual time could be greater and should be expected to be greater if conditions at the time of the split were such that neighboring groups remained in contact after the divergence began. Swadesh's highest figure within Uto-Aztecan is forty-seven centuries for Mono and Aztec. Hale's highest figure, for Shoshone and Mecayapan, is fifty-two centuries. In both instances the figures are between Numic and Aztecic, geographically the farthest apart of any two families in the stock.

<sup>20</sup>Personal communication.

<sup>21</sup>Personal communication. The revised figure appears in a diagram showing Uto-Aztecan relationships in Swadesh (1960:103).

### 3.7. The Numic Family.

Recently, new light has been shed on the northern part of Uto-Aztecan. I have helped clarify the situation existing within Numic (1958), primarily on the basis of material collected during dialect surveys made possible by the Survey of California Indian Languages of the Department of Linguistics, University of California, Berkeley. My findings confirmed Kroeber's treatment of Numic as a linguistic unity (in spite of Whorf's assertions to the contrary) as well as his division of it into three branches. Following a century of confusion brought about by the multiplicity of names of different tribal groups, I also tried to clarify the linguistic situation within the three genera, each of which appears to consist of two languages. In addition, I supported the view that Shoshonean is not a linguistic unity within Uto-Aztecan, although without furnishing any new evidence. Such evidence is now presented, however, by Miller's paper in the present volume. Miller has also provided some valuable comparative data relating to the Luiseñic family (for which he proposed the name Takic) in his review (1961) of the Kroeber-Grace-Sparkman Luiseño grammar.<sup>22</sup>

## 4. LARGER GROUPINGS

### 4.0. Uto-Aztecan and Kiotanoan.

A number of attempts have been made to set up larger linguistic groupings containing Uto-Aztecan. So far the success of such efforts has been limited, largely because there are so many possibilities. Also, of course, since the relationships involved at this level are more distant, the evidence is neither as clear nor as copious as with intrastock relationships. In addition, it must be remembered that for real success in these efforts, it must be shown that Uto-Aztecan is more closely related to another stock than either is to remaining stocks being excluded from the larger grouping.

At any rate, the efforts have resulted in a generally accepted grouping of Uto-Aztecan with Kiotanoan, and even though it is not certain that Kiotanoan is the closest relative of Uto-Aztecan, it is highly probable that no other stock is significantly closer.

### 4.1. Harrington.

The vexing question of the affiliations of Kiowa, which had been of concern to some of the nineteenth-century investigators (see above), was taken up again by J. P. Harrington, who published a list of sixty-seven lexical resemblances between Kiowa and Tanoan (1910) and several years later gave a number of probable Tewa cognates of Kiowa forms in his Kiowa vocabulary (1928). Many of the forms compared by Harrington show strong resemblance also to Uto-Aztecan.

### 4.2. Sapir.

In his "Bird's-eye View of American Languages" (1921c), Sapir set up as one of his superstocks "Aztec-Tanoan", which was composed of Uto-Aztecan and Tanoan-Kiowa. Zuni was added, with a query, in the famous Encyclopedia Britannica classification (1929b), possibly more from a desire not to leave it isolated than from evidence for a relationship.

### 4.3. Whorf and Trager.

In an excellent illustration of the best method for establishing distant rela-

<sup>22</sup>After the submission of this paper for publication, an extremely significant contribution to Uto-Aztecan studies appeared which is deserving of much more attention than this brief note. See C. F. and F. M. Voegelin and Kenneth L. Hale, Typological and Comparative Grammar of Uto-Aztecan: I (Phonology), Indiana University Publications in Anthropology and Linguistics, Memoir 17 of IJAL (1962).

tionships, Whorf and Trager (1937) compared Proto-Uto-Aztecan and Proto-Tanoic to reconstruct a provisional phonemic system for Proto-Azteco-Tanoan. Unfortunately, the deficiency of descriptive data for Tanoan languages made it necessary to base the Proto-Tanoan system mainly upon only one branch (Tewa) of Tanoan, but despite this handicap the authors were able to put forth a very convincing case. Sixty-seven etymologies were given, and an additional thirty-five reconstructed forms were listed without the supporting etymologies. The authors reported that they had thirty-five more reconstructions, which were not given, and that of the total of 140, only ten were considered doubtful. Whorf and Trager also expressed the opinion that Kiowa is related to Uto-Aztecan and Tanoan, but at a deeper level.

#### 4.4. Trager, Trager and Miller.

The matter was dealt with again by Trager a few years later (1951) in a paper which attempted to correlate some conjectures about southwestern linguistic prehistory with the archeology of the area. Although this attempt was unsuccessful, since the linguistic timetable was on too small a scale, Trager asserted here that Kiowa is closer to Tanoan than either is to Uto-Aztecan. (Unfortunately, for no apparent reason, he also hypothesized that Kiotanoan is closer to Zunian than to Uto-Aztecan. This possibility was later rejected by Trager and Trager, 1959.) Although no linguistic evidence was presented in the article, it is apparent that the conclusion concerning the relationship of Kiowa and Tanoan was based on an examination of more linguistic material than was available to Whorf and Trager earlier, including Kiowa data which had been collected by Edith C. Trager.

The first published evidence dealing with Kiowa-Tanoan affiliations since Harrington's work was provided recently by Miller (1959), whose paper stimulated Trager and Trager (1959) to furnish still more evidence. Miller compared Kiowa forms with Azteco-Tanoan reconstructions of Whorf and Trager (1937) and obtained very gratifying results. Some of the Whorf and Trager reconstructions had been discarded by Miller as doubtful, leaving less than one hundred available for the comparisons, out of which he found twenty-eight showing a resemblance to Kiowa. He also noted some sound-correspondences.

The Tragers added a good deal of evidence in the form of additional etymologies and sound-correspondences. (They also noted that the examination of additional Zuni material makes the possibility of a connection with Zuni seem doubtful.) The evidence put forth suggests that the relationship between Kiowa and Tanoan is not too distant. One is therefore led to suspect that Swadesh's lexicostatistic figure of fifty-six minimum centuries for Kiotanoan<sup>23</sup> may be too high. This apparent conflict is no cause for alarm, since it is well known that lexicostatistical calculations are subject to error, particularly when applied in situations in which the comparative phonology and grammar have not been worked out.

#### 4.5. The Macro-Penutian Hypothesis.

A considerably more inclusive grouping than Aztec-Tanoan was hypothesized by Whorf, who wrote: "[The] resemblances [of Uto-Aztecan] to Penutian on the one hand and to Mayan on the other, and of Mayan to Penutian, are to my mind so striking and so deep-seated as to require grouping them all into one large family, which would also include Kiowa and its relatives and Totonac of Eastern Mexico" (1935b:608).

Trager has reported that: "Whorf established, to the satisfaction of those who

<sup>23</sup>See foldout in Swadesh (1960a:102 and 1960b:125).

Since writing this paper I have learned from Swadesh that the figure apparently resulted from a clerical error and that the lexicostatistic count actually results in a figure of thirty-four minimum centuries (for Kiowa-Jemez).

saw his material, that the grouping of Penutian, Sahaptian, Azteco-Tanoan, Zuffi, Kiowa, probably Mayan and Totonac, and possibly Tunican, as stocks constituting a phylum which he called Macro-Penutian, was at least as good as the Algonkian-Mosan (Algonkian-Wakashan) or Na-Déné groupings of Sapir" (1945:188).

Even if the evidence for these connections is indeed convincing, it does not justify our setting up "Macro-Penutian" as a linguistic group, in view of the various other possibilities regarding relationships of some of these languages. What is needed, as always, is evidence of the degrees of distance of the relationships concerned.

#### 4.6. Swadesh.

More recently, Swadesh has been proposing even more elaborate schemes, including connections of Uto-Aztecan to other groups in complex chains. His findings (1960b) indicate that Uto-Aztecan is not significantly closer to Kiotanoan than it is to Chibchan, Cuitlateco, and Lenca. Lenca, in turn, he finds not significantly closer to Uto-Aztecan than to Xinca, Mayan, and Manguean, of which the last two connect to still other links. At present, these findings should be regarded as little more than suggestive, since they are based primarily upon only the limited evidence furnished by comparisons of hundred-item diagnostic word lists.