Some Mysteries in the Reconstruction of Proto-Yuman*

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Problems of reconstruction are not limited to large families like Hokan or Indo-European, but also abound in small families of languages whose relationship leaves no doubt. This is forcibly brought home to me every time I work on the compilation of the Comparative Dictionary of the Yuman Languages,[1] a collaborative project among Yumanists which uses a computerized lexical database of all Yuman languages. Although the regular recurring sound correspondences and the reconstructed phonological system of Proto-Yuman are well-known and non-controversial based as they are on obvious cognates, the application of these findings to a much broader lexical database reveals difficulties which are worth discussing as they are, I believe, not unique to Yuman languages,[2] and therefore raise issues of broader methodological import.

The Proto-Yuman consonant inventory is:
*p *t *č *k^y *k *k^w *q *q^w *ʔ *s *ṣ *x *x^w *m *n *n^y *l *l^y *r *w *y.

Other consonants found in individual Yuman languages are:
v ṇ ṭ θ ɖ ɬ $ɬ^y$ š h h^w ṛ.

Proto-Yuman had three basic vowels: *i *a *u, each with a long counterpart. Other vowels occurring in Yuman languages are e and o (both short and long), and ə.

Sound changes affecting consonants are due to unconditioned sound changes, mergers, or position within or outside of the root (Langdon 1975). Vowel contrasts beyond the three Proto-Yuman vowels are due to raising and lowering in specific consonantal environments, or to coalescence of diphthongs; ə is either epenthetic or a reduced unstressed full vowel. (For a list of regular sound correspondences, see Langdon and Munro 1980,[3] and for the history of the Yuman vowel systems, see Langdon 1976).

Typical Proto-Yuman word structure centers on a root, most commonly of the shape *CVC, where the initial *C can be any consonant, *V can be any vowel, short or long, and the final *C can be any consonant except the labialized *k^w, *x^w, *q^w, the palatalized *k^y, and *ʔ. *u(:) does not occur after labialized consonants, and *i(:) is rare after *k^y and *l^y. Roots shorter than the canonical *CVC are attested but are not as frequent. The root is also the stressed syllable of the word. Full words are derived from roots by prefixation, suffixation, length ablaut of vowels, consonantal ablaut in sound symbolic alternations, some noun incorporation, and reduplication. A fair number of reconstructions, small compared to the full lexicon, are longer than a canonical root and cannot be further analyzed. They seem to point to an older layer of lexical formations. Prefixes and suffixes often do not match across languages although the languages are quite closely related, making reconstruction of full words difficult.

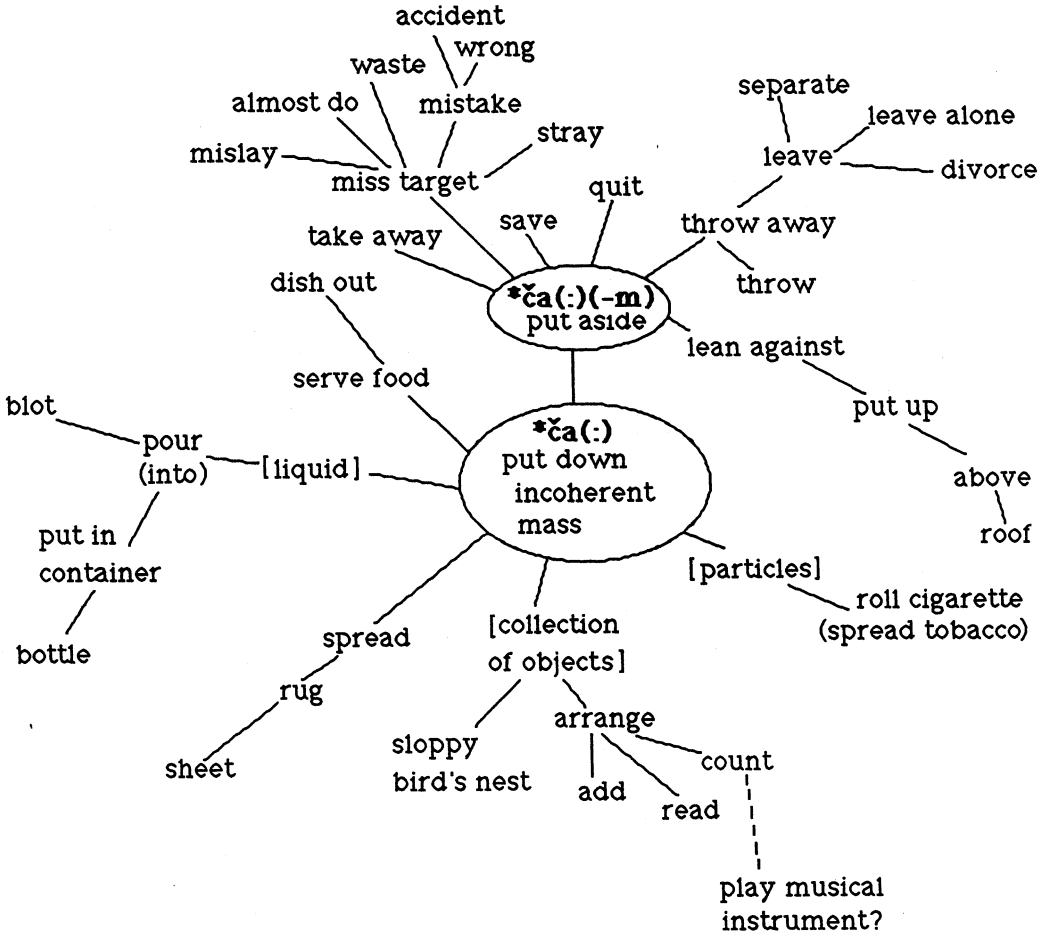
Vowel length, which is certainly distinctive in Proto-Yuman, cannot be reconstructed as often or as unambiguously as one would expect in a language

with only three basic vowels. The problem has to do with the fact that vowel length serves a number of grammatical functions among which are various notions of plurality and other derivation (Langdon 1989). In trying to ascertain which roots must be reconstructed with length, it is often difficult to determine whether the presence of length in individual languages is due to derivation or to an original long vowel. Criteria for reconstructing length have therefore not been fully worked out.

Homophony versus polysemy

The problem of homophony versus polysemy which has been discussed at length by Yumanists with respect to grammatical morphemes (Gorbet 1979, Kendall 1975, Munro 1981, Yamamoto 1976), also pervades the lexicon. Given the shortness of the canonical root and the limitations of the phonological inventory, one would predict that homophonous roots would be common, and, while some do indeed exist, they turn out to be not that numerous. This is due to the fact that what appear at first to be homophonous roots with contrasting meanings, upon closer examination turn out to be related in complex semantic networks where the division into several roots becomes quite arbitrary. An example is given in the figure below (taken from Langdon and Hinton 1989:37) which shows the various extensions in meaning of a root *ča(:) and its derived form *ča(:)-m, where the suffix *-m means 'away from the point of reference'.

This reconstruction is also an example of the difficulty discussed above of deciding whether a root should be reconstructed with a long vowel or not, which is indicated in the reconstruction formula by the length mark in parentheses. It also illustrates the problems created by the English translations provided by the various investigators working on these languages and the very different semantic organization of the Yuman lexicon from that of English. Without the phonological commonality of the reconstructed root, there would be no convincing way of demonstrating that such disparate glosses as 'pour, divorce, count' etc share any semantic components at all. The coherence of the semantic network exhibited here would not have been noticed if the computer programs designed to group together all reflexes of a single phonological shape had not forcibly revealed the problem. This is one of the benefits of the total literal-mindedness of computer operations. (See Johnson 1985 for a description of the architecture of the database and the computerized procedures used in this project.)



One possible representation of the semantic extensions of *ča(:)- "put down incoherent mass", and *ča(:)(-m) "put aside".

Sound Symbolism

More troublesome, though actually quite common, are sets of correspondences which enter into sound symbolic alternations, but do not regularly match across languages (Aoki 1994:20, Oswalt 1971:190). If each attested combination of reflexes across the various languages were to be assigned a distinct reconstruction, the sound system of Proto-Yuman would defy typological characterization as it would contain a large number of laterals and resonants (possibly exceeding the already fairly large number of stops and clustering mostly in the coronal area!). Consonantal sound symbolism is known to be very productive in a large number of American Indian languages (see e.g. Nichols 1971) and often involves, as in Yuman languages, alternations, not only among resonants but also fricatives, although almost all sound types can enter into such a relationship to some degree. In Yuman languages, the process is not totally productive synchronically, but comparative evidence indicates that it must be reconstructed for Proto-Yuman, where the most common sounds involved are *n *n^{y} *r *l *l^{y}, while individual languages also show that such segments as n̥ θ ɬ ɬ^{y} s̥ x̌, and even p and v can occur. Semantically the distinctions denote various degrees of size and intensity. Sound symbolism can affect both nouns and verbs.

The facts will be illustrated by the case of a particularly productive root (or rather set of roots) with a plausible reconstruction consisting of an initial *x^{w} followed by the vowel *a and ending in alternating consonants which will be labeled *R to suggest the preponderance of cognates with *r. The meanings of the various reflexes center on the description of activities characterized by persistent, abrasive motions affecting a surface. Consider the data in table 1 below showing possible reconstructions followed by their most common meanings in each of the languages in which they are attested. Glosses followed by a question mark do not fit as well semantically, but are included for further analysis.

Table 1. The root *x^{w}aR

*x^{w}ar
IM[4] rub, scrape, scrub, scour, massage, chew, shave, stir, mix, beat
IB sharpen, scrub, scrape, chafe, be scratchy, hoe
TJ file one's nails, shave
CO laughter, calf of leg?
YU laugh, large green grasshopper
MO scrape out, noisy cricket
HA scrape, scratch
HU make small holes in something
WA dig, scrape out
YA hollow out, scrape out
YS hollow out, shave
PM striped, scour, hail, make lining?

*x^wa:r
IM be worn (from scraping), erode, rake, scrape
TJ nailfile, clear away (weeds)
YU leg from knee down?
WA whittle
PM scratch

*x^wal
IM dig, chafe, pull something out real quick
IB dig
TJ dig, scratch, brush across something real fast
CO prune (tree limbs)
MO clean with a scraping, circular motion
HA dig, plant, sow, digging stick
YA dig out, plant, well(n), etc.
YT well(n)
YS dig, plant, well(n), sow
PM dig, scratch, digging stick
PS hole, well(n)
KI strike a match, dig out, rake, scratch, wave hello?, flap ears?, capture?

*x^wal^y
CO, YU, MA, MO dig

*x^wan
IM, IB, TJ, CO, PM, KI scratch
PM rub thorns off
KI strike a match

*x^wan^y
YU clear one's throat
MA scratch
MO scrape, shave, rub

*x^was
IM, IB, TJ wash
CO whip
HA chatter
HU be noisy
WA buzz, hum
KI gizzard

*x^wat
KI brush, stroke

*x^way
IB, HA, HU, YA, YS, PM, HU, YA, PS to smoke (ritual)

CO cavity, dip
MO talk baby talk, hug
CO, MO, MA, PM, KI whisper

The sets above, all with the vowel *a or *a:, solidly point to actions (or results of actions) involving friction of various degrees of intensity, the differences being presumably due to the differences in the final consonant. This is obviously too simplistic an analysis since the same meanings appear with several of the alternating consonants; for example, *x^{w}ar, *x^{w}al, and *x^{w}an^{y} can all mean 'scrape', *x^{w}ar and *x^{w}al 'chafe', *x^{w}ar, *x^{w}al, *x^{w}an, *x^{w}an^{y} 'scratch', *x^{w}ar and *x^{w}an^{y} 'shave', *x^{w}ar, *x^{w}al, and *x^{w}al^{y} 'dig', and this is only listing the glosses which are identical in the data; including near synonyms would of course increase the list. Note, however, that *x^{w}as, *x^{w}at, and *x^{w}ay seem somewhat more semantically specialized although a good case can be made for their inclusion in the set. These are also consonants which are more rarely involved in sound symbolic alternations.

Consider now Table 2 which lists roots which seem to be semantic extensions of *x^{w}aR and show, in addition to variations in the last consonant, variations in the vowel and in the initial consonant, but have meanings which are compatible with those of roots in Table 2.

Table 2

*x^{w}ir
IB strip leaves and seeds off
CO, MA, MO fence
YU make a fence
PM inhale, fence

*x^{w}il^{y}
MO cuddle a baby

*x^{w}im
MO strip leaves and seeds off

*x^{w}iny
MO to scale fish

*x^{w}ip
PM inhale, sigh, sob

*k^{w}ar
TJ,CO,MO laugh, giggle, talk
HA, WA bind (baby to cradleboard)

*k^{w}al
TJ lick
MO wade

CO peel

*k^{w}an
MO, HA, WA peel
*k^{w}an^{y}
MO clean
*k^{w}at
CO rake over

*k^{w}aw
HA talk (cf. *x^{w}ay)

*k^{w}is
TJ chatter, squeak

*q^{w}ar
YU talk (cf. *k^{w}aw, *x^{w}ay)

*q^{w}ir
YU, MO, YT, WA sharpen

*q^{w}al
WA splash
CO,MO row (a boat)

Note that some of these, particularly those with the vowel *i, may also be related to another sound symbolic root *k^{w}iR whose core meaning has to do with 'twisting, spiraling, turning motions and their results'. This suggests that complex semantic networks illustrated with the root *ča(:) above can also link roots with sound symbolic alternations in "mega networks" weaving in and out of a very large portion of the reconstructed root inventory. The full extent of this phenomenon still remains to be demonstrated but raises the question of where the cut-off point is reached.

Segment Distributional Imbalances

It has often been remarked in linguistic descriptions that not all phonological segments carry the same functional load in the lexical inventory of a language. To my knowledge, little discussion has been devoted to this topic beyond mention of the facts and it is not clear why such imbalances are found. Some fairly obvious reasons can sometimes be inferred. Yuman examples would be voiced stops which occur only in Spanish borrowings, systematic restrictions in distribution, e.g. the absence of labialized consonants in root- and word-final position, sounds whose historical origin is determined by sound shifts occurring in specific environments, e.g. the split of *t into /t/ (dental) and /ṭ/ (alveolar) in Delta-California and Yuma, alveolar /ṭ/ occurring originally only in root-final position. One might also surmise that some highly marked sound types might not be overly

common, but I think that would remain to be demonstrated. As a counter-example, in the Yuman languages that have them, the highly marked and innovative voiceless lateral fricatices ɬ and ɬʸ are at least as numerous as their voiced counterparts in the Delta-California languages, and enter in sound-symbolic sets with forms which have their voiced counterparts. In these sets, the voiceless ones denote the unmarked, more general, member of the pair with the more basic meaning, e.g. IM *ɔsaɬʸ* 'hand', but *ɔsalʸ* 'little hand'. These voiceless laterals are, however, extremely rare in Yuma and Paipai where they have spread from their Delta-California neighbors.

Skewed distributions in Proto-Yuman also include some rather strange ones. At first sight, the large number of roots containing the vowel *a does not appear bizarre, since [a] is certainly the unmarked vowel par excellence. It is without a doubt the most common vowel in the daughter languages as well, but in the reconstructed forms for Proto-Yuman the skewing is much more pronounced (perhaps as high as 80 percent of the reconstructed roots). What can we say about that? An obvious place to start would be to question the validity of the reconstructions. Individual Yuman languages have either 3 or 5 basic vowels, probably with a larger number of /a/'s than other vowels but not unduly unbalanced. The facts which have led me (Landgon 1976) to reconstruct the vowels of Proto-Yuman as only three are fairly well established and to my knowledge no Yumanists have challenged their validity. When the draft printouts of the Comparative Dictionary of the Yuman languages are carefully examined, the number of solid reconstructed roots with *i and *u shrinks even more. If anything, it reminds me most of the reconstruction of Indo-European vowels after the discovery of laryngeals, where the basic number of Indo-European vowels is reduced to essentially one. If it were to turn out on further study that many of the remaining *i and *u vowels of Proto-Yuman are restricted to individual languages or can be shown to be of some other origin, we would certainly have an Indo-European type vowel system. In fact, Proto-Yuman is rather like Indo-European in its general sound system (although it has only one series of stops), and shares its *CVC preferred root shape.

All this makes me very uneasy. Is this perhaps nothing but an artifact of our methods of reconstruction? If so, what do we do?

Another example of skewed distribution, though not as dramatic as the vowel problem, is the paucity of roots beginning in *t. Except in Cocopa, where *t mostly has the reflex /č/, /t/ is an extremely common segment in Yuman languages, both in root final position and in a variety of prefixes and suffixes with derivational and syntactic functions. In each language, it also is quite common in root-initial position. Few of these forms have cognates throughout the family.

An examination of the mechanically produced roots reconstructed from the Yuman lexical database reveals that few solid reconstructions can be proposed with initial *t. These are exhibited in Table 3. Note that Proto-Yuman reconstructions are proposed only where cognates are attested in at least two, non-

contiguous, subgroups.[5]

Table 3

1. *ʔ-xta 'cane, bamboo'
2. *xtat 'back (body part), backbone'
3. *(x)tat 'thorn'
4. *xta:t 'crawl'
5. *tapṣ 'bloom'
6. *tay 'big'
7. *taq 'open'
8. *tu 'belly, middle, satiated'
9. *tu-y 'pregnant'
10. *ta-k, *ta-m, *ta-p, *tax/*tux 'throw, slap, clap hands, play cards'
11. *tir 'wrap around'
12. *tur 'roll'

Note that 2, 3 and maybe even 4 are probably related and that 9 is derived from 8 by the addition of a suffix meaning 'characterized by'. In 1, *ʔ is clearly segmentable and represents a nominal marker, but the rest of the root is not segmentable, and neither are the longer roots 2, 3, 4, as well as 5. These longer roots, I believe, represent a conservative set of etymologies, a number of which in fact have cognates throughout Hokan. The set of roots in 10 seem to contain a root *ta followed in most cases by suffixes known to derive verb stems (*-k 'hither', *-m 'thither', *-p 'passive, reflexive'), but *tax and *tux, if segmentable at all, must contain an archaic suffix *-x whose meaning cannot be recovered at this point. Note also that *tux may well be a variant of *tax since the vowel *a often is backed and raised before velars and postvelars. 11 and 12 might actually be relatable by vocalic symbolism. When all this is taken into account, the total number of distinct roots with *t- may in fact dwindle to 8.

It seems odd that an unmarked segment like *t, reflexes of which are extremely common in the daughter languages, would have such limited use in root-initial position, especially when compared to other unmarked segments like *č- *m-, *p- which are initial in a large number of roots. The question is, is this meaningful, and if so, is there a way of addressing this question?

Beyond Yuman

Since I have alluded above to parallels with Indo-European, let me pursue this a little more. Imbalances in segment distribution in any reconstructed branch of Indo-European could be compared with other reconstructed branches as well as with Proto-Indo-European itself. We could, for example, look at the famous paucity of evidence for Proto-Indo-European *b, the expected reflexes of which are nevertheless very common in the daughter languages. Proto-Yuman, too, represents a branch of a larger family, Hokan, which, if indeed a valid construct, would rival Indo-European in antiquity and number of branches. This, however,

is where the similarities end. For Hokan, unlike Indo-European, is not attested in any of its branches by ancient documentation of the languages and history of its peoples, nor has the work of reconstruction reached the sophistication and depth of Indo-European. Furthermore, among the most commonly assumed 12 branches,[6] 8 are language isolates, and the work of reconstruction in the remaining families has proceeded in some depth only for Pomoan and Yuman-Cochimí,[7] the Hokan language families containing the largest number of languages and possibly of comparable time depth (for a survey of the history of the Hokan hypothesis, see Langdon 1974, and for a summary of reconstruction work in progress, see Kaufman 1988). I will therefore take a look at reconstructions of Proto-Pomo (McLendon 1973) and Proto-Hokan (Kaufman 1988) in the context of the concerns of this paper.

The Proto-Pomo phonemic inventory (McLendon 1973:52) is richer than the Proto-Yuman system, mostly in that it has four series of stops: voiced (*b and *d only), voiceless, voiceless aspirated, and voiceless glottalized); it also has voiceless fricatives and voiced resonants, plus 5 vowels, each occurring short and long. Except for the richness of the stop system compared to the Yuman stops (only 1 series) the systems are not unlike each other. Furthermore, structural parallels between Proto-Yuman and Proto-Pomo abound (Langdon 1979), among which is a stressed syllable sharing some of the characteristics of the Proto-Yuman root though most Proto-Pomo "roots" lack the final consonant so common in Yuman.

Compared to the distributional imbalances found in Yuman, the five vowels of Proto-Pomo seem to be fairly evenly distributed among reconstructed forms suggesting, at least tentatively, that the Yuman vowel system was subject to considerable erosion. On the other hand, most researchers who have considered the issue assume that Proto-Hokan had only three vowels. Kaufman (1988), the most recent attempt at Proto-Hokan reconstruction, postulates 5 original vowels (plus length and diphthongs), but believes that eventually no more than three vowel qualities will be needed. A very quick glance through the proposed Hokan reconstructions of Kaufman (1988) does not, however, confirm the kind of imbalance favoring *a[8] over the other vowels as found in Yuman. This suggests to me that in Pre-Proto-Yuman times, some rather drastic leveling of vowels did indeed take place under conditions which of course remain to be discovered.

On the question of the paucity of Proto-Yuman roots in *t-, the following observations might be relevant. When comparing Yuman to Pomoan, the conservative view requires that Proto-Yuman *t's be compared with all Proto-Pomo dental-alveolar stops, since Yuman only has one series of stops and since at this stage of our knowledge, reflexes of stops appear to be quite conservative. The total number of reconstructed Proto-Pomo "roots" beginning in any one of these is 42, only two of which, meaning 'big, singular' and 'big, plural', which clearly point to one single etymology, suggest a solid cognate with Yuman. For comparison, all variants of k are represented in over 30 sets. In fact, the distribution of consonants in root-initial position in Proto-Pomo is remarkably even when

compared to Yuman. Can we draw any conclusions from this? Is Proto-Pomo a particularly well-balanced system and if so what does it mean?

When we now compare the distribution of t-like segments in root-initial position in Proto-Hokan (as proposed by Kaufman 1988) about 14 items represent such forms with evidence from all areas of Hokan territory, quite comparable with the Yuman numbers, and at least 4 of them have matches in Proto-Yuman. Other consonants reconstructed by Kaufman for Proto-Hokan seem much better attested, e.g. nasals, fricatives, and resonants. Does this mean that Yuman is more conservative with respect to Hokan than Pomoan? In view of the tentativeness of all this, I would not want to make a prediction, especially since these figures may well represent an artifact of the still primitive state of the art of Hokan studies.

Concluding remarks

One might well ask why I consider these topics worth discussing. Let me review them in the order in which they were presented above.

The complex semantic networks I mentioned are probably a common aspect of semantic change. Methodologically, they rely on the basic assumption of the arbitrariness of the linguistic sign, as they exclude from consideration forms whose semantic content is compatible with the set but whose phonological shape is not. Thus, the root complex reconstructed as *ča(:)(-m) does not include other reconstructions with compatible meanings of, e.g. 'put down, set aside, separate' but with other phonological shapes. Such a root is also discussed in Langdon and Hinton (1989:132) where a reconstruction *č-k^{w}a has meanings such as 'put down things, put away, etc.' In this set, the prefix *č- denotes that a number of distinct objects are involved and the whole form focuses more on the result of the action than on the action itself. Similarly, the root *ta- plus various suffixes exhibited in Table 3 has a meaning 'throw' which is also one of the the meanings of *ča(:)(-m), but the focus here is more on the action and its force. I believe that when the whole of the reconstructed lexicon of Proto-Yuman is analyzed in this way, a clearer picture will emerge of the unique semantic organization of concepts which characterize the system as a whole. Even the small sample discussed here should indicate that this organizing principle will turn out to be considerably different from that of languages like English.

Contrasting with the above, the sound-symbolic networks illustrated for Yuman in Table 2, and of which there are quite a few, must of necessity violate the absolute arbitrariness of the linguistic sign, since specific segments tend to become associated with contrastive meanings within the sets and thus acquire iconic properties of their own. A lot more work is of course needed to fully demonstrate this.

As to the distributional imbalances, whatever their exact import may be, I believe they occur to a certain degree in all systems. They are a consequence of the tensions between symmetry and its disruption which are constantly at work in

language change, and provide one of the many mechanisms which allow changes to take place.

Let me reiterate that these are totally preliminary observations which if anything, reflect only our very sketchy control of Hokan historical reconstructions. They are presented at this special session on Historical Issues in Native American Linguistics in the hope that the topic will generate further discussion. They also suggest that any sweeping generalizations about proposed deep genetic relationships must be considered with a good deal of caution. There is much work to be done and Hokanists need all the help they can get.

Endnotes

* I particularly wish to thank Joshua Katz, Amy Miller, and Pamela Munro for discussions of some of the issues raised in this paper.

1. The data in this paper come mostly from the computerized database developed in the preparation of the Comparative Dictionary of the Yuman Languages (supported by NSF Grant BNS 8317837), using material collected by all Yumanists without whose efforts the project could not have been undertaken, working in collaboration with the members of the Editorial Board of the project (James Crawford†, Leanne Hinton, Mauricio Mixco, Pamela Munro and myself).

2. Subgroupings within the Yuman family are as follows:

Pai group:

i. Upland: Havasupai, Hualapai, Yavapai (Western Arizona)

ii. Paipai (Northern Baja California south of Tiipay)

River group: Maricopa (central Arizona), Yuma (Quechan), Mojave (along the Colorado River north of Cocopa)

California-Delta group:

i. Cocopa (in the area of Somerton, Arizona and around San Luis, Sonora, Mexico)

ii. Diegueño: Iipay, Kumeyaay, Tiipay (San Diego County and northern Baja California, Mexico)

Kiliwa (Northern Baja California south of Paipai)

3. Reconstructed *q^w was inadvertently omitted from that chart, possibly because it is not very common. Its reflexes are /q^w/ in all Yuman languages except the Diegueño languages, where its reflex is /k^w/.

4. Language name abbreviations used in this paper are: IM Mesa Grande Iipay, IB Barona Iipay, TJ Jamul Tiipay, CO Cocopa, YU Yuma, MA Maricopa, MO Mojave, HA Havasupai, HU Hualapai data from the tribal dictionary, WA Walapai data from Werner Winter (note that Hualapai and Walapai are variant spellings of the name of a single language), YA Yavapai (Shaterian data), YM Tolkapaya Yavapai (Munro data), YS Tolkapaya Yavapai (Shaterian data), PJ Paipai (Joël data), PM Paipai (Mixco data), PS Paipai (Kaufman and Shaterian data), KI Kiliwa.

5. Also discounted are sets where Mojave alone among River languages has cognate forms with Upland Pai. These are due to recent contact among these languages as demonstrated by Hinton (1979).

6. The most likely Hokan branches are: Karuk, Chimariko, Shasta, Achomawi-Atsuguewi, Yana, Washo, Pomoan, Esselen, Salinan, Yuman-Cochimí, Seri, Oaxaca Chontal (Tequistlatecan).

7. Although Yuman-Cochimí has been demonstrated to be a language family (Mixco 1978), the data considered in this paper are limited to Yuman because the data on Cochimí (which is exinct) do not provide enough detail to support any part of the discussion, and because Proto-Yuman-Cochimí reconstructions have not been worked out.

8. It should be kept in mind that Kaufman's reconstructions are (by his own admission) still very tentative and may of necessity rely more on some branches than on others. Nevertheless the large number of proposed reconstructions is impressive and allows some preliminary observations. Mid vowels are much rarer than others and almost non-existent in reconstructed grammatical morphemes; they often occur in environments conducive to raising and lowering, confirming the impression that fewer vowels may be needed. *a is probably more common than *i and *u, but not excessively so.

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