THE UPLAND YUMAN NUMERAL SYSTEM

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0.1 General

The basic morphology for Upland Yuman numerals differs only slightly from dialect to dialect; yet the syntactic constructions in which the morphological items participate are just divergent enough to create difficulties in inter-dialectal communication. Despite the high degree of mutual intelligibility Upland Yuman dialects show, speakers of the Southern dialects may switch to English when talking with speakers of the Northern dialects if the subject of discourse involved numeration.

The Southern or Yavapai dialects have borrowed English words for hundred, /shuna/, and thousand, /tawwa/, while the others innovated native-language compounds. This seemingly insignificant datum assumes its proper gravity when these two basic numeral systems are compared syntactically. All numbers in Upland Yuman are verbs, or are derived from verbs, except for Yavapai /shuna/ and /tawwa/. As verbs, they exhibit regular verbal morphology, i.e., they may be marked for person of subject, number, mode, tense, aspect, switch reference, and so on, although obviously not all verbal affixes are semantically compatible with the concept number. Now, the words for hundred and thousand are based on the lexical item for ten in the Northern dialects; that is, they are compound verb phrases where one hundred is expressed as
\[ /wa:v-a\ c-wa:v-a/\ ten-nts\ pl-ten-nts \] and one thousand is rendered as ten times ten times ten /wa:v-a\ c-wa:v-a\ v-wa:v-a/\ ten-nts\ pl-ten-nts\ stative-ten-nts. When all the syntactic prefixes and suffixes appropriate to the number's function in the sentence are added to such compounds, they become quite complex, not to mention cumbersome and unwieldy from a Yavapai speakers point of view.

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1This paper was inspired by Munro's Mojave Numerals' presentation at the first Yuman workshop in 1975. I would like to thank Dr. Munro for providing such a fertile idea, and also to thank Dr. Margaret Langdon for helpful comments. A version of this, The Upland Yuman Numeral System, was presented at the American Anthropological Association Meetings Washington, D.C., November, 1976.

2The origin of the initial consonant on /shuna/ is something of a problem if English is the donor language. Perhaps, as Langdon suggests (personal communication) its source is to be found in another American Indian language.
<table>
<thead>
<tr>
<th>Northern Dialects</th>
<th>Southern Dialects</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. hwak-a</td>
<td>hwak-i</td>
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<tr>
<td>3. hmuk-a</td>
<td>hmuk-i</td>
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<td>4. hopa</td>
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<td>5. Ora:p-a</td>
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<td>6. t-spe (cause-lean)</td>
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<td>7. hwak-spe (two-lean)</td>
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<td>8. hmuk-spe (three-lean)</td>
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<td>99. v-wa:v-k</td>
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<tr>
<td>100. v-wa:v-k</td>
<td>v-wa:v-k</td>
</tr>
</tbody>
</table>

3These are forms provided by Havasupai speakers Ethel Jack and Florence Marshall. My Hualapai consultant, Irene Haudenschild, gave slightly different forms for multiples of 100; she would occasionally insert a /-k/ between the two morphemes meaning ten in this situation. It is not clear to me whether this was a performance error or whether she had a different system, but the appearance of a same-subject marker in this position spoils the regular pattern. The significance of /v-/ on /v-wa:v/ is as of yet underdetermined.
Table One
(continued)

<table>
<thead>
<tr>
<th>Northern Dialects</th>
<th>Southern Dialects</th>
</tr>
</thead>
<tbody>
<tr>
<td>102. wa:v-a ċ-wa:v-k hwak-k čʔa1-a</td>
<td>shuna ?sit-k hwak-i</td>
</tr>
<tr>
<td>110. wa:v-a ċ-wa:v-k wa:v-k čʔa1-a</td>
<td>shuna ?sit-k v-wa:v-i</td>
</tr>
<tr>
<td></td>
<td>v-wa:v-k ?sit-č</td>
</tr>
<tr>
<td>120. wa:v-a ċ-wa:v-k wa:v-a hwak-k</td>
<td>shuna ?sit-k hwak-a</td>
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<tr>
<td></td>
<td>v-wa:v-i</td>
</tr>
<tr>
<td>145. wa:v-a č-wa:v-k v-wa:v-a hopa-k</td>
<td>shuna ?sit-k hopa-č</td>
</tr>
<tr>
<td>θrap-k cʔa1-a</td>
<td>v-wa:v-č θrap-p-i</td>
</tr>
<tr>
<td>1000. wa:v-a č-wa:v-a v-wa:v-a</td>
<td>θawva</td>
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</tbody>
</table>

From the system displayed in this table, it is obvious that the Hualapai number 2,111 will contain significantly more morphological material than the equivalent Yavapai term. In fact, the two numerals are included here for comparative purposes; keep in mind that they are citation forms only, and that therefore they are subject to even further inflection.

Hualapai 2,111
/wa:v-a ċ-wa:v-a v-wa:v-a hwak-k
wa:v-a č-wa:v-a ?sit-k v-wa:v-k
?sit-k čʔa1-a/ (ten-tns pl-ten-tns
stative-ten-tns two-SS ten-tns
pl-ten-tns one-SS stative-ten-SS
one-SS out + over-tns) or [(10x10x10)
x2] + [(10x10x10)] + [10+1] = 2,111

Yavapai 2,111
/θawva hwak-k shuna ?sit-k
v-wa:v-k ?sit-č/ (thousand
two-SS hundred one-SS
stative-ten-SS one-tns) or
[1,000x2] + [100x1] +
[10+1] = 2,111

1.0 Citation Forms

Turning to Table One, we can examine characteristics of the Northern and Southern version of Upland Yuman numerals. Note the following things:

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4It might be argued that we should not concern ourselves with larger figures, as Northern Pai Indians have little opportunity to use them. Nothing could be more mistaken. With hundreds of thousands of dollars in land claims against the United States Government a topic of conversation on every Northern Yuman reservation, the Indians have both opportunity and motivation to use such numbers.
(1) The "tense" marker\(^5\) for Northern dialects is /-a/, Redden's aorist, or general tense. Yaype dialects show /-i/, the so-called "present" or "manifestive" tense on the right-most verb. (As far as I can tell, only Southern dialects ever use /-i/, which seems to have derived historically from the auxiliary /?i/ to say, to show, to manifest.

(2) Northern dialects use the verb phrase modifier /q?al/ to come out over, to emerge on top of with numerals between decades after ten. Hualapai speakers, particularly older ones from the Seligman area, recognize /q?kwav/ to pile on top of, as an archaic form serving the same function.

(3) The order of elements in the decade numbers between ten and one hundred are reversed in the two dialect areas. Northern Upland Yuman speakers realize 20 as 1 0 2 0 ' s, while Southern dialect speakers say 2 0 ' s ten ' s instead. On the other hand, both groups treat multiples of 1 0 0 in a parallel way, with the multiplying figure to the right of the number multiplied. Thus, the forms for 2 0 will differ in the order of elements, while the forms for 2 0 0 0 and 2 0 0 0 will follow the same pattern, e.g.,

<table>
<thead>
<tr>
<th>Hualapai</th>
<th>Yaype</th>
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</thead>
<tbody>
<tr>
<td>20. v-wa:v-a hwak-a</td>
<td>hwak-a v-wa:v-i</td>
</tr>
<tr>
<td>200. v-wa:v-a č-wa:v-a hwak-a</td>
<td>shuna hwak-i</td>
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<tr>
<td>[(10x10)x2]</td>
<td>[(100x2)]</td>
</tr>
<tr>
<td>220. wwa:va čwa:va hwakk wwa:va hwaka [(10x10)x2] + [10x2]</td>
<td>shuna hwakk hwaka wwa:va</td>
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<td></td>
<td>[(100x2) + (2x10)]</td>
</tr>
<tr>
<td>2000. wwa:va čwa:va wva:wva hwaka [(10x10)x2]</td>
<td>6awva hwaki [(1000)x2]</td>
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</tbody>
</table>

(4) The decade numbers 4 0 , 6 0 , 7 0 , and 8 0 are pluralized in the Southern, but not the Northern dialects. It is possible to get the plurals of numbers in the Northern dialects, but only in certain constructions where the semantic basis for pluralization is obvious (see following).

\(^5\)"Tense" does not necessarily mean tense here. The formative /-a/ sometimes seems to indicate aspect; in other cases it appears to be a nominalizer. Glosses must be evaluated in the light of this uncertainty.
(5) A general property of Upland Yuman numerals, shared across dialects, is the presence of absence of the "same-subject" morpheme when various arithmetical operations are to be performed. If a number is to be multiplied by a following digit, the "tense" marker /-a/ will appear on the left-hand number; if the following digit is to be added, on the other hand, the first number will show a /-k/. In other words, /-a/ signals multiplication; /-k/ addition,\(^6\) e.g.,

Hualapai

\[145. \text{wa:} v-a \quad \text{č:wa:} v-k \quad \text{v-wa:} v-a\]

\[\text{hopa-k} \quad \text{θrap-k} \quad \text{č?al-a}\]

\[\text{[10×10]} + \text{[10×4]} + 5\]

Yavpe

\[\text{shuna} \ ?\text{sit-k} \ \text{hopa-č-a}\]

\[\text{v-wa:} v-k \ \text{θrap-i}\]

\[\text{[100×1]} + \text{[4×10]} + 5\]

The internal logic of the generalization just stated is not immediately obvious, i.e., it is not clear why addition requires a same-subject indicator, while multiplication requires a "tense" morpheme. (After all, multiplication is the same operation as addition, mathematically). Langdon and Munro (1975) supply a plausible explanation for the presence of /-k/ when figures are to be added, but their hypothesis does not really help account for /-a/ when digits are to be multiplied. The Langdon-Munro hypothesis assumes that the subjects of two numerical verbs separated by /-k/ are, in fact, the same, and that, therefore, this subject must be the unit. Thus, two plus two equals four, which in Upland Yuman is expressed as

\[(a) \ \text{hwak-k} \ \text{hwak-k} \ \text{hopa(k yu)}\]

means "the units are two, and then the units are two, and then the units are four." This analysis makes perfectly good sense. The puzzling thing is why there is not a same-subject marker in compounds like 20, 300, 4000. The number 20 is just the number 10 added to itself, and 300 is just 10 added to itself 30 times and so forth. But this mystery cannot be solved until we know what /-a/ actually represents semantically, and we are nowhere near a solution to that problem. Suffice it to say, the two different morphemes are necessary to distinguish addition from multiplication in the internal

\(^6\)But see footnote number 3 where I mentioned problems with this analysis, at least where my Hualapai consultant is concerned. In any event, the rule stated above works for both Yavpe and Havasupai, so it probably works for Hualapai as well.
composition of compound numbers. 7

2.0 The Syntax of Numbers

Upland Yuman numerical verbs have several typologically interesting properties, most of which have to do with the types of inflections they take in their various syntactic appearances. The following list of patterns for numbers is not exhaustive, though it does provide an idea of their grammatical range.

2.1 Partitives 8

When the numbers are used as partitive subjects or as partitive modifiers for noun subjects, they generally appear with the same-subject morpheme /-k/. When used as objects, they appear with the different-subject marker /-m/. In either position they are inflected to agree with person, but not number, of their referents.

(1) m-hwak-t-k m-k’ya:-č-a (2-two-temp-SS 2-shoot-pl-imp)
   You two shoot! Two of you shoot! (Hualapai)

(2) ma:-č m-yu ?ňa-c ?-yu-(y)e:-m ?-hwak-k q’maqt’a-ňu
   ?-yo:-ň-k ?-wiŋk ?-wa:m-k ?-wa:-č-o ?-ček’ya:t-č-h
   (2-sbj 2-be 1-sbj 1-be-also-assoc 1-two-SS meat-
   that 1-take-conj-SS 1-conj 1-take + away-SS 1-sit-
   pl-place 1-chop-pl-irreal) Let's you and I (the two
   of us) take that meat to our house and divide it up.
   (Yavape)

(3) klo:-ňu-l hopa-θ-k way-o-hi-k yu (boat-this-in
   four-temp-SS sit + pl-stative-irreal-SS be)
   Four can fit in this boat. (Havasupai)

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7 The question arises as to how Upland Yuman speakers do simple arithmetic, how they say 3 x 2 = 6 or 8 ÷ 2 = 4 or 8 - 6 = 2 or 10 + 7 + 1 = 18. The answer seems to be that simple addition and subtraction are possible, while multiplication (outside of compounding) and division are not, though I am somewhat uncertain about this. David Rood (personal communication) says that division and multiplication are also lacking in Wichita.

8 By partitive I mean "denoting a part" as in two of the boys, where two boys can be considered a subset of all possible boys. This meaning also covers cases like "the two of us," "two of you," "all of us," etc., where a number or other quantifier indicates the members of a set.
(4) qwa qa hmuk-m ?-k' a:-k ?-wi (deer three-ds 1-shoot-SS 1-do) I shot three (of the) deer. (Havasupai)

2.2 Adverbial Modifiers

When numbers appear as adverbial qualifiers to main predicates, they generally appear only with the "tense" indicator /-a/, though those that are subject to pluralization do pluralize. In other words, adverbial numbers do not normally take person-of-subject inflections matching the main verb, even if other modifiers in the construction do. Two qualifications for this generalization must be stated however: (1) if the adverbial numeral is a compound number, i.e., a number between 11 and infinity, person markers may show up on the last element in the compound. In the Northern dialects this includes the tag modifier "q' al" to come out over. (2) if the semantic situation is such that numbers themselves are being counted, the corresponding grammatical construction is highly marked. In these cases, number morphemes that are subject to pluralization (4, 6, 7, 8, and, by extension, numbers that contain these morphemes) must pluralize. More importantly, all numbers in such constructions occur with the stative marker /-o/- and the locative case marker /-k/.

The loose translation for these forms is "N by N" or "N at a time" (as in the animals came in two by two or he ran up the steps three at a time). Literally, however, they should probably be rendered "at the state of being two's," "by three's," or something to that effect. Examples of each of these possibilities are included below, arranged in order of complexity:

(5) hwak-a m-k' a: (two-tns 2-shoot) Shoot twice! (Havasupai) [no person marker on /hwak/]

(6) hmuk-a ?-snu-k ?-k' a:-k-90 ... (three-tns 1-time-SS 1-shoot-SS-cond ...) If I shot thrice ... If I shot three times ... [person marker on /snu/, but not /hwak/] (Yavpe)

(7) wa:v-a m-hwak-o m-sn' u-k m-k' a: (ten-tns 2-two-stative 2-times-SS 2-shoot) Shoot twenty times! (Hualapai) [Note the person marker on /hwak/ two in the compound for twenty; note also the stative marker /-o/].

9At least I think this is the proper analysis. The /-k/ in question does not seem to be the verbal referent-switching /-k/ for it occurs on these forms even when they are in object position.
(8) t-spay m-swa:r-k-a (cause-six + pl 2-sing-SS-imp)
    Sing it six times! (Hualapai)

(9) wa:v-a hopa-k m-č?al-k v-naw-k-a (ten-tns four-SS
    2-come + out + over-SS stative-up-SS-imp) Jump fourteen
    times! (Hualapai)

(10) hopa-č-a m-swa:r-e: (four-pl-tns 2-sing-imp) Sing it
    four times! (Yavape)

(11) hopa-č-v-k sqe:d-o-v-k-a (four-pl-passive-SS lying +
    parallel-stative-pass-SS-tns) They're lying there four
    by four. They're four-ed there. (Havasupai)

(12) v-č-wa:v-o-k hwak-spay-k č-č?al-k-a (stative-pl-ten-
    stative-SS two-teen + pl-SS pl-come + out + over-SS-tns)
    There are sixteen here and sixteen there. (Havasupai)
    They are grouped here and there by sixteens. [This sentence
    is interesting for the amount of plural morphology it
    displays. Examine the following paradigm, where the forms
    all mean N here and N there. (Havasupai)]

    (12a) hwa:k-o-v-k-a 2 x 2
    (12b) hmu:k-o-v-k-a 3 x 3
    (12c) hopa-v-o-k-a 4 x 4
    (12d) tspay-o-k-a 6 x 6
    (12e) hmu:k-spay-o-k-a 8 x 8
    (12f) v-č-wa:v-o-k hwak-k č-č?al-k-a 12 x 12

    In these constructions, the /-o-/ that I gloss stative, is no
    doubt the evidential-stative morpheme I discussed in my "irrealis"
    paper (1975). It is the one that signifies an achieved state, the end
    result of a process. In other words, it indicates that something has
    undergone a change and is now in a new state of being. In these cases
    the change indicated is, apparently, a re-grouping. The /-v-/ here,
    then, is a passive marker, also indicating a transformation of state.
    The analysis of /-o-/ is supported by the contrast evident in the
    following two sentences. The first describes a normal state; the
    second an a-typical or transformed state. Both sentences are
    Hualapai.10

    (13a) ḟhi:sa-v-č mpat hmukspe:-k yu (spider-dem-sbj
    leg eight-SS be) A spider has eight legs. Literally,
    The spider's legs are eight.

Sentences suggested by Munro.
(13b) vya-č ṣhi:sa mpat tspe-o-k yu (this-sbj spider leg six-stative-SS be) This spider has six legs. (i.e., there is evidence that this particular spider has undergone a transformation from its normal condition to the one reported on.)

All Upland Yuman dialects have this kind of manner adverbial with /-o-/ and /-k/, plus or minus /-v-/ and its semantic range in Havasupai is not as large as for other Norther Pai speakers. The Havasupai use the construction when the situation described is one of spacial discontinuity of groups ("There are six here and six there"). Both Hualapai and Yavpe speakers can use it to signal temporal discontinuity of groups as well. ("The child ate the beans three at a time," i.e., he picked at them -- ate three, then another three, then another three, etc.).

In any event, that this construction is so highly marked structurally is less remarkable when we compare it to other Upland Yuman adverbial modifiers. Some temporal words such as Yavpe /hipatke:/ "at dawn," "in the morning," are frozen forms, occurring always with /-k-/ and existential /-e:/, even when their sense is from "morning 'till evening." This is true despite the requirement that other temporal forms show associative or switch reference /-m(e:)/. It is probably that the /-k/ manner adverbials have some deep semantic connection to these other frozen forms.

2.3 Main Predicates, Predicates in Dependent Clauses

When a number is the major predicate of a main or dependent clause, it displays regular verbal morphology. The main qualification of this statement concerns the position of person prefixes in complex numeral: person markers generally go on the right-most verb in a compound number, therefore etymologically transparent digits like 6, 7, 8, 16, 17, 18, etc. can be "interrupted" with person markers, as can all decade numbers. (cf. sentences (17) - (21) below, for example).

(14) hwa:k-k ṣh-hmuk-k ẽda:p-k yu (two-SS when-three-SS five-SS be) Two and three are five. (Havasupai)

(15) msi:-̊u-č hme:-̊u-m hwak-k ḋur-a hopa-č-k yu (girl-that-sbj boy-that-assoc two-SS year-abs four-pl-SS be) That girl and that boy are both four. (Hualapai)

(16) ḋur’  m-hwak-e:? (year 2-two-Q) Are you two years old? Are your years two? (Yavpe)
(17) ?nà-č čur-a hmuk ?-v-wa:v-h ?-čat-km (1-sbj year-abs three 1-stative-ten-irreal 1-nearly-inc) I'm nearly thirty. (Yavpe)

(18) ?nà-č-č ?-hwak-t-k čur hmuk ?-v-wa:v-č-kn (1-pl-sbj 1-two-temp-SS year three 1-stative-ten-pl-cmp) We were both thirty. (Yavpe)

(19) čur halquy-a v-wa:v-k hwa:k-ň-m-spe-k-0o m-yo: m-pe:m-ha (year 9-tns stative-ten-SS two-temp-2-lean-SS-cond 2-teeth 2-absent-irreal) When you get to be 97 your teeth are gone. (Yavpe)

(20) v-wa:v-a ?-hwak-k ?-yu-o kak hma:ň ?-wiy-h ?-t?op-y-k ?-wi-h (stative-ten-tns 1-two-SS 1-be-transformed + state neg children 1-have-irreal 1-not-again-SS 1-do-irreal) If I were twenty (again) I wouldn't have children again. (If I had it to do over and were twenty, I wouldn't have children this time. (Hualapai)

(21) m-hwak-t-k čur-a wa:va halquy-k m-(h)opa-k m-č?al-č-ŋ-yu (2-two-temp-SS year-abs ten nine-SS 2-four-SS 2-come + out + over-pl-2 + k-be) You're both ninety-four. (Hualapai)

(22) ma:-č čur-a shuna ?sit-k m-?sit-i ta:m-km (2-sbj year-tns hundred one-SS 2-one-tns now-inc) You're 101 years old today. (Yavpe)

(23) ?pa:ñ-h-v-c mpara hwak-km (human-dem-sbj leg two-inc) People are two-legged. People have two legs. (Yavpe)

Note that in all these sentences the thing counted (years, legs) remains uninflected. The counting predicate, on the other hand, agrees with its subject in person and number (in addition to whatever other inflections it may carry). Thus, "I am thirty years old" is literally "I am thirty with respect to years" or "My years are thirty."

Times of day usually follow an analogous pattern. Thus "We dance until three in the morning" is rendered literally as "We are three with respect to hours in the morning, dancing," as in sentences (24) and (25). Sentence (26) shows a slightly different version of the same thing. The personal prefix is missing from the number, but present on the auxiliary verb.
(24) ?pa:-č-č hima:-č-č-y k ye: k ?ha: hwak-č-kā
(person-pl-sbj dance-pl-temp-SS morning hour
two-pl-cmp) The people danced until two in the
morning. Dancing, the people were two hours (into/of)
the morning. (Yavape)

(25) pay-t-k m-ima:-č-k ?ha: m-tspe:-m-č-i (all-temp-SS
2-dance-pl-SS hour 2-six-?-pl-tns) You are all
dancing at six in the morning. (Yavape)

(1-sing-SS sun static-morning manif-toward-SS
hour three-SS 1-be) I sang until three in the
morning. (Havasupai)

(27) ?ha-č-č va-k ?-way-k ?ha: tqe:p-a ?-hwakspe-č-i
(1-pl-sbj here-at 1-sit + pl-SS day night-abs
1-seven-pl-tns) We stayed seven nights.

2.4 Nominalized Numbers

Ordinal numbers are generally, though not necessarily, nominalized
forms and relativization is the most frequent process creating them.
As nouns, they take case markers appropriate to their grammatical
function in the sentence. Numbers followed by the intensifier predicate
/rav/ much, a lot, many, also have ordinal semantics, although,
obviously, in this construction the numbers are verbs rather than nouns.

(28) hma:ŋ k-hwak-ŋu k-ora:p-m hwak-o-k-a yo:-č-č wi
(children rel-two-dem rel-five-ds/assoc two-static-
at-plns pick/take-pl-SS do) They picked the second
and fifth child together. (Havasupai)

(29) su + k?ula k-tspe:-ŋu-č ŋ-hnaq-m nal-k yu
(bead rel-six-that-sbj 1-necklace-from fall-SS be)
The sixth bead fell off my necklace [vs. /su + k?ula
tspe:-k nal-k yu/ Six beads fell off my necklace.]
(Hualapai)

(30) qaqtə k-ora:p-ŋu-č ŋ-maya pe:m-i (cow rel-five-
that-sbj poss-milk absent-tns) The fifth cow is dry.
(Yavape)

Contrast the sentences above with number (31), following:
(31) ṭa:-v-m v-wa:v-a ra:v-a wa + si + pe:m-i va:-kḥ
(day-dem-associative ten-tns very-tns drunk-tns
come-comp) Today is the tenth time he's come drunk.
(Yavpe)

Numbers functioning as "adjectival" modifiers, i.e., as the final element in a noun clause, relativized or otherwise, take the case markers appropriate to the function of the noun in the sentence, e.g.,

(32) qʷawlyyavo mpara hwak-m vo:-k yu pos-č mpara
hopa-m vo:-k yu (chicken leg two-with go-SS be
cat-sbj leg four-with go-SS be) A chicken walks on
two legs; a cat on four. (Hualapai) [instrument]

(33) ṭa-č-č qʷaqtá mpara θrap-k-ʔi-č-a ?-ʔu:-č-i
(1-pl-sbj cow leg five-SS-manifest-habit-abs
1-see-pl-tns) We saw a five-legged cow. We saw a cow
of the sort manifesting five legs. (Yavpe) [object]

(34) ṭapahmi Qri: ṭisit-k-ʔi-č-č ke čka:-h ṭum-h
(man arm one-SS-manifest-habitual-sbj neg shoot-
irreal not-irreal) A one-armed man can't shoot.
A man of the one-armed variety can't shoot. (Yavpe)
[subject]

2.5 Summary

The information contained in the previous sections shows clearly that numbers in Upland Yuman are underlyingly verbs, although they may be nominalized for particular grammatical or semantic reasons. In general, their behavior does not present severe analytical problems, even if the associated morphology is occasionally puzzling. This is not to minimize their interest however. A semantic domain like numerals, where challenging but not unanswerable questions arise, is worthwhile investigating for typological reasons, if not for just sheer enjoyment.
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ANNOUNCEMENT

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PREFACE

In 1970 numerous linguists working on Hokan and Yuman languages were invited by Margaret Langdon to attend a conference at the University of California, San Diego. This made it possible for specialist to get to know each other and to learn in detail what each other was doing. The meeting was so successful that participants soon began asking when we would meet again. In 1975 Margaret Langdon invited the Yumanists to a workshop in conjunction with the research being done at the Yuman Languages Archives which she had established with the aid of a National Science Foundation grant. Again, the participants felt that the workshop was so successful that we ought to meet every year if possible. In 1976 another workshop was held at UCSD to which both Hokanists and Yumanists were invited. These proceedings are the result of that workshop. It is now expected that Hokanists and Yumanists will meet every year. The 1977 meeting will be at the University of Utah in Salt Lake City.

The participants of the 1976 Hokan-Yuman Languages Workshop gratefully acknowledge all the work that Sandra Chung and Pamela Munro did in organizing and running the workshop. Thanks are also due to Donald Crook and Susan Norwood for looking after the many details that helped make the workshop run smoothly.

Unfortunately, everyone who presented a paper at the 1976 Hokan-Yuman Languages Workshop was not able to prepare a final version for inclusion in this volume before it went to press. All the papers in this volume were presented in an earlier version at the 1976 workshop except the ones by Langdon and Webb, which were not ready in time for presentation for the workshop. However, since many of the points they contain were discussed at the workshop, they are included here.

The papers are presented according to the groups of languages presented at the workshop. Since there were some last minute changes in the program, I must plead faulty memory if I inadvertently placed some papers in an order different from that of the workshop presentation. The Langdon and Webb papers are included in the appropriate groups.

James E. Redden
Carbondale, May 1977
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